CLAIMS

1. Use of a gonadotropin-releasing hormone (GnRH) antagonist in the manufacture of a medicament for use in a~~A~~ method of treating an estrogen-dependent disease in a human patient in need thereof, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a gonadotropin-releasing hormone (GnRH) antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the second treatment period commences at least one week after the end of the first treatment period, and wherein the patient is not administered a GnRH antagonist during the time elapsed between the end of the first treatment period and commencement of the second treatment period.

2. The ~~method~~ use of claim 1, wherein the estrogen-dependent disease is uterine fibroids or endometriosis.

~~3. A method of reducing the volume of menstrual blood loss in a human patient diagnosed as having uterine fibroids, the method comprising:~~

~~a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,~~

~~b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,~~

~~c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the second treatment period commences at least one week after the end of the first treatment period, and wherein the patient is not administered a GnRH antagonist during the time elapsed between the end of the first treatment period and commencement of the second treatment period.~~

~~4. A method of inducing amenorrhea in a human patient diagnosed as having uterine fibroids, the method comprising:~~

~~a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,~~

~~b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,~~

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the second treatment period commences at least one week after the end of the first treatment period, and wherein the patient is not administered a GnRH antagonist during the time elapsed between the end of the first treatment period and commencement of the second treatment period.

5. A method of reducing the volume of one or more uterine fibroids in a human patient diagnosed as having uterine fibroids, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the second treatment period commences at least one week after the end of the first treatment period, and wherein the patient is not administered a GnRH antagonist during the time elapsed between the end of the first treatment period and commencement of the second treatment period.

6. A method of preserving or increasing hemoglobin in a human patient diagnosed as having uterine fibroids, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the second treatment period commences at least one week after the end of the first treatment period, and wherein the patient is not administered a GnRH antagonist during the time elapsed between the end of the first treatment period and commencement of the second treatment period.

7. The method of claim 1, wherein the estrogen-dependent disease is endometriosis.

8. A method of reducing the volume of one or more endometriosis nodes in a human patient diagnosed as having endometriosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the second treatment period commences at least one week after the end of the first treatment period, and wherein the patient is not administered a GnRH antagonist during the time elapsed between the end of the first treatment period and commencement of the second treatment period.

9. A method of reducing pelvic pain in a human patient diagnosed as having endometriosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the second treatment period commences at least one week after the end of the first treatment period, and wherein the patient is not administered a GnRH antagonist during the time elapsed between the end of the first treatment period and commencement of the second treatment period.

10. A method of reducing dysmenorrhea in a human patient diagnosed as having endometriosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the second treatment period commences at least one week after the end of the first treatment period, and wherein the patient is not administered a GnRH antagonist during the time elapsed between the end of the first treatment period and commencement of the second treatment period.

11. A method of reducing dyspareunia in a human patient diagnosed as having endometriosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the second treatment period commences at least one week after the end of the first treatment period, and wherein the patient is not administered a GnRH antagonist during the time elapsed between the end of the first treatment period and commencement of the second treatment period.

12. A method of reducing dyschezia in a human patient diagnosed as having endometriosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the second treatment period commences at least one week after the end of the first treatment period, and wherein the patient is not administered a GnRH antagonist during the time elapsed between the end of the first treatment period and commencement of the second treatment period.

13. A method of reducing uterine bleeding in a human patient diagnosed as having endometriosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the second treatment period commences at least one week after the end of the first treatment period, and wherein the patient is not administered a GnRH antagonist during the time elapsed between the end of the first treatment period and commencement of the second treatment period.

14. A method of inducing amenorrhea in a human patient diagnosed as having endometriosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the second treatment period commences at least one week after the end of the first treatment period, and wherein the patient is not administered a GnRH antagonist during the time elapsed between the end of the first treatment period and commencement of the second treatment period.

15. The method of claim 1, wherein the estrogen-dependent disease is adenomyosis.

16. A method of reducing uterine volume in a human patient diagnosed as having adenomyosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the second treatment period commences at least one week after the end of the first treatment period, and wherein the patient is not administered a GnRH antagonist during the time elapsed between the end of the first treatment period and commencement of the second treatment period.

17. A method of reducing the thickness of the anterior and/or posterior region of the uterine myometrium in a human patient diagnosed as having adenomyosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the second treatment period commences at least one week after the end of the first treatment period, and wherein the patient is not administered a GnRH antagonist during the time elapsed between the end of the first treatment period and commencement of the second treatment period.

18. A method of reducing pelvic pain in a human patient diagnosed as having adenomyosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the second treatment period commences at least one week after the end of the first treatment period, and wherein the patient is not administered a GnRH antagonist during the time elapsed between the end of the first treatment period and commencement of the second treatment period.

19. A method of reducing dysmenorrhea in a human patient diagnosed as having adenomyosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the second treatment period commences at least one week after the end of the first treatment period, and wherein the patient is not administered a GnRH antagonist during the time elapsed between the end of the first treatment period and commencement of the second treatment period.

20. A method of reducing dyspareunia in a human patient diagnosed as having adenomyosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the second treatment period commences at least one week after the end of the first treatment period, and wherein the patient is not administered a GnRH antagonist during the time elapsed between the end of the first treatment period and commencement of the second treatment period.

21. A method of reducing dyschezia in a human patient diagnosed as having adenomyosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the second treatment period commences at least one week after the end of the first treatment period, and wherein the patient is not administered a GnRH antagonist during the time elapsed between the end of the first treatment period and commencement of the second treatment period.

22. A method of reducing uterine tenderness in a human patient diagnosed as having adenomyosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the second treatment period commences at least one week after the end of the first treatment period, and wherein the patient is not administered a GnRH antagonist during the time elapsed between the end of the first treatment period and commencement of the second treatment period.

23. A method of reducing uterine bleeding in a human patient diagnosed as having adenomyosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the second treatment period commences at least one week after the end of the first treatment period, and wherein the patient is not administered a GnRH antagonist during the time elapsed between the end of the first treatment period and commencement of the second treatment period.

24. A method of inducing amenorrhea in a human patient diagnosed as having adenomyosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the second treatment period commences at least one week after the end of the first treatment period, and wherein the patient is not administered a GnRH antagonist during the time elapsed between the end of the first treatment period and commencement of the second treatment period.

25. The method of claim 1, wherein the estrogen-dependent disease is rectovaginal endometriosis.

26. A method of reducing the volume of one or more rectovaginal endometriosis nodes in a human patient diagnosed as having rectovaginal endometriosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the second treatment period commences at least one week after the end of the first treatment period, and wherein the patient is not administered a GnRH antagonist during the time elapsed between the end of the first treatment period and commencement of the second treatment period.

27. A method of reducing the volume of one or more type III rectovaginal endometriosis nodes in a human patient diagnosed as having rectovaginal endometriosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the second treatment period commences at least one week after the end of the first treatment period, and wherein the patient is not administered a GnRH antagonist during the time elapsed between the end of the first treatment period and commencement of the second treatment period.

28. A method of reducing pelvic pain in a human patient diagnosed as having rectovaginal endometriosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment

period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the second treatment period commences at least one week after the end of the first treatment period, and wherein the patient is not administered a GnRH antagonist during the time elapsed between the end of the first treatment period and commencement of the second treatment period.

29. A method of reducing dysmenorrhea in a human patient diagnosed as having rectovaginal endometriosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the second treatment period commences at least one week after the end of the first treatment period, and wherein the patient is not administered a GnRH antagonist during the time elapsed between the end of the first treatment period and commencement of the second treatment period.

30. A method of reducing dyspareunia in a human patient diagnosed as having rectovaginal endometriosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the second treatment period commences at least one week after the end of the first treatment period, and wherein the patient is not administered a GnRH antagonist during the time elapsed between the end of the first treatment period and commencement of the second treatment period.

31. A method of reducing dyschezia in a human patient diagnosed as having rectovaginal endometriosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment

~~period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,~~

~~c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the second treatment period commences at least one week after the end of the first treatment period, and wherein the patient is not administered a GnRH antagonist during the time elapsed between the end of the first treatment period and commencement of the second treatment period.~~

~~32. A method of reducing uterine bleeding in a human patient diagnosed as having rectovaginal endometriosis, the method comprising:~~

~~a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,~~

~~b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,~~

~~c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the second treatment period commences at least one week after the end of the first treatment period, and wherein the patient is not administered a GnRH antagonist during the time elapsed between the end of the first treatment period and commencement of the second treatment period.~~

~~33. A method of inducing amenorrhea in a human patient diagnosed as having rectovaginal endometriosis, the method comprising:~~

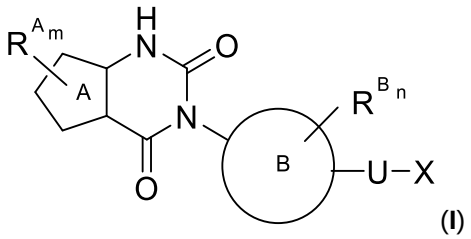
~~a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,~~

~~b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,~~

~~c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the second treatment period commences at least one week after the end of the first treatment period, and wherein the patient is not administered a GnRH antagonist during the time elapsed between the end of the first treatment period and commencement of the second treatment period.~~

~~34. The method of any one of claims 1-33, wherein the amount of the GnRH antagonist that is periodically administered to the patient during the second treatment period is less than the amount of the GnRH antagonist that is periodically administered to the patient during the first treatment period.~~

~~35.~~3. The ~~method~~use of ~~any one of~~ claim~~s~~ 1 or 2~~-34~~, wherein the GnRH antagonist that is periodically administered to the patient during the first treatment period is not a compound represented by formula (**I**), and the GnRH antagonist that is periodically administered to the patient during the second treatment period is a compound represented by formula (**I**)



(**I**)

wherein ring A is a thiophene ring;

each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$, NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

m is an integer from 0 to 3;

ring B is an aryl group or a monocyclic heteroaryl group;

each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

n is an integer from 0 to 2;

U is a single bond;

X is a group represented by —S—L—Y, —O—L—Y, —CO—L—Y, or —SO_2—L—Y, wherein L is an optionally substituted lower alkylene group;

Y is a group represented by Z or —NW^7W^8, wherein W^7 and W^8 independently are a hydrogen atom, an optionally substituted lower alkyl group, or Z with the proviso that W^7 and W^8 are not simultaneously hydrogen atoms, or W^7 and W^8 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group; and

Z is an optionally fused and optionally substituted cycloalkyl group, an optionally fused and optionally substituted heterocycloalkyl group, an optionally fused and optionally substituted aryl group, or an optionally fused and optionally substituted heteroaryl group;

or a pharmaceutically acceptable salt thereof.

~~36.~~4.Use of a GnRH antagonist in the manufacture of a medicament for use in a~~A~~ method of treating an estrogen-dependent disease in a human patient in need thereof, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the amount of the GnRH antagonist that is periodically administered to the patient during the second treatment period is less than the amount of the GnRH antagonist that is periodically administered to the patient during the first treatment period.

~~37.~~5. The ~~method~~ use of claim ~~36~~4, wherein the estrogen-dependent disease is uterine fibroids or endometriosis.

~~38. A method of reducing the volume of menstrual blood loss in a human patient diagnosed as having uterine fibroids, the method comprising:~~

~~a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,~~

~~b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,~~

~~c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the amount of the GnRH antagonist that is periodically administered to the patient during the second treatment period is less than the amount of the GnRH antagonist that is periodically administered to the patient during the first treatment period.~~

~~39. A method of inducing amenorrhea in a human patient diagnosed as having uterine fibroids, the method comprising:~~

~~a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,~~

~~b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,~~

~~c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the amount of the GnRH antagonist that is periodically administered to the patient during the second treatment period is less than the amount of the GnRH antagonist that is periodically administered to the patient during the first treatment period.~~

~~40. A method of reducing the volume of one or more uterine fibroids in a human patient diagnosed as having uterine fibroids, the method comprising:~~

~~a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,~~

~~b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,~~

~~c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the amount of the GnRH antagonist that is periodically~~

administered to the patient during the second treatment period is less than the amount of the GnRH antagonist that is periodically administered to the patient during the first treatment period.

41. A method of preserving or increasing hemoglobin in a human patient diagnosed as having uterine fibroids, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the amount of the GnRH antagonist that is periodically administered to the patient during the second treatment period is less than the amount of the GnRH antagonist that is periodically administered to the patient during the first treatment period.

42. The method of claim 36, wherein the estrogen-dependent disease is endometriosis.

43. A method of reducing the volume of one or more endometriosis nodes in a human patient diagnosed as having endometriosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the amount of the GnRH antagonist that is periodically administered to the patient during the second treatment period is less than the amount of the GnRH antagonist that is periodically administered to the patient during the first treatment period.

44. A method of reducing pelvic pain in a human patient diagnosed as having endometriosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the amount of the GnRH antagonist that is periodically administered to the patient during the second treatment period is less than the amount of the GnRH antagonist that is periodically administered to the patient during the first treatment period.

45. A method of reducing dysmenorrhea in a human patient diagnosed as having endometriosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the amount of the GnRH antagonist that is periodically administered to the patient during the second treatment period is less than the amount of the GnRH antagonist that is periodically administered to the patient during the first treatment period.

46. A method of reducing dyspareunia in a human patient diagnosed as having endometriosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the amount of the GnRH antagonist that is periodically administered to the patient during the second treatment period is less than the amount of the GnRH antagonist that is periodically administered to the patient during the first treatment period.

47. A method of reducing dyschezia in a human patient diagnosed as having endometriosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the amount of the GnRH antagonist that is periodically administered to the patient during the second treatment period is less than the amount of the GnRH antagonist that is periodically administered to the patient during the first treatment period.

48. A method of reducing uterine bleeding in a human patient diagnosed as having endometriosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the amount of the GnRH antagonist that is periodically administered to the patient during the second treatment period is less than the amount of the GnRH antagonist that is periodically administered to the patient during the first treatment period.

49. A method of inducing amenorrhea in a human patient diagnosed as having endometriosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the amount of the GnRH antagonist that is periodically administered to the patient during the second treatment period is less than the amount of the GnRH antagonist that is periodically administered to the patient during the first treatment period.

50. The method of claim 36, wherein the estrogen-dependent disease is adenomyosis.

51. A method of reducing uterine volume in a human patient diagnosed as having adenomyosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the amount of the GnRH antagonist that is periodically administered to the patient during the second treatment period is less than the amount of the GnRH antagonist that is periodically administered to the patient during the first treatment period.

52. A method of reducing the thickness of the anterior and/or posterior region of the uterine myometrium in a human patient diagnosed as having adenomyosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment

period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the amount of the GnRH antagonist that is periodically administered to the patient during the second treatment period is less than the amount of the GnRH antagonist that is periodically administered to the patient during the first treatment period.

53. A method of reducing pelvic pain in a human patient diagnosed as having adenomyosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the amount of the GnRH antagonist that is periodically administered to the patient during the second treatment period is less than the amount of the GnRH antagonist that is periodically administered to the patient during the first treatment period.

54. A method of reducing dysmenorrhea in a human patient diagnosed as having adenomyosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the amount of the GnRH antagonist that is periodically administered to the patient during the second treatment period is less than the amount of the GnRH antagonist that is periodically administered to the patient during the first treatment period.

55. A method of reducing dyspareunia in a human patient diagnosed as having adenomyosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the amount of the GnRH antagonist that is periodically

administered to the patient during the second treatment period is less than the amount of the GnRH antagonist that is periodically administered to the patient during the first treatment period.

56. A method of reducing dyschezia in a human patient diagnosed as having adenomyosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the amount of the GnRH antagonist that is periodically administered to the patient during the second treatment period is less than the amount of the GnRH antagonist that is periodically administered to the patient during the first treatment period.

57. A method of reducing uterine tenderness in a human patient diagnosed as having adenomyosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the amount of the GnRH antagonist that is periodically administered to the patient during the second treatment period is less than the amount of the GnRH antagonist that is periodically administered to the patient during the first treatment period.

58. A method of reducing uterine bleeding in a human patient diagnosed as having adenomyosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the amount of the GnRH antagonist that is periodically administered to the patient during the second treatment period is less than the amount of the GnRH antagonist that is periodically administered to the patient during the first treatment period.

59. A method of inducing amenorrhea in a human patient diagnosed as having adenomyosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the amount of the GnRH antagonist that is periodically administered to the patient during the second treatment period is less than the amount of the GnRH antagonist that is periodically administered to the patient during the first treatment period.

60. The method of claim 36, wherein the estrogen-dependent disease is rectovaginal endometriosis.

61. A method of reducing the volume of one or more rectovaginal endometriosis nodes in a human patient diagnosed as having rectovaginal endometriosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the amount of the GnRH antagonist that is periodically administered to the patient during the second treatment period is less than the amount of the GnRH antagonist that is periodically administered to the patient during the first treatment period.

62. A method of reducing the volume of one or more type III rectovaginal endometriosis nodes in a human patient diagnosed as having rectovaginal endometriosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the amount of the GnRH antagonist that is periodically administered to the patient during the second treatment period is less than the amount of the GnRH antagonist that is periodically administered to the patient during the first treatment period.

63. A method of reducing pelvic pain in a human patient diagnosed as having rectovaginal endometriosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the amount of the GnRH antagonist that is periodically administered to the patient during the second treatment period is less than the amount of the GnRH antagonist that is periodically administered to the patient during the first treatment period.

64. A method of reducing dysmenorrhea in a human patient diagnosed as having rectovaginal endometriosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the amount of the GnRH antagonist that is periodically administered to the patient during the second treatment period is less than the amount of the GnRH antagonist that is periodically administered to the patient during the first treatment period.

65. A method of reducing dyspareunia in a human patient diagnosed as having rectovaginal endometriosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the amount of the GnRH antagonist that is periodically administered to the patient during the second treatment period is less than the amount of the GnRH antagonist that is periodically administered to the patient during the first treatment period.

66. A method of reducing dyschezia in a human patient diagnosed as having rectovaginal endometriosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the amount of the GnRH antagonist that is periodically administered to the patient during the second treatment period is less than the amount of the GnRH antagonist that is periodically administered to the patient during the first treatment period.

67. A method of reducing uterine bleeding in a human patient diagnosed as having rectovaginal endometriosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the amount of the GnRH antagonist that is periodically administered to the patient during the second treatment period is less than the amount of the GnRH antagonist that is periodically administered to the patient during the first treatment period.

68. A method of inducing amenorrhea in a human patient diagnosed as having rectovaginal endometriosis, the method comprising:

a) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a first treatment period,

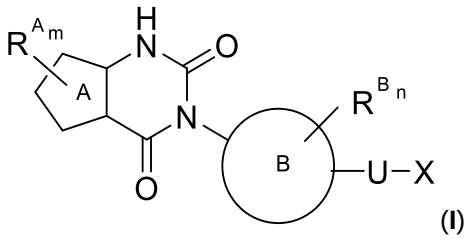
b) monitoring the patient's bone mineral density at the end of the first treatment period, and, if the patient is determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period,

c) periodically administering to the patient a therapeutically effective amount of a GnRH antagonist during a second treatment period, wherein the amount of the GnRH antagonist that is periodically administered to the patient during the second treatment period is less than the amount of the GnRH antagonist that is periodically administered to the patient during the first treatment period.

69. The method of any one of claims 36-68, wherein the second treatment period commences at least one week after the end of the first treatment period.

70. The method of claim 69, wherein the patient is not administered a GnRH antagonist during the time elapsed between the end of the first treatment period and commencement of the second treatment period.

71.6. The method use of any one of claims 4 or 536-70, wherein the GnRH antagonist that is periodically administered to the patient during the first treatment period is not a compound represented by formula (**I**), and the GnRH antagonist that is periodically administered to the patient during the second treatment period is a compound represented by formula (**I**)



(**I**)

wherein ring A is a thiophene ring;

each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$, NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

m is an integer from 0 to 3;

ring B is an aryl group or a monocyclic heteroaryl group;

each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

n is an integer from 0 to 2;

U is a single bond;

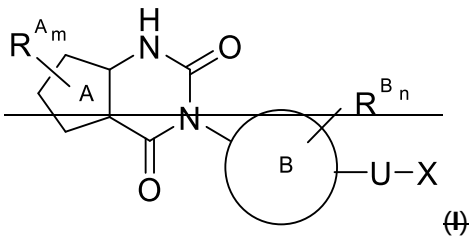
X is a group represented by —S—L—Y, —O—L—Y, —CO—L—Y, or —SO_2—L—Y, wherein L is an optionally substituted lower alkylene group;

Y is a group represented by Z or —NW^7W^8, wherein W^7 and W^8 independently are a hydrogen atom, an optionally substituted lower alkyl group, or Z with the proviso that W^7 and W^8 are not simultaneously hydrogen atoms, or W^7 and W^8 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group; and

Z is an optionally fused and optionally substituted cycloalkyl group, an optionally fused and optionally substituted heterocycloalkyl group, an optionally fused and optionally substituted aryl group, or an optionally fused and optionally substituted heteroaryl group;

or a pharmaceutically acceptable salt thereof.

~~72. A method of treating an estrogen-dependent disease in a human patient in need thereof, the method comprising periodically administering to the patient, during a second treatment period, a therapeutically effective amount of a GnRH antagonist represented by formula (I)~~



~~(I)~~

wherein ring A is a thiophene ring;

each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$, NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

m is an integer from 0 to 3;

ring B is an aryl group or a monocyclic heteroaryl group;

each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

n is an integer from 0 to 2;

U is a single bond;

X is a group represented by —S—L—Y, —O—L—Y, —CO—L—Y, or —SO_2—L—Y, wherein L is an optionally substituted lower alkylene group;

Y is a group represented by Z or —NW^7W^8, wherein W^7 and W^8 independently are a hydrogen atom, an optionally substituted lower alkyl group, or Z with the proviso that W^7 and W^8 are not simultaneously hydrogen atoms, or W^7 and W^8 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group; and

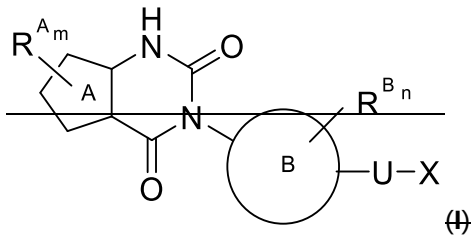
Z is an optionally fused and optionally substituted cycloalkyl group, an optionally fused and optionally substituted heterocycloalkyl group, an optionally fused and optionally substituted aryl group, or an optionally fused and optionally substituted heteroaryl group;

or a pharmaceutically acceptable salt thereof,

wherein the patient has previously been administered, during a first treatment period, a GnRH antagonist that is not a compound represented by formula (I).

73. The method of claim 72, wherein the estrogen-dependent disease is uterine fibroids.

74. A method of reducing the volume of menstrual blood loss in a human patient diagnosed as having uterine fibroids, the method comprising periodically administering to the patient, during a second treatment period, a therapeutically effective amount of a GnRH antagonist represented by formula (I)



(I)

wherein ring A is a thiophene ring;

each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted

lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$, NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

m is an integer from 0 to 3;

ring B is an aryl group or a monocyclic heteroaryl group;

each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

n is an integer from 0 to 2;

U is a single bond;

X is a group represented by —S—L—Y, —O—L—Y, —CO—L—Y, or —SO_2—L—Y, wherein L is an optionally substituted lower alkylene group;

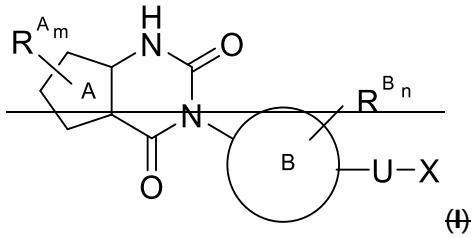
Y is a group represented by Z or —NW^7W^8, wherein W^7 and W^8 independently are a hydrogen atom, an optionally substituted lower alkyl group, or Z with the proviso that W^7 and W^8 are not simultaneously hydrogen atoms, or W^7 and W^8 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group; and

Z is an optionally fused and optionally substituted cycloalkyl group, an optionally fused and optionally substituted heterocycloalkyl group, an optionally fused and optionally substituted aryl group, or an optionally fused and optionally substituted heteroaryl group;

or a pharmaceutically acceptable salt thereof,

wherein the patient has previously been administered, during a first treatment period, a GnRH antagonist that is not a compound represented by formula (**I**).

75. A method of inducing amenorrhea in a human patient diagnosed as having uterine fibroids, the method comprising periodically administering to the patient, during a second treatment period, a therapeutically effective amount of a GnRH antagonist represented by formula (**I**)



(**I**)

wherein ring A is a thiophene ring;

each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$, NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally

substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

m is an integer from 0 to 3;

ring B is an aryl group or a monocyclic heteroaryl group;

each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

n is an integer from 0 to 2;

U is a single bond;

X is a group represented by —S—L—Y, —O—L—Y, —CO—L—Y, or —SO_2—L—Y, wherein L is an optionally substituted lower alkylene group;

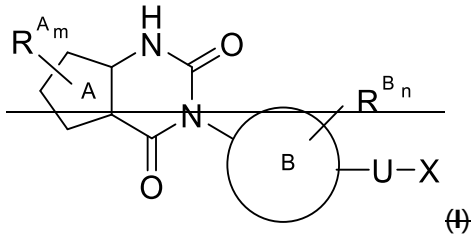
Y is a group represented by Z or —NW^7W^8, wherein W^7 and W^8 independently are a hydrogen atom, an optionally substituted lower alkyl group, or Z with the proviso that W^7 and W^8 are not simultaneously hydrogen atoms, or W^7 and W^8 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group; and

Z is an optionally fused and optionally substituted cycloalkyl group, an optionally fused and optionally substituted heterocycloalkyl group, an optionally fused and optionally substituted aryl group, or an optionally fused and optionally substituted heteroaryl group;

or a pharmaceutically acceptable salt thereof,

wherein the patient has previously been administered, during a first treatment period, a GnRH antagonist that is not a compound represented by formula (I).

76. A method of reducing the volume of one or more uterine fibroids in a human patient diagnosed as having uterine fibroids, the method comprising periodically administering to the patient, during a second treatment period, a therapeutically effective amount of a GnRH antagonist represented by formula (I)



(I)

wherein ring A is a thiophene ring;

each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$, NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

m is an integer from 0 to 3;

ring B is an aryl group or a monocyclic heteroaryl group;

each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

n is an integer from 0 to 2;

U is a single bond;

X is a group represented by —S—L—Y, —O—L—Y, —CO—L—Y, or —SO_2—L—Y, wherein L is an optionally substituted lower alkylene group;

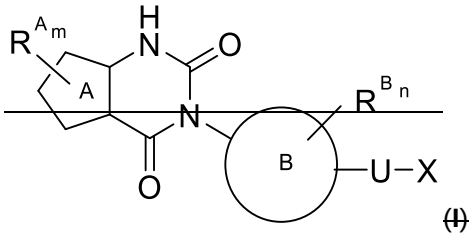
Y is a group represented by Z or —NW^7W^8, wherein W^7 and W^8 independently are a hydrogen atom, an optionally substituted lower alkyl group, or Z with the proviso that W^7 and W^8 are not simultaneously hydrogen atoms, or W^7 and W^8 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group; and

Z is an optionally fused and optionally substituted cycloalkyl group, an optionally fused and optionally substituted heterocycloalkyl group, an optionally fused and optionally substituted aryl group, or an optionally fused and optionally substituted heteroaryl group;

or a pharmaceutically acceptable salt thereof,

wherein the patient has previously been administered, during a first treatment period, a GnRH antagonist that is not a compound represented by formula (**I**).

77. A method of preserving or increasing hemoglobin in a human patient diagnosed as having uterine fibroids, the method comprising periodically administering to the patient, during a second treatment period, a therapeutically effective amount of a GnRH antagonist represented by formula (**I**)



(**I**)

wherein ring A is a thiophene ring;

each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$, NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

m is an integer from 0 to 3;

ring B is an aryl group or a monocyclic heteroaryl group;

each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen

atom to form an optionally substituted cyclic amino group;

n is an integer from 0 to 2;

U is a single bond;

X is a group represented by —S—L—Y, —O—L—Y, —CO—L—Y, or —SO_2—L—Y, wherein L is an optionally substituted lower alkylene group;

Y is a group represented by Z or —NW^7W^8, wherein W^7 and W^8 independently are a hydrogen atom, an optionally substituted lower alkyl group, or Z with the proviso that W^7 and W^8 are not simultaneously hydrogen atoms, or W^7 and W^8 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group; and

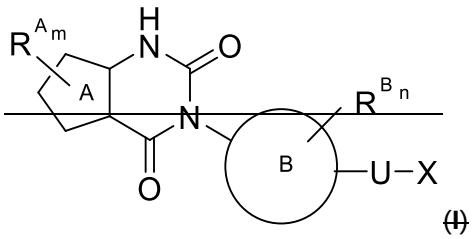
Z is an optionally fused and optionally substituted cycloalkyl group, an optionally fused and optionally substituted heterocycloalkyl group, an optionally fused and optionally substituted aryl group, or an optionally fused and optionally substituted heteroaryl group;

or a pharmaceutically acceptable salt thereof,

wherein the patient has previously been administered, during a first treatment period, a GnRH antagonist that is not a compound represented by formula (I).

78. The method of claim 72, wherein the estrogen-dependent disease is endometriosis.

79. A method of reducing the volume of one or more endometriosis nodes in a human patient diagnosed as having endometriosis, the method comprising periodically administering to the patient, during a second treatment period, a therapeutically effective amount of a GnRH antagonist represented by formula (I)



(I)

wherein ring A is a thiophene ring;

each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$, NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

m is an integer from 0 to 3;

ring B is an aryl group or a monocyclic heteroaryl group;

each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

n is an integer from 0 to 2;

U is a single bond;

X is a group represented by —S—L—Y, —O—L—Y, —CO—L—Y, or —SO_2—L—Y, wherein L is an optionally substituted lower alkylene group;

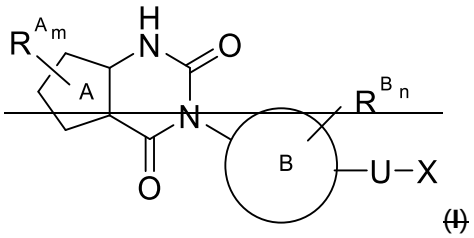
Y is a group represented by Z or —NW^7W^8, wherein W^7 and W^8 independently are a hydrogen atom, an optionally substituted lower alkyl group, or Z with the proviso that W^7 and W^8 are not simultaneously hydrogen atoms, or W^7 and W^8 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group; and

Z is an optionally fused and optionally substituted cycloalkyl group, an optionally fused and optionally substituted heterocycloalkyl group, an optionally fused and optionally substituted aryl group, or an optionally fused and optionally substituted heteroaryl group;

or a pharmaceutically acceptable salt thereof,

wherein the patient has previously been administered, during a first treatment period, a GnRH antagonist that is not a compound represented by formula (I).

80. A method of reducing pelvic pain in a human patient diagnosed as having endometriosis, the method comprising periodically administering to the patient, during a second treatment period, a therapeutically effective amount of a GnRH antagonist represented by formula (I)



(I)

wherein ring A is a thiophene ring;

each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$, NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

m is an integer from 0 to 3;

ring B is an aryl group or a monocyclic heteroaryl group;

each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

n is an integer from 0 to 2;

U is a single bond;

X is a group represented by —S—L—Y, —O—L—Y, —CO—L—Y, or —SO_2—L—Y, wherein L is an optionally substituted lower alkylene group;

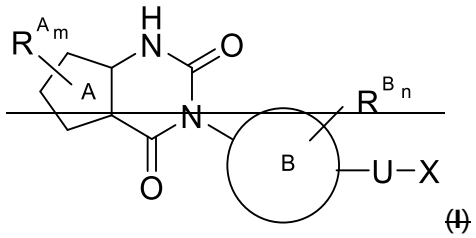
Y is a group represented by Z or —NW^7W^8, wherein W^7 and W^8 independently are a hydrogen atom, an optionally substituted lower alkyl group, or Z with the proviso that W^7 and W^8 are not simultaneously hydrogen atoms, or W^7 and W^8 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group; and

Z is an optionally fused and optionally substituted cycloalkyl group, an optionally fused and optionally substituted heterocycloalkyl group, an optionally fused and optionally substituted aryl group, or an optionally fused and optionally substituted heteroaryl group;

or a pharmaceutically acceptable salt thereof,

wherein the patient has previously been administered, during a first treatment period, a GnRH antagonist that is not a compound represented by formula (I).

81. A method of reducing dysmenorrhea in a human patient diagnosed as having endometriosis, the method comprising periodically administering to the patient, during a second treatment period, a therapeutically effective amount of a GnRH antagonist represented by formula (I)



(I)

wherein ring A is a thiophene ring;

each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$, NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

m is an integer from 0 to 3;

ring B is an aryl group or a monocyclic heteroaryl group;

each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

n is an integer from 0 to 2;

U is a single bond;

X is a group represented by —S—L—Y, —O—L—Y, —CO—L—Y, or —SO_2—L—Y, wherein L is an optionally substituted lower alkylene group;

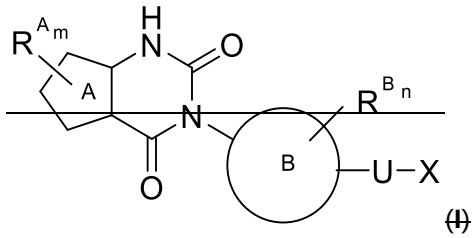
Y is a group represented by Z or —NW^7W^8, wherein W^7 and W^8 independently are a hydrogen atom, an optionally substituted lower alkyl group, or Z with the proviso that W^7 and W^8 are not simultaneously hydrogen atoms, or W^7 and W^8 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group; and

Z is an optionally fused and optionally substituted cycloalkyl group, an optionally fused and optionally substituted heterocycloalkyl group, an optionally fused and optionally substituted aryl group, or an optionally fused and optionally substituted heteroaryl group;

or a pharmaceutically acceptable salt thereof,

wherein the patient has previously been administered, during a first treatment period, a GnRH antagonist that is not a compound represented by formula (I).

82. A method of reducing dyspareunia in a human patient diagnosed as having endometriosis, the method comprising periodically administering to the patient, during a second treatment period, a therapeutically effective amount of a GnRH antagonist represented by formula (I)



(I)

wherein ring A is a thiophene ring;

each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$, NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

m is an integer from 0 to 3;

ring B is an aryl group or a monocyclic heteroaryl group;

each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

n is an integer from 0 to 2;

U is a single bond;

X is a group represented by —S—L—Y, —O—L—Y, —CO—L—Y, or —SO_2—L—Y, wherein L is an optionally substituted lower alkylene group;

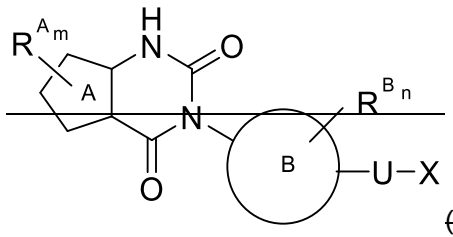
Y is a group represented by Z or —NW^7W^8, wherein W^7 and W^8 independently are a hydrogen atom, an optionally substituted lower alkyl group, or Z with the proviso that W^7 and W^8 are not simultaneously hydrogen atoms, or W^7 and W^8 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group; and

Z is an optionally fused and optionally substituted cycloalkyl group, an optionally fused and optionally substituted heterocycloalkyl group, an optionally fused and optionally substituted aryl group, or an optionally fused and optionally substituted heteroaryl group;

or a pharmaceutically acceptable salt thereof,

wherein the patient has previously been administered, during a first treatment period, a GnRH antagonist that is not a compound represented by formula (I).

83. A method of reducing dyschezia in a human patient diagnosed as having endometriosis, the method comprising periodically administering to the patient, during a second treatment period, a therapeutically effective amount of a GnRH antagonist represented by formula (I)



(I)

wherein ring A is a thiophene ring;

each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$, NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

m is an integer from 0 to 3;

ring B is an aryl group or a monocyclic heteroaryl group;

each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

n is an integer from 0 to 2;

U is a single bond;

X is a group represented by —S—L—Y, —O—L—Y, —CO—L—Y, or —SO_2—L—Y, wherein L is an optionally substituted lower alkylene group;

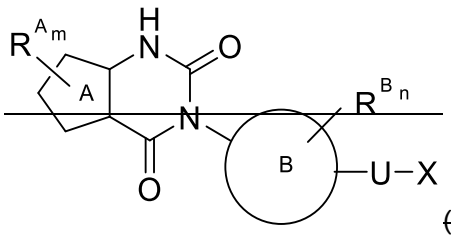
Y is a group represented by Z or —NW^7W^8, wherein W^7 and W^8 independently are a hydrogen atom, an optionally substituted lower alkyl group, or Z with the proviso that W^7 and W^8 are not simultaneously hydrogen atoms, or W^7 and W^8 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group; and

Z is an optionally fused and optionally substituted cycloalkyl group, an optionally fused and optionally substituted heterocycloalkyl group, an optionally fused and optionally substituted aryl group, or an optionally fused and optionally substituted heteroaryl group;

or a pharmaceutically acceptable salt thereof,

wherein the patient has previously been administered, during a first treatment period, a GnRH antagonist that is not a compound represented by formula (I).

84. A method of reducing uterine bleeding in a human patient diagnosed as having endometriosis, the method comprising periodically administering to the patient, during a second treatment period, a therapeutically effective amount of a GnRH antagonist represented by formula (I)



(I)

wherein ring A is a thiophene ring;

each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$, NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

m is an integer from 0 to 3;

ring B is an aryl group or a monocyclic heteroaryl group;

each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

n is an integer from 0 to 2;

U is a single bond;

X is a group represented by —S—L—Y, —O—L—Y, —CO—L—Y, or —SO_2—L—Y, wherein L is an optionally substituted lower alkylene group;

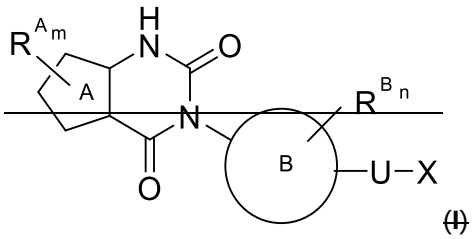
Y is a group represented by Z or —NW^7W^8, wherein W^7 and W^8 independently are a hydrogen atom, an optionally substituted lower alkyl group, or Z with the proviso that W^7 and W^8 are not simultaneously hydrogen atoms, or W^7 and W^8 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group; and

Z is an optionally fused and optionally substituted cycloalkyl group, an optionally fused and optionally substituted heterocycloalkyl group, an optionally fused and optionally substituted aryl group, or an optionally fused and optionally substituted heteroaryl group;

or a pharmaceutically acceptable salt thereof,

wherein the patient has previously been administered, during a first treatment period, a GnRH antagonist that is not a compound represented by formula (I).

85. A method of inducing amenorrhea in a human patient diagnosed as having endometriosis, the method comprising periodically administering to the patient, during a second treatment period, a therapeutically effective amount of a GnRH antagonist represented by formula (I)



(I)

wherein ring A is a thiophene ring;

each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$, NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

m is an integer from 0 to 3;

ring B is an aryl group or a monocyclic heteroaryl group;

each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

n is an integer from 0 to 2;

U is a single bond;

X is a group represented by —S—L—Y, —O—L—Y, —CO—L—Y, or —SO_2—L—Y, wherein L is an optionally substituted lower alkylene group;

Y is a group represented by Z or —NW^7W^8, wherein W^7 and W^8 independently are a hydrogen atom, an optionally substituted lower alkyl group, or Z with the proviso that W^7 and W^8 are not simultaneously hydrogen atoms, or W^7 and W^8 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group; and

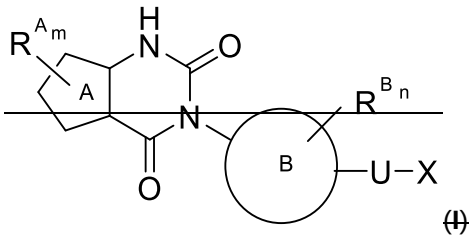
Z is an optionally fused and optionally substituted cycloalkyl group, an optionally fused and optionally substituted heterocycloalkyl group, an optionally fused and optionally substituted aryl group, or an optionally fused and optionally substituted heteroaryl group;

or a pharmaceutically acceptable salt thereof,

wherein the patient has previously been administered, during a first treatment period, a GnRH antagonist that is not a compound represented by formula (I).

86. The method of claim 72, wherein the estrogen-dependent disease is adenomyosis.

87. A method of reducing uterine volume in a human patient diagnosed as having adenomyosis, the method comprising periodically administering to the patient, during a second treatment period, a therapeutically effective amount of a GnRH antagonist represented by formula (I)



(I)

wherein ring A is a thiophene ring;

each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$, NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

m is an integer from 0 to 3;

ring B is an aryl group or a monocyclic heteroaryl group;

each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

n is an integer from 0 to 2;

U is a single bond;

X is a group represented by —S—L—Y, —O—L—Y, —CO—L—Y, or —SO_2—L—Y, wherein L is an optionally substituted lower alkylene group;

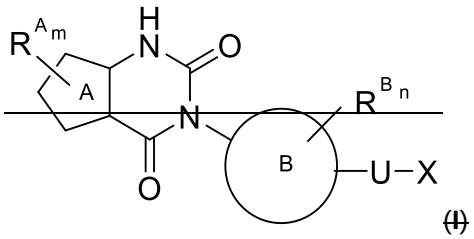
Y is a group represented by Z or —NW^7W^8, wherein W^7 and W^8 independently are a hydrogen atom, an optionally substituted lower alkyl group, or Z with the proviso that W^7 and W^8 are not simultaneously hydrogen atoms, or W^7 and W^8 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group; and

Z is an optionally fused and optionally substituted cycloalkyl group, an optionally fused and optionally substituted heterocycloalkyl group, an optionally fused and optionally substituted aryl group, or an optionally fused and optionally substituted heteroaryl group;

or a pharmaceutically acceptable salt thereof,

wherein the patient has previously been administered, during a first treatment period, a GnRH antagonist that is not a compound represented by formula (I).

88. A method of reducing the thickness of the anterior and/or posterior region of the uterine myometrium in a human patient diagnosed as having adenomyosis, the method comprising periodically administering to the patient, during a second treatment period, a therapeutically effective amount of a GnRH antagonist represented by formula (I)



(I)

wherein ring A is a thiophene ring;

each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$, NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

m is an integer from 0 to 3;

ring B is an aryl group or a monocyclic heteroaryl group;

each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

n is an integer from 0 to 2;

U is a single bond;

X is a group represented by —S—L—Y, —O—L—Y, —CO—L—Y, or —SO_2—L—Y, wherein L is an optionally substituted lower alkylene group;

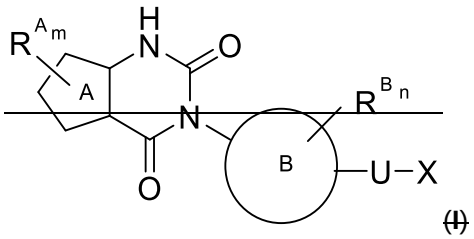
Y is a group represented by Z or —NW^7W^8, wherein W^7 and W^8 independently are a hydrogen atom, an optionally substituted lower alkyl group, or Z with the proviso that W^7 and W^8 are not simultaneously hydrogen atoms, or W^7 and W^8 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group; and

Z is an optionally fused and optionally substituted cycloalkyl group, an optionally fused and optionally substituted heterocycloalkyl group, an optionally fused and optionally substituted aryl group, or an optionally fused and optionally substituted heteroaryl group;

or a pharmaceutically acceptable salt thereof,

wherein the patient has previously been administered, during a first treatment period, a GnRH antagonist that is not a compound represented by formula (I).

89. A method of reducing pelvic pain in a human patient diagnosed as having adenomyosis, the method comprising periodically administering to the patient, during a second treatment period, a therapeutically effective amount of a GnRH antagonist represented by formula (I)



(I)

wherein ring A is a thiophene ring;

each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$, NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

m is an integer from 0 to 3;

ring B is an aryl group or a monocyclic heteroaryl group;

each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

n is an integer from 0 to 2;

U is a single bond;

X is a group represented by —S—L—Y, —O—L—Y, —CO—L—Y, or —SO_2—L—Y, wherein L is an optionally substituted lower alkylene group;

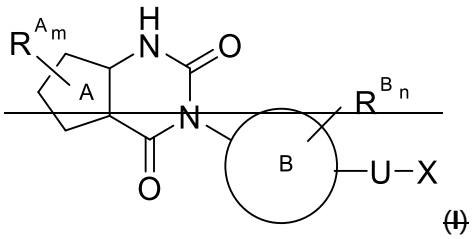
Y is a group represented by Z or —NW^7W^8, wherein W^7 and W^8 independently are a hydrogen atom, an optionally substituted lower alkyl group, or Z with the proviso that W^7 and W^8 are not simultaneously hydrogen atoms, or W^7 and W^8 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group; and

Z is an optionally fused and optionally substituted cycloalkyl group, an optionally fused and optionally substituted heterocycloalkyl group, an optionally fused and optionally substituted aryl group, or an optionally fused and optionally substituted heteroaryl group;

or a pharmaceutically acceptable salt thereof,

wherein the patient has previously been administered, during a first treatment period, a GnRH antagonist that is not a compound represented by formula (I).

90. A method of reducing dysmenorrhea in a human patient diagnosed as having adenomyosis, the method comprising periodically administering to the patient, during a second treatment period, a therapeutically effective amount of a GnRH antagonist represented by formula (I)



(I)

wherein ring A is a thiophene ring;

each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$, NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

m is an integer from 0 to 3;

ring B is an aryl group or a monocyclic heteroaryl group;

each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

n is an integer from 0 to 2;

U is a single bond;

X is a group represented by —S—L—Y, —O—L—Y, —CO—L—Y, or —SO_2—L—Y, wherein L is an optionally substituted lower alkylene group;

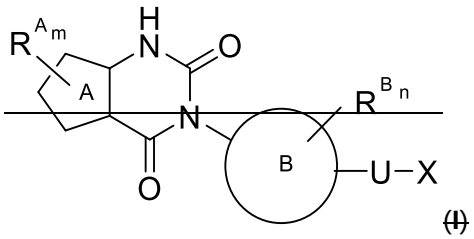
Y is a group represented by Z or —NW^7W^8, wherein W^7 and W^8 independently are a hydrogen atom, an optionally substituted lower alkyl group, or Z with the proviso that W^7 and W^8 are not simultaneously hydrogen atoms, or W^7 and W^8 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group; and

Z is an optionally fused and optionally substituted cycloalkyl group, an optionally fused and optionally substituted heterocycloalkyl group, an optionally fused and optionally substituted aryl group, or an optionally fused and optionally substituted heteroaryl group;

or a pharmaceutically acceptable salt thereof,

wherein the patient has previously been administered, during a first treatment period, a GnRH antagonist that is not a compound represented by formula (I).

91. A method of reducing dyspareunia in a human patient diagnosed as having adenomyosis, the method comprising periodically administering to the patient, during a second treatment period, a therapeutically effective amount of a GnRH antagonist represented by formula (I)



(I)

wherein ring A is a thiophene ring;

each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$, NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

m is an integer from 0 to 3;

ring B is an aryl group or a monocyclic heteroaryl group;

each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

n is an integer from 0 to 2;

U is a single bond;

X is a group represented by —S—L—Y, —O—L—Y, —CO—L—Y, or —SO_2—L—Y, wherein L is an optionally substituted lower alkylene group;

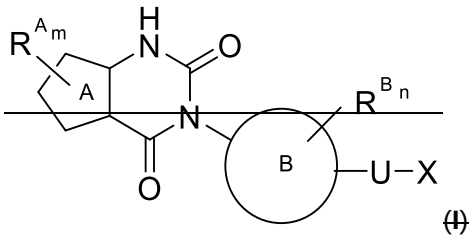
Y is a group represented by Z or —NW^7W^8, wherein W^7 and W^8 independently are a hydrogen atom, an optionally substituted lower alkyl group, or Z with the proviso that W^7 and W^8 are not simultaneously hydrogen atoms, or W^7 and W^8 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group; and

Z is an optionally fused and optionally substituted cycloalkyl group, an optionally fused and optionally substituted heterocycloalkyl group, an optionally fused and optionally substituted aryl group, or an optionally fused and optionally substituted heteroaryl group;

or a pharmaceutically acceptable salt thereof,

wherein the patient has previously been administered, during a first treatment period, a GnRH antagonist that is not a compound represented by formula (I).

92. A method of reducing dyschezia in a human patient diagnosed as having adenomyosis, the method comprising periodically administering to the patient, during a second treatment period, a therapeutically effective amount of a GnRH antagonist represented by formula (I)



(I)

wherein ring A is a thiophene ring;

each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$, NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

m is an integer from 0 to 3;

ring B is an aryl group or a monocyclic heteroaryl group;

each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

n is an integer from 0 to 2;

U is a single bond;

X is a group represented by —S—L—Y, —O—L—Y, —CO—L—Y, or —SO_2—L—Y, wherein L is an optionally substituted lower alkylene group;

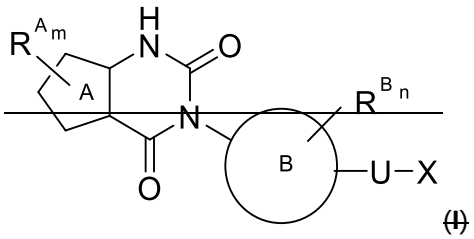
Y is a group represented by Z or —NW^7W^8, wherein W^7 and W^8 independently are a hydrogen atom, an optionally substituted lower alkyl group, or Z with the proviso that W^7 and W^8 are not simultaneously hydrogen atoms, or W^7 and W^8 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group; and

Z is an optionally fused and optionally substituted cycloalkyl group, an optionally fused and optionally substituted heterocycloalkyl group, an optionally fused and optionally substituted aryl group, or an optionally fused and optionally substituted heteroaryl group;

or a pharmaceutically acceptable salt thereof,

wherein the patient has previously been administered, during a first treatment period, a GnRH antagonist that is not a compound represented by formula (I).

93. A method of reducing uterine tenderness in a human patient diagnosed as having adenomyosis, the method comprising periodically administering to the patient, during a second treatment period, a therapeutically effective amount of a GnRH antagonist represented by formula (I)



(I)

wherein ring A is a thiophene ring;

each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$, NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

m is an integer from 0 to 3;

ring B is an aryl group or a monocyclic heteroaryl group;

each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

n is an integer from 0 to 2;

U is a single bond;

X is a group represented by —S—L—Y, —O—L—Y, —CO—L—Y, or —SO_2—L—Y, wherein L is an optionally substituted lower alkylene group;

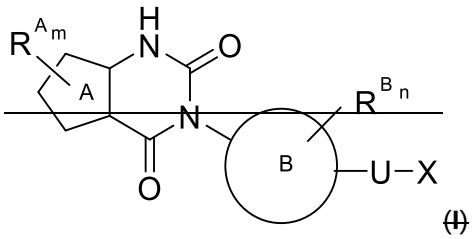
Y is a group represented by Z or —NW^7W^8, wherein W^7 and W^8 independently are a hydrogen atom, an optionally substituted lower alkyl group, or Z with the proviso that W^7 and W^8 are not simultaneously hydrogen atoms, or W^7 and W^8 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group; and

Z is an optionally fused and optionally substituted cycloalkyl group, an optionally fused and optionally substituted heterocycloalkyl group, an optionally fused and optionally substituted aryl group, or an optionally fused and optionally substituted heteroaryl group;

or a pharmaceutically acceptable salt thereof,

wherein the patient has previously been administered, during a first treatment period, a GnRH antagonist that is not a compound represented by formula (I).

94. A method of reducing uterine bleeding in a human patient diagnosed as having adenomyosis, the method comprising periodically administering to the patient, during a second treatment period, a therapeutically effective amount of a GnRH antagonist represented by formula (I)



(I)

wherein ring A is a thiophene ring;

each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$, NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

m is an integer from 0 to 3;

ring B is an aryl group or a monocyclic heteroaryl group;

each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

n is an integer from 0 to 2;

U is a single bond;

X is a group represented by —S—L—Y, —O—L—Y, —CO—L—Y, or —SO_2—L—Y, wherein L is an optionally substituted lower alkylene group;

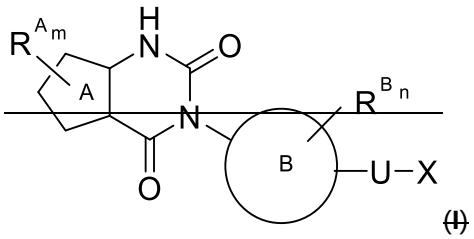
Y is a group represented by Z or —NW^7W^8, wherein W^7 and W^8 independently are a hydrogen atom, an optionally substituted lower alkyl group, or Z with the proviso that W^7 and W^8 are not simultaneously hydrogen atoms, or W^7 and W^8 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group; and

Z is an optionally fused and optionally substituted cycloalkyl group, an optionally fused and optionally substituted heterocycloalkyl group, an optionally fused and optionally substituted aryl group, or an optionally fused and optionally substituted heteroaryl group;

or a pharmaceutically acceptable salt thereof,

wherein the patient has previously been administered, during a first treatment period, a GnRH antagonist that is not a compound represented by formula (I).

95. A method of inducing amenorrhea in a human patient diagnosed as having adenomyosis, the method comprising periodically administering to the patient, during a second treatment period, a therapeutically effective amount of a GnRH antagonist represented by formula (I)



(I)

wherein ring A is a thiophene ring;

each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$, NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

m is an integer from 0 to 3;

ring B is an aryl group or a monocyclic heteroaryl group;

each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

n is an integer from 0 to 2;

U is a single bond;

X is a group represented by —S—L—Y, —O—L—Y, —CO—L—Y, or —SO_2—L—Y, wherein L is an optionally substituted lower alkylene group;

Y is a group represented by Z or —NW^7W^8, wherein W^7 and W^8 independently are a hydrogen atom, an optionally substituted lower alkyl group, or Z with the proviso that W^7 and W^8 are not simultaneously hydrogen atoms, or W^7 and W^8 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group; and

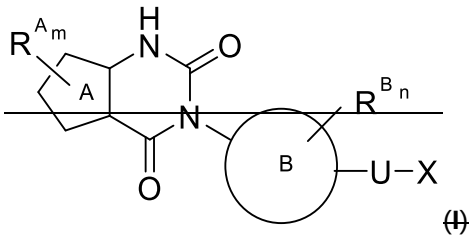
Z is an optionally fused and optionally substituted cycloalkyl group, an optionally fused and optionally substituted heterocycloalkyl group, an optionally fused and optionally substituted aryl group, or an optionally fused and optionally substituted heteroaryl group;

or a pharmaceutically acceptable salt thereof,

wherein the patient has previously been administered, during a first treatment period, a GnRH antagonist that is not a compound represented by formula (I).

96. The method of claim 72, wherein the estrogen-dependent disease is rectovaginal endometriosis.

97. A method of reducing the volume of one or more rectovaginal endometriosis nodes in a human patient diagnosed as having rectovaginal endometriosis, the method comprising periodically administering to the patient, during a second treatment period, a therapeutically effective amount of a GnRH antagonist represented by formula (I)



(I)

wherein ring A is a thiophene ring;

each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$, NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

m is an integer from 0 to 3;

ring B is an aryl group or a monocyclic heteroaryl group;

each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

n is an integer from 0 to 2;

U is a single bond;

X is a group represented by —S—L—Y, —O—L—Y, —CO—L—Y, or —SO_2—L—Y, wherein L is an optionally substituted lower alkylene group;

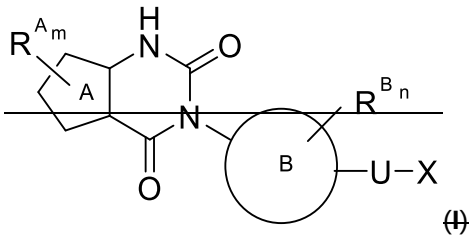
Y is a group represented by Z or —NW^7W^8, wherein W^7 and W^8 independently are a hydrogen atom, an optionally substituted lower alkyl group, or Z with the proviso that W^7 and W^8 are not simultaneously hydrogen atoms, or W^7 and W^8 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group; and

Z is an optionally fused and optionally substituted cycloalkyl group, an optionally fused and optionally substituted heterocycloalkyl group, an optionally fused and optionally substituted aryl group, or an optionally fused and optionally substituted heteroaryl group;

or a pharmaceutically acceptable salt thereof,

wherein the patient has previously been administered, during a first treatment period, a GnRH antagonist that is not a compound represented by formula (I).

98. A method of reducing the volume of one or more type III rectovaginal endometriosis nodes in a human patient diagnosed as having rectovaginal endometriosis, the method comprising periodically administering to the patient, during a second treatment period, a therapeutically effective amount of a GnRH antagonist represented by formula (I)



(I)

wherein ring A is a thiophene ring;

each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$, NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

m is an integer from 0 to 3;

ring B is an aryl group or a monocyclic heteroaryl group;

each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

n is an integer from 0 to 2;

U is a single bond;

X is a group represented by —S—L—Y, —O—L—Y, —CO—L—Y, or —SO_2—L—Y, wherein L is an optionally substituted lower alkylene group;

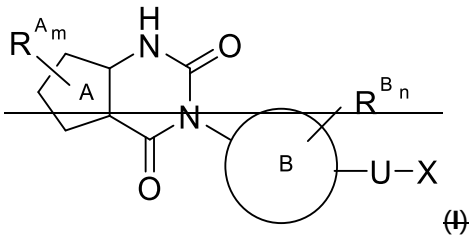
Y is a group represented by Z or —NW^7W^8, wherein W^7 and W^8 independently are a hydrogen atom, an optionally substituted lower alkyl group, or Z with the proviso that W^7 and W^8 are not simultaneously hydrogen atoms, or W^7 and W^8 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group; and

Z is an optionally fused and optionally substituted cycloalkyl group, an optionally fused and optionally substituted heterocycloalkyl group, an optionally fused and optionally substituted aryl group, or an optionally fused and optionally substituted heteroaryl group;

or a pharmaceutically acceptable salt thereof,

wherein the patient has previously been administered, during a first treatment period, a GnRH antagonist that is not a compound represented by formula (I).

99. A method of reducing pelvic pain in a human patient diagnosed as having rectovaginal endometriosis, the method comprising periodically administering to the patient, during a second treatment period, a therapeutically effective amount of a GnRH antagonist represented by formula (I)



(I)

wherein ring A is a thiophene ring;

each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$, NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

m is an integer from 0 to 3;

ring B is an aryl group or a monocyclic heteroaryl group;

each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

n is an integer from 0 to 2;

U is a single bond;

X is a group represented by —S—L—Y, —O—L—Y, —CO—L—Y, or —SO_2—L—Y, wherein L is an optionally substituted lower alkylene group;

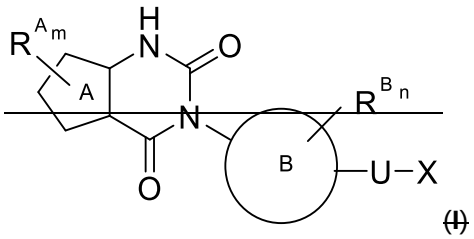
Y is a group represented by Z or —NW^7W^8, wherein W^7 and W^8 independently are a hydrogen atom, an optionally substituted lower alkyl group, or Z with the proviso that W^7 and W^8 are not simultaneously hydrogen atoms, or W^7 and W^8 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group; and

Z is an optionally fused and optionally substituted cycloalkyl group, an optionally fused and optionally substituted heterocycloalkyl group, an optionally fused and optionally substituted aryl group, or an optionally fused and optionally substituted heteroaryl group;

or a pharmaceutically acceptable salt thereof,

wherein the patient has previously been administered, during a first treatment period, a GnRH antagonist that is not a compound represented by formula (I).

100. A method of reducing dysmenorrhea in a human patient diagnosed as having rectovaginal endometriosis, the method comprising periodically administering to the patient, during a second treatment period, a therapeutically effective amount of a GnRH antagonist represented by formula (I)



(I)

wherein ring A is a thiophene ring;

each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$, NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

m is an integer from 0 to 3;

ring B is an aryl group or a monocyclic heteroaryl group;

each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

n is an integer from 0 to 2;

U is a single bond;

X is a group represented by —S—L—Y, —O—L—Y, —CO—L—Y, or —SO_2—L—Y, wherein L is an optionally substituted lower alkylene group;

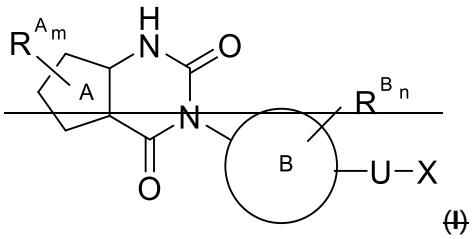
Y is a group represented by Z or —NW^7W^8, wherein W^7 and W^8 independently are a hydrogen atom, an optionally substituted lower alkyl group, or Z with the proviso that W^7 and W^8 are not simultaneously hydrogen atoms, or W^7 and W^8 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group; and

Z is an optionally fused and optionally substituted cycloalkyl group, an optionally fused and optionally substituted heterocycloalkyl group, an optionally fused and optionally substituted aryl group, or an optionally fused and optionally substituted heteroaryl group;

or a pharmaceutically acceptable salt thereof,

wherein the patient has previously been administered, during a first treatment period, a GnRH antagonist that is not a compound represented by formula (I).

101. A method of reducing dyspareunia in a human patient diagnosed as having rectovaginal endometriosis, the method comprising periodically administering to the patient, during a second treatment period, a therapeutically effective amount of a GnRH antagonist represented by formula (I)



(I)

wherein ring A is a thiophene ring;

each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$, NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

m is an integer from 0 to 3;

ring B is an aryl group or a monocyclic heteroaryl group;

each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

n is an integer from 0 to 2;

U is a single bond;

X is a group represented by —S—L—Y, —O—L—Y, —CO—L—Y, or —SO_2—L—Y, wherein L is an optionally substituted lower alkylene group;

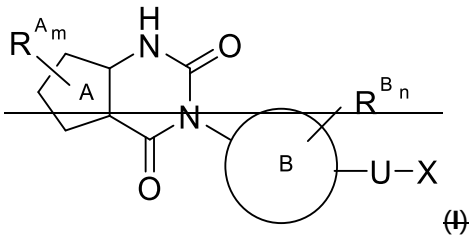
Y is a group represented by Z or —NW^7W^8, wherein W^7 and W^8 independently are a hydrogen atom, an optionally substituted lower alkyl group, or Z with the proviso that W^7 and W^8 are not simultaneously hydrogen atoms, or W^7 and W^8 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group; and

Z is an optionally fused and optionally substituted cycloalkyl group, an optionally fused and optionally substituted heterocycloalkyl group, an optionally fused and optionally substituted aryl group, or an optionally fused and optionally substituted heteroaryl group;

or a pharmaceutically acceptable salt thereof,

wherein the patient has previously been administered, during a first treatment period, a GnRH antagonist that is not a compound represented by formula (I).

102. A method of reducing dyschezia in a human patient diagnosed as having rectovaginal endometriosis, the method comprising periodically administering to the patient, during a second treatment period, a therapeutically effective amount of a GnRH antagonist represented by formula (I)



(I)

wherein ring A is a thiophene ring;

each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$, NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

m is an integer from 0 to 3;

ring B is an aryl group or a monocyclic heteroaryl group;

each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

n is an integer from 0 to 2;

U is a single bond;

X is a group represented by —S—L—Y, —O—L—Y, —CO—L—Y, or —SO_2—L—Y, wherein L is an optionally substituted lower alkylene group;

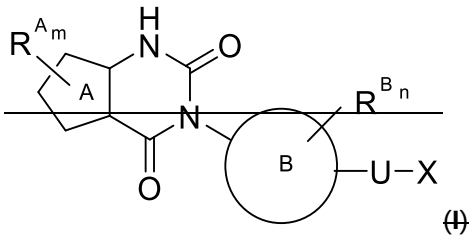
Y is a group represented by Z or —NW^7W^8, wherein W^7 and W^8 independently are a hydrogen atom, an optionally substituted lower alkyl group, or Z with the proviso that W^7 and W^8 are not simultaneously hydrogen atoms, or W^7 and W^8 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group; and

Z is an optionally fused and optionally substituted cycloalkyl group, an optionally fused and optionally substituted heterocycloalkyl group, an optionally fused and optionally substituted aryl group, or an optionally fused and optionally substituted heteroaryl group;

or a pharmaceutically acceptable salt thereof,

wherein the patient has previously been administered, during a first treatment period, a GnRH antagonist that is not a compound represented by formula (I).

103. A method of reducing uterine bleeding in a human patient diagnosed as having rectovaginal endometriosis, the method comprising periodically administering to the patient, during a second treatment period, a therapeutically effective amount of a GnRH antagonist represented by formula (I)



(I)

wherein ring A is a thiophene ring;

each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$, NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

m is an integer from 0 to 3;

ring B is an aryl group or a monocyclic heteroaryl group;

each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

n is an integer from 0 to 2;

U is a single bond;

X is a group represented by —S—L—Y, —O—L—Y, —CO—L—Y, or —SO_2—L—Y, wherein L is an optionally substituted lower alkylene group;

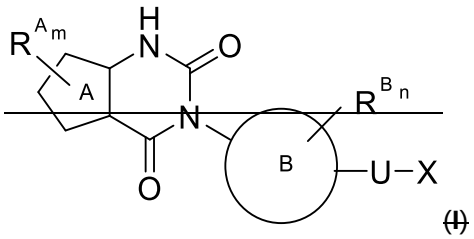
Y is a group represented by Z or —NW^7W^8, wherein W^7 and W^8 independently are a hydrogen atom, an optionally substituted lower alkyl group, or Z with the proviso that W^7 and W^8 are not simultaneously hydrogen atoms, or W^7 and W^8 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group; and

Z is an optionally fused and optionally substituted cycloalkyl group, an optionally fused and optionally substituted heterocycloalkyl group, an optionally fused and optionally substituted aryl group, or an optionally fused and optionally substituted heteroaryl group;

or a pharmaceutically acceptable salt thereof,

wherein the patient has previously been administered, during a first treatment period, a GnRH antagonist that is not a compound represented by formula (I).

104. A method of inducing amenorrhea in a human patient diagnosed as having rectovaginal endometriosis, the method comprising periodically administering to the patient, during a second treatment period, a therapeutically effective amount of a GnRH antagonist represented by formula (I)



(I)

wherein ring A is a thiophene ring;

each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$, NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

m is an integer from 0 to 3;

ring B is an aryl group or a monocyclic heteroaryl group;

each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

n is an integer from 0 to 2;

U is a single bond;

X is a group represented by —S—L—Y, —O—L—Y, —CO—L—Y, or —SO_2—L—Y, wherein L is an optionally substituted lower alkylene group;

Y is a group represented by Z or —NW^7W^8, wherein W^7 and W^8 independently are a hydrogen atom, an optionally substituted lower alkyl group, or Z with the proviso that W^7 and W^8 are not simultaneously hydrogen atoms, or W^7 and W^8 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group; and

Z is an optionally fused and optionally substituted cycloalkyl group, an optionally fused and optionally substituted heterocycloalkyl group, an optionally fused and optionally substituted aryl group, or an optionally fused and optionally substituted heteroaryl group;

or a pharmaceutically acceptable salt thereof,

wherein the patient has previously been administered, during a first treatment period, a GnRH antagonist that is not a compound represented by formula (I).

105. The method of any one of claims 72-104, wherein the GnRH antagonist that is not a compound represented by formula (I) has been periodically administered to the patient during the first treatment period.

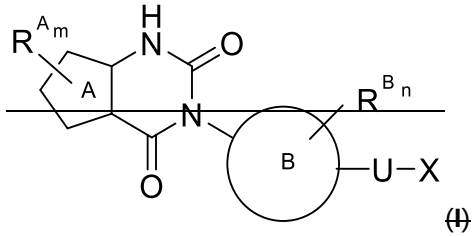
106. The method of any one of claims 72-105, wherein the patient has been determined to exhibit a reduced bone mineral density at the end of the first treatment period relative to a measurement of the patient's bone mineral density obtained during, or prior to commencement of, the first treatment period.

107. The method of any one of claims 72-106, wherein the second treatment period commences at least one week after the end of the first treatment period.

108. The method of claim 107, wherein the patient is not administered a GnRH antagonist during the time elapsed between the end of the first treatment period and commencement of the second treatment period.

109. The method of any one of claims 72-108, wherein the amount of the GnRH antagonist that is periodically administered to the patient during the second treatment period is less than the amount of the GnRH antagonist that is periodically administered to the patient during the first treatment period.

110. The method of any one of claims 1-34 and 36-70, wherein the GnRH antagonist administered during the first treatment period is a compound represented by formula (I)



(I)

wherein ring A is a thiophene ring;

each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$, NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

m is an integer from 0 to 3;

ring B is an aryl group or a monocyclic heteroaryl group;

each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

n is an integer from 0 to 2;

U is a single bond;

X is a group represented by —S—L—Y, —O—L—Y, —CO—L—Y, or —SO_2—L—Y, wherein L is an optionally substituted lower alkylene group;

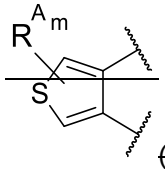
Y is a group represented by Z or —NW^7W^8, wherein W^7 and W^8 independently are a hydrogen atom, an optionally substituted lower alkyl group, or Z with the proviso that W^7 and W^8 are not simultaneously hydrogen atoms, or W^7 and W^8 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group; and

Z is an optionally fused and optionally substituted cycloalkyl group, an optionally fused and optionally substituted heterocycloalkyl group, an optionally fused and optionally substituted aryl group, or

an optionally fused and optionally substituted heteroaryl group;

or a pharmaceutically acceptable salt thereof.

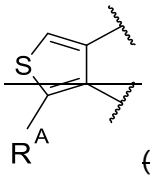
111. The method of claim 110, wherein the ring A is a thiophene ring represented by formula (**IIa**)



(**IIa**).

112. The method of claim 110 or 111, wherein m is 1.

113. The method of claim 112, wherein the ring A is an optionally substituted thiophene ring represented by formula (**IIb**)



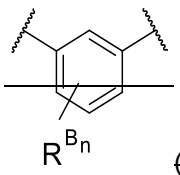
(**IIb**).

114. The method of any one of claims 110-113, wherein each R^A is independently a halogen atom, an optionally substituted lower alkyl group, $COOW^1$, or $CONW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group.

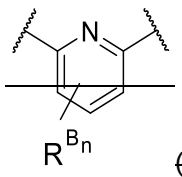
115. The method of claim 114, wherein each R^A is COOH or pharmaceutically acceptable salt thereof.

116. The method of any one of claims 110-115, wherein the ring B is an optionally substituted benzene ring, pyridine ring, or thiophene ring.

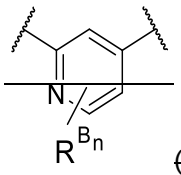
117. The method of claim 116, wherein the ring B is represented by a formula selected from the group consisting of:



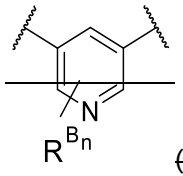
(**IIIa**);



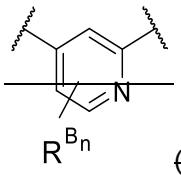
(**IIIb**);



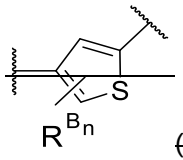
~~(IIIc);~~



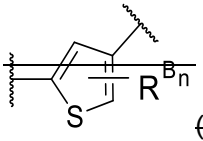
~~(IIId);~~



~~(IIIe);~~



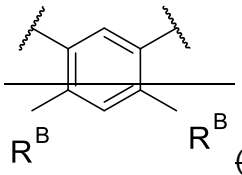
~~(IIIf); and~~



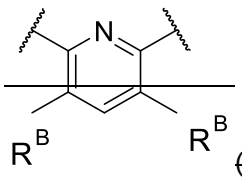
~~(IIIg).~~

~~118. The method of any one of claims 110-117, wherein n is 2.~~

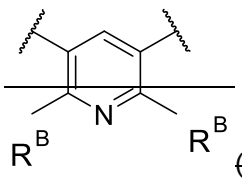
~~119. The method of claim 118, wherein the ring B is represented by a formula selected from the group consisting of:~~



~~(IVa);~~



~~(IVb); and~~



~~(IVc).~~

~~120. The method of any one of claims 110-119, wherein each R^B is independently a halogen atom, an optionally substituted lower alkyl group, or OW^4, wherein each W^4 is independently a hydrogen atom or an optionally substituted lower alkyl group.~~

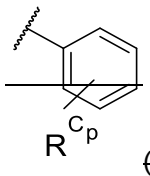
~~121. The method of claim 120, wherein each R^B is independently a fluorine atom, chlorine atom, bromine atom, methyl group, or methoxy group.~~

~~122. The method of any one of claims 110-121, wherein U is a single bond.~~

~~123. The method of any one of claims 110-122, wherein X is a group represented by —O—L—Y.~~

~~124. The method of any one of claims 110-123, wherein L is a methylene group.~~

~~125. The method of any one of claims 110-124, wherein Y is an optionally substituted benzene ring represented by formula (**V**)~~

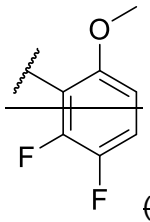


~~(**V**)~~

~~wherein each R^C is independently a halogen atom, an optionally substituted lower alkyl group, or OW^9, wherein each W^9 is independently a hydrogen atom or an optionally substituted lower alkyl group; and~~

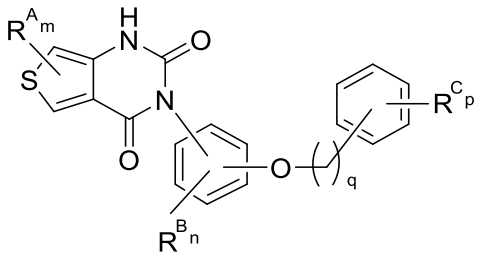
~~p is an integer from 0 to 3.~~

~~126. The method of claim 125, wherein Y is a substituted benzene ring represented by formula (**Va**)~~



~~(**Va**).~~

~~127.~~7. The ~~method~~ use of claim ~~110~~3 or 4, wherein the compound is represented by formula (**Ia**)



(**Ia**)

wherein each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally

substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$, NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

m is an integer from 0 to 3;

each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

n is an integer from 0 to 2;

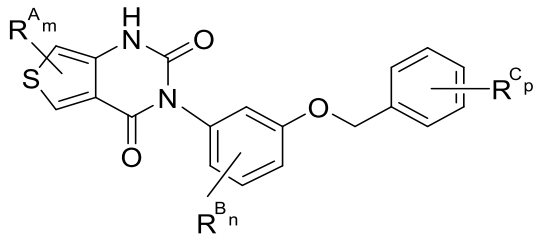
q is an integer from 0 to 3;

each R^C is independently a halogen atom, an optionally substituted lower alkyl group, or OW^9, wherein each W^9 is independently a hydrogen atom or an optionally substituted lower alkyl group; and

p is an integer from 0 to 3;

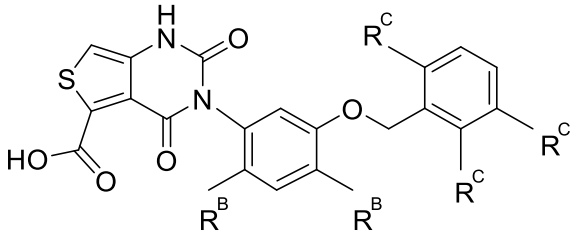
or a pharmaceutically acceptable salt thereof.

~~128.~~8. The ~~method~~ use of claim ~~12~~7, wherein the compound is represented by formula (**Ib**)



(**Ib**).

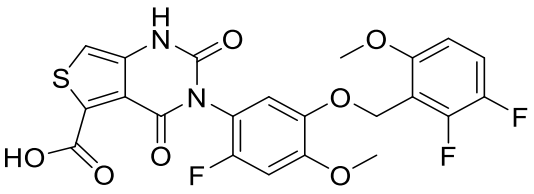
~~129.~~9. The ~~method~~ use of claim ~~12~~8, wherein the compound is represented by formula (**Ic**)



(**Ic**)

or a pharmaceutically acceptable salt thereof.

~~130.~~10. The ~~method~~ use of claim ~~any one of claims 110-12~~9, wherein the compound is represented by formula (**VI**)



(**VI**)

or a pharmaceutically acceptable salt thereof.

~~131.~~11. The ~~method~~ use of claim 1~~3~~0, wherein the compound is the choline salt of the compound represented by formula (**VI**).

~~132. The method of claim 131, wherein the compound is in a crystalline state.~~

~~133. The method of claim 132, wherein the compound exhibits characteristic X-ray powder diffraction (XRPD) peaks at about 7.1° 2θ, about 11.5° 2θ, about 19.4° 2θ, about 21.5° 2θ, about 22.0° 2θ, about 22.6° 2θ, about 23.5° 2θ, and about 26.2° 2θ.~~

~~134. The method of claim 132 or 133, wherein the compound exhibits ^{13}C solid-state nuclear magnetic resonance (NMR) peaks centered at about 55.5 ppm, about 57.1 ppm, about 58.7 ppm, about 69.8 ppm, about 98.1 ppm, about 110.3 ppm, about 111.6 ppm, about 113.7 ppm, about 118.0 ppm, about 145.3 ppm, about 149.8 ppm, and about 155.8 ppm.~~

~~135. The method of any one of claims 132-134, wherein the compound exhibits ^{19}F solid-state NMR peaks centered at about -151.8 ppm, -145.2 ppm, and -131.6 ppm.~~

~~136. The method of any one of claims 110-135, wherein the compound is orally administered to the patient during the first treatment period.~~

~~137. The method of any one of claims 110-136, wherein the compound is administered to the patient one or more times per day, week, or month during the first treatment period.~~

~~138. The method of claim 137, wherein the compound is administered to the patient one or more times daily during the first treatment period.~~

~~139.~~12. The ~~method~~ use of any one of claims 1 to 11~~38~~, wherein the compound is administered to the patient once daily during the first treatment period.

~~140. The method of any one of claims 137-139, wherein the compound is administered to the patient in an amount of from about 25 mg per day to about 400 mg per day during the first treatment period.~~

~~141. The method of claim 140, wherein the compound is administered to the patient in an amount of from about 35 mg to about 65 mg per day during the first treatment period.~~

~~142. The method of claim 141, wherein the compound is administered to the patient in an amount of about 50 mg per day during the first treatment period.~~

~~143. The method of claim 140, wherein the compound is administered to the patient in an amount of from about 60 mg per day to about 90 mg per day during the first treatment period.~~

~~144. The method of claim 143, wherein the compound is administered to the patient in an amount of about 75 mg per day during the first treatment period.~~

~~145. The method of claim 140, wherein the compound is administered to the patient in an amount of from about 85 mg to about 115 mg per day during the first treatment period.~~

~~146. The method of claim 145, wherein the compound is administered to the patient in an amount of about 100 mg per day during the first treatment period.~~

~~147.~~13. The ~~method~~ use of any one of claims 1 to 12~~40~~, wherein the compound is administered to the patient in an amount of from about 185 mg to about 215 mg per day during the first treatment period.

~~148. The method of claim 147, wherein the compound is administered to the patient in an amount of about 200 mg per day during the first treatment period.~~

~~149. The method of any one of claims 1-109, wherein the GnRH antagonist administered during the first treatment period is elagolix, relugolix, opigolix (ASP1707), BAY-784, or SK-2706.~~

~~150. The method of claim 149, wherein the GnRH antagonist administered during the first treatment period is elagolix.~~

~~151. The method of claim 150, wherein the GnRH antagonist is orally administered to the patient during the first treatment period.~~

~~152. The method of claim 150 or 151, wherein the GnRH antagonist is administered to the patient one or more times per day, week, or month during the first treatment period.~~

~~153. The method of claim 152, wherein the GnRH antagonist is administered to the patient one or more times daily during the first treatment period.~~

~~154. The method of claim 153, wherein the GnRH antagonist is administered to the patient once daily during the first treatment period.~~

~~155. The method of any one of claims 150-154, wherein the GnRH antagonist is administered to the patient in an amount of from about 100 mg to about 600 mg per day during the first treatment period.~~

~~156. The method of claim 155, wherein the GnRH antagonist is administered to the patient in an amount of about 150 mg per day during the first treatment period.~~

~~157. The method of claim 155, wherein the GnRH antagonist is administered to the patient in an amount of about 300 mg per day during the first treatment period.~~

~~158. The method of claim 155, wherein the GnRH antagonist is administered to the patient in an amount of about 400 mg per day during the first treatment period, optionally wherein the GnRH antagonist is administered to the patient in two daily doses of 200 mg per dose during the first treatment period.~~

~~159. The method of claim 155, wherein the GnRH antagonist is administered to the patient in an amount of about 600 mg per day during the first treatment period, optionally wherein the GnRH antagonist is administered to the patient in two daily doses of 300 mg per dose during the first treatment period.~~

~~160. The method of claim 149, wherein the GnRH antagonist administered during the first treatment period is relugolix.~~

161. The method of claim 160, wherein the GnRH antagonist is orally administered to the patient during the first treatment period.

162. The method of claim 160 or 161, wherein the GnRH antagonist is administered to the patient one or more times per day, week, or month during the first treatment period.

163. The method of claim 162, wherein the GnRH antagonist is administered to the patient one or more times daily during the first treatment period.

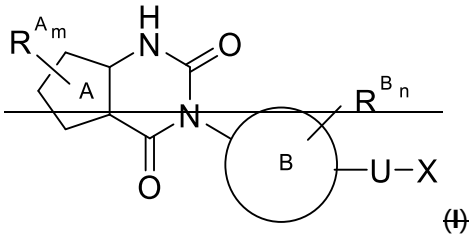
164. The method of claim 163, wherein the GnRH antagonist is administered to the patient once daily during the first treatment period.

165. The method of any one of claims 160-164, wherein the GnRH antagonist is administered to the patient in an amount of from about 10 mg to about 60 mg per day during the first treatment period.

166. The method of claim 165, wherein the GnRH antagonist is administered to the patient in an amount of from about 20 mg to about 50 mg per day during the first treatment period.

167. The method of claim 166, wherein the GnRH antagonist is administered to the patient in an amount of about 40 mg per day during the first treatment period.

168. The method of any one of claims 1-34, 36-70, and 110-167, wherein the GnRH antagonist administered during the second treatment period is a compound represented by formula (I)



(I)

wherein ring A is a thiophene ring;

each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$, NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

m is an integer from 0 to 3;

ring B is an aryl group or a monocyclic heteroaryl group;

each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

n is an integer from 0 to 2;

U is a single bond;

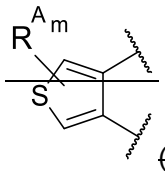
X is a group represented by —S—L—Y, —O—L—Y, —CO—L—Y, or —SO_2—L—Y, wherein L is an optionally substituted lower alkylene group;

Y is a group represented by Z or —NW^7W^8, wherein W^7 and W^8 independently are a hydrogen atom, an optionally substituted lower alkyl group, or Z with the proviso that W^7 and W^8 are not simultaneously hydrogen atoms, or W^7 and W^8 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group; and

Z is an optionally fused and optionally substituted cycloalkyl group, an optionally fused and optionally substituted heterocycloalkyl group, an optionally fused and optionally substituted aryl group, or an optionally fused and optionally substituted heteroaryl group;

or a pharmaceutically acceptable salt thereof.

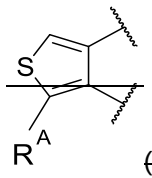
169. The method of claim 168, wherein the ring A is a thiophene ring represented by formula (**IIa**)



(**IIa**).

170. The method of claim 168 or 169, wherein m is 1.

171. The method of claim 170, wherein the ring A is an optionally substituted thiophene ring represented by formula (**IIb**)



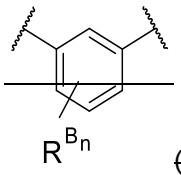
(**IIb**).

172. The method of any one of claims 168-171, wherein each R^A is independently a halogen atom, an optionally substituted lower alkyl group, COOW^1, or CONW^2W^3, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group.

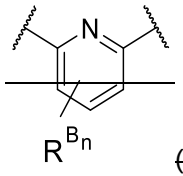
173. The method of claim 172, wherein each R^A is COOH or pharmaceutically acceptable salt thereof.

174. The method of any one of claims 168-173, wherein the ring B is an optionally substituted benzene ring, pyridine ring, or thiophene ring.

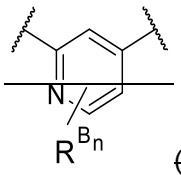
175. The method of claim 174, wherein the ring B is represented by a formula selected from the group consisting of:



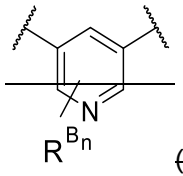
(IIIa);



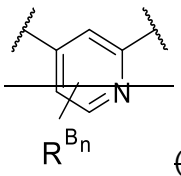
(IIIb);



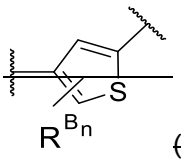
(IIIc);



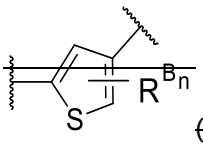
(IIId);



(IIIe);



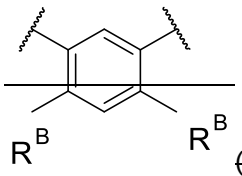
(IIIf); and



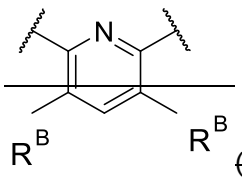
(IIIg).

176. The method of any one of claims 168-175, wherein n is 2.

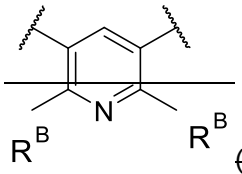
177. The method of claim 176, wherein the ring B is represented by a formula selected from the group consisting of:



(IVa);



~~(IVb); and~~



~~(IVc).~~

~~178. The method of any one of claims 168-177, wherein each R^B is independently a halogen atom, an optionally substituted lower alkyl group, or OW^4, wherein each W^4 is independently a hydrogen atom or an optionally substituted lower alkyl group.~~

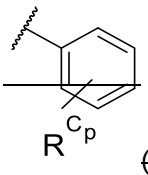
~~179. The method of claim 178, wherein each R^B is independently a fluorine atom, chlorine atom, bromine atom, methyl group, or methoxy group.~~

~~180. The method of any one of claims 168-179, wherein U is a single bond.~~

~~181. The method of any one of claims 168-180, wherein X is a group represented by —O—L—Y.~~

~~182. The method of any one of claims 168-181, wherein L is a methylene group.~~

~~183. The method of any one of claims 168-182, wherein Y is an optionally substituted benzene ring represented by formula (V)~~

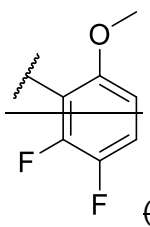


~~(V)~~

~~wherein each R^C is independently a halogen atom, an optionally substituted lower alkyl group, or OW^9, wherein each W^9 is independently a hydrogen atom or an optionally substituted lower alkyl group; and~~

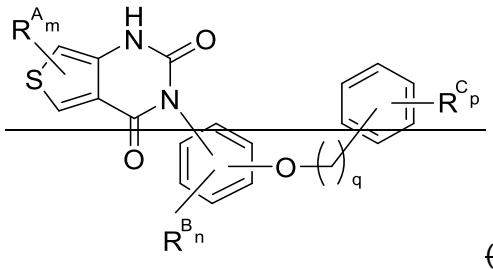
~~p is an integer from 0 to 3.~~

~~184. The method of claim 183, wherein Y is a substituted benzene ring represented by formula (Va)~~



~~(Va).~~

~~185. The method of claim 168, wherein the compound is represented by formula (Ia)~~



(Ia)

wherein each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$, NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

m is an integer from 0 to 3;

each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

n is an integer from 0 to 2;

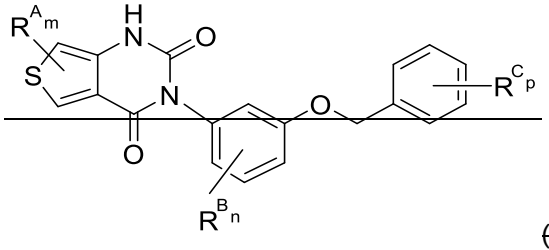
q is an integer from 0 to 3;

each R^C is independently a halogen atom, an optionally substituted lower alkyl group, or OW^9, wherein each W^9 is independently a hydrogen atom or an optionally substituted lower alkyl group; and

p is an integer from 0 to 3;

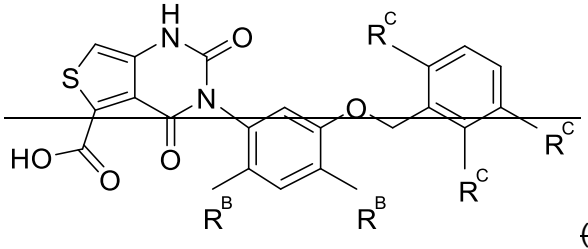
or a pharmaceutically acceptable salt thereof.

186. The method of claim 185, wherein the compound is represented by formula (**Ib**)



(Ib).

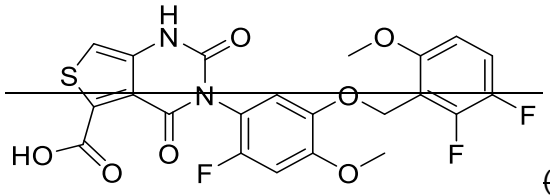
187. The method of claim 186, wherein the compound is represented by formula (**Ic**)



(Ic)

or a pharmaceutically acceptable salt thereof.

188. The method of claim any one of claims 168-187, wherein the compound is represented by formula (**VI**)



(**VI**)

or a pharmaceutically acceptable salt thereof.

189. The method of claim 188, wherein the compound is the choline salt of the compound represented by formula (**VI**).

190. The method of claim 189, wherein the compound is in a crystalline state.

191. The method of claim 190, wherein the compound exhibits characteristic X-ray powder diffraction (XRPD) peaks at about 7.1° 2θ, about 11.5° 2θ, about 19.4° 2θ, about 21.5° 2θ, about 22.0° 2θ, about 22.6° 2θ, about 23.5° 2θ, and about 26.2° 2θ.

192. The method of claim 190 or 191, wherein the compound exhibits ^{13}C solid-state nuclear magnetic resonance (NMR) peaks centered at about 55.5 ppm, about 57.1 ppm, about 58.7 ppm, about 69.8 ppm, about 98.1 ppm, about 110.3 ppm, about 111.6 ppm, about 113.7 ppm, about 118.0 ppm, about 145.3 ppm, about 149.8 ppm, and about 155.8 ppm.

193. The method of any one of claims 190-192, wherein the compound exhibits ^{19}F solid-state NMR peaks centered at about -151.8 ppm, -145.2 ppm, and -131.6 ppm.

194. The method of any one of claims 168-193, wherein the compound is orally administered to the patient during the second treatment period.

195. The method of any one of claims 168-194, wherein the compound is administered to the patient one or more times per day, week, or month during the second treatment period.

196. The method of claim 195, wherein the compound is administered to the patient one or more times daily during the second treatment period.

197. The method of claim 196, wherein the compound is administered to the patient once daily during the second treatment period.

198. The method of any one of claims 195-197, wherein the compound is administered to the patient in an amount of from about 25 mg per day to about 400 mg per day during the second treatment period.

199. The method of claim 198, wherein the compound is administered to the patient in an amount of from about 35 mg to about 65 mg per day during the second treatment period.

200. The method of claim 199, wherein the compound is administered to the patient in an amount of about 50 mg per day during the second treatment period.

201. The method of claim 198, wherein the compound is administered to the patient in an amount of from about 60 mg per day to about 90 mg per day during the second treatment period.

202. The method of claim 201, wherein the compound is administered to the patient in an amount of about 75 mg per day during the second treatment period.

203. The method of claim 198, wherein the compound is administered to the patient in an amount of from about 85 mg to about 115 mg per day during the second treatment period.

204. The method of claim 203, wherein the compound is administered to the patient in an amount of about 100 mg per day during the second treatment period.

205. The method of claim 198, wherein the compound is administered to the patient in an amount of from about 185 mg to about 215 mg per day during the second treatment period.

206. The method of claim 205, wherein the compound is administered to the patient in an amount of about 200 mg per day during the second treatment period.

207. The method of any one of claims 1-34, 36-70, and 110-167, wherein the GnRH antagonist administered during the second treatment period is elagolix, relugolix, opigolix (ASP1707), BAY-784, or SK-2706.

208. The method of claim 207, wherein the GnRH antagonist administered during the second treatment period is elagolix.

209. The method of claim 208, wherein the GnRH antagonist is orally administered to the patient during the second treatment period.

210. The method of claim 208 or 209, wherein the GnRH antagonist is administered to the patient one or more times per day, week, or month during the second treatment period.

211. The method of claim 210, wherein the GnRH antagonist is administered to the patient one or more times daily during the second treatment period.

212. The method of claim 211, wherein the GnRH antagonist is administered to the patient once daily during the second treatment period.

213. The method of any one of claims 208-212, wherein the GnRH antagonist is administered to the patient in an amount of from about 100 mg to about 600 mg per day during the second treatment period.

214. The method of claim 213, wherein the GnRH antagonist is administered to the patient in an amount of about 150 mg per day during the second treatment period.

~~215. The method of claim 213, wherein the GnRH antagonist is administered to the patient in an amount of about 300 mg per day during the second treatment period.~~

~~216. The method of claim 213, wherein the GnRH antagonist is administered to the patient in an amount of about 400 mg per day during the second treatment period, optionally wherein the GnRH antagonist is administered to the patient in two daily doses of 200 mg per dose during the second treatment period.~~

~~217. The method of claim 213, wherein the GnRH antagonist is administered to the patient in an amount of about 600 mg per day during the second treatment period, optionally wherein the GnRH antagonist is administered to the patient in two daily doses of 300 mg per dose during the second treatment period.~~

~~218. The method of claim 207, wherein the GnRH antagonist administered during the second treatment period is relugolix.~~

~~219. The method of claim 218, wherein the GnRH antagonist is orally administered to the patient during the second treatment period.~~

~~220. The method of claim 218 or 219, wherein the GnRH antagonist is administered to the patient one or more times per day, week, or month during the second treatment period.~~

~~221. The method of claim 220, wherein the GnRH antagonist is administered to the patient one or more times daily during the second treatment period.~~

~~222.~~14. The ~~method~~ use of any one of claims ~~221~~ to 13, wherein the GnRH antagonist is administered to the patient once daily during the second treatment period.

~~223. The method of any one of claims 218-222, wherein the GnRH antagonist is administered to the patient in an amount of from about 10 mg to about 60 mg per day during the second treatment period.~~

~~224. The method of claim 223, wherein the GnRH antagonist is administered to the patient in an amount of from about 20 mg to about 50 mg per day during the second treatment period.~~

~~225. The method of claim 224, wherein the GnRH antagonist is administered to the patient in an amount of about 40 mg per day during the second treatment period.~~

~~226.~~15. The ~~method~~ use of any one of claims 1 to 14~~-225~~, wherein the first treatment period has a duration of at least four weeks.

~~227. The method of claim 226, wherein the first treatment period has a duration of at least eight weeks.~~

~~228. The method of claim 227, wherein the first treatment period has a duration of at least 10 weeks.~~

~~229. The method of claim 228, wherein the first treatment period has a duration of at least 12 weeks.~~

~~230. The method of claim 229, wherein the first treatment period has a duration of at least 24 weeks.~~

~~231.~~16. The ~~method~~ use of any one of claims 1 to ~~22~~15, wherein the first treatment period has a duration of from about four weeks to about 12 months.

~~232. The method of claim 231, wherein the first treatment period has a duration of from about four weeks to about 44 weeks.~~

~~233. The method of claim 232, wherein the first treatment period has a duration of from about four weeks to about 40 weeks.~~

~~234. The method of claim 233, wherein the first treatment period has a duration of from about four weeks to about 36 weeks.~~

~~235. The method of claim 234, wherein the first treatment period has a duration of from about four weeks to about 24 weeks.~~

~~236. The method of claim 235, wherein the first treatment period has a duration of from about five weeks to about 20 weeks.~~

~~237. The method of claim 236, wherein the first treatment period has a duration of from about six weeks to about 18 weeks.~~

~~238. The method of claim 237, wherein the first treatment period has a duration of from about eight weeks to about 16 weeks.~~

~~239. The method of claim 238, wherein the first treatment period has a duration of from about 10 weeks to about 14 weeks.~~

~~240. The method of claim 239, wherein the first treatment period has a duration of about 12 weeks.~~

~~241. The method of claim 231, wherein the first treatment period has a duration of from about 14 weeks to about 40 weeks.~~

~~242. The method of claim 241, wherein the first treatment period has a duration of from about 16 weeks to about 32 weeks.~~

~~243. The method of claim 242, wherein the first treatment period has a duration of from about 18 weeks to about 30 weeks.~~

~~244. The method of claim 243, wherein the first treatment period has a duration of from about 20 weeks to about 28 weeks.~~

~~245. The method of claim 244, wherein the first treatment period has a duration of from about 22 weeks to about 26 weeks.~~

~~246. The method of claim 245, wherein the first treatment period has a duration of about 24 weeks.~~

~~247. The method of any one of claims 1-246, wherein the second treatment period has a duration of at least four weeks.~~

~~248. The method of claim 247, wherein the second treatment period has a duration of at least eight weeks.~~

~~249. The method of claim 248, wherein the second treatment period has a duration of at least 10 weeks.~~

~~250. The method of claim 249, wherein the second treatment period has a duration of at least 12 weeks.~~

~~251. The method of claim 250, wherein the second treatment period has a duration of at least 24 weeks.~~

~~252. The method of any one of claims 1-246, wherein the second treatment period has a duration of from about four weeks to about 12 months.~~

~~253. The method of claim 252, wherein the second treatment period has a duration of from about four weeks to about 44 weeks.~~

~~254. The method of claim 253, wherein the second treatment period has a duration of from about four weeks to about 40 weeks.~~

~~255. The method of claim 254, wherein the second treatment period has a duration of from about four weeks to about 36 weeks.~~

~~256. The method of claim 255, wherein the second treatment period has a duration of from about four weeks to about 24 weeks.~~

~~257. The method of claim 256, wherein the second treatment period has a duration of from about five weeks to about 20 weeks.~~

~~258. The method of claim 257, wherein the second treatment period has a duration of from about six weeks to about 18 weeks.~~

~~259. The method of claim 258, wherein the second treatment period has a duration of from about eight weeks to about 16 weeks.~~

~~260. The method of claim 259, wherein the second treatment period has a duration of from about 10 weeks to about 14 weeks.~~

~~261. The method of claim 260, wherein the second treatment period has a duration of about 12 weeks.~~

~~262. The method of claim 252, wherein the second treatment period has a duration of from about 14 weeks to about 40 weeks.~~

~~263. The method of claim 262, wherein the second treatment period has a duration of from about 16 weeks to about 32 weeks.~~

~~264. The method of claim 263, wherein the second treatment period has a duration of from about 18 weeks to about 30 weeks.~~

~~265. The method of claim 264, wherein the second treatment period has a duration of from about 20 weeks to about 28 weeks.~~

~~266. The method of claim 265, wherein the second treatment period has a duration of from about 22 weeks to about 26 weeks.~~

~~267. The method of claim 266, wherein the second treatment period has a duration of about 24 weeks.~~

~~268. The method of any one of claims 1-267, wherein the time elapsed between the end of the first treatment period and commencement of the second treatment period is at least about two weeks.~~

~~269. The method of claim 268, wherein the time elapsed between the end of the first treatment period and commencement of the second treatment period is at least about four weeks.~~

~~270. The method of claim 269, wherein the time elapsed between the end of the first treatment period and commencement of the second treatment period is at least about eight weeks.~~

~~271. The method of claim 270, wherein the time elapsed between the end of the first treatment period and commencement of the second treatment period is at least about 12 weeks.~~

~~272. The method of claim 271, wherein the time elapsed between the end of the first treatment period and commencement of the second treatment period is at least about 24 weeks.~~

~~273. The method of any one of claims 1-267, wherein the time elapsed between the end of the first treatment period and commencement of the second treatment period is from about one week to about 48 weeks.~~

~~274. The method of claim 273, wherein the time elapsed between the end of the first treatment period and commencement of the second treatment period is from about one week to about 12 weeks.~~

~~275. The method of claim 274, wherein the time elapsed between the end of the first treatment period and commencement of the second treatment period is from about one week to about six weeks.~~

~~276. The method of claim 275, wherein the time elapsed between the end of the first treatment period and commencement of the second treatment period is from about two weeks to about four weeks.~~

277. The method of claim 273, wherein the time elapsed between the end of the first treatment period and commencement of the second treatment period is about two weeks, about three weeks, about four weeks, about five weeks, or about six weeks.

278. The method of claim 273, wherein the time elapsed between the end of the first treatment period and commencement of the second treatment period is from about one month to about eight months.

279. The method of claim 278, wherein the time elapsed between the end of the first treatment period and commencement of the second treatment period is from about one month to about six months.

280. The method of claim 279, wherein the time elapsed between the end of the first treatment period and commencement of the second treatment period is from about one month to about four months.

281. The method of claim 273, wherein the time elapsed between the end of the first treatment period and commencement of the second treatment period is about one month, about two months, about three months, or about four months.

282. The method of any one of claims 1-281, wherein add-back therapy is periodically administered to the patient during the first treatment period.

283. The method of any one of claims 1-282, wherein add-back therapy is periodically administered to the patient during the second treatment period.

284. The method of claim 282 or 283, wherein the add-back therapy is administered to the patient one or more times daily during the first and/or second treatment period.

285. The method of claim 284, wherein the add-back therapy is administered to the patient once daily, concurrently with the GnRH antagonist, during the first and/or second treatment period.

286. The method of claim 284, wherein the add-back therapy is administered to the patient once daily, prior to administration of the GnRH antagonist, during the first and/or second treatment period.

287. The method of claim 284, wherein the add-back therapy is administered to the patient once daily, following administration of the GnRH antagonist, during the first and/or second treatment period.

288. The method of claim 287, wherein the add-back therapy is administered to the patient in the form of a pharmaceutical composition comprising the GnRH antagonist.

289. The method of any one of claims 282-288, wherein the add-back therapy comprises an estrogen.

290. The method of claim 289, wherein the estrogen is selected from the group consisting of β17-estradiol, ethinyl estradiol, and conjugated estrogens.

291. The method of claim 290, wherein the estrogen is β17-estradiol.

292. The method of claim 291, wherein the β17-estradiol is administered to the patient in an amount of about 1.0 mg/day during the first and/or second treatment period.

293. The method of claim 291, wherein the β17-estradiol is administered to the patient in an amount of about 0.5 mg/day during the first and/or second treatment period.

294. The method of claim 290, wherein the estrogen is ethinyl estradiol.

295. The method of claim 294, wherein the ethinyl estradiol is administered to the patient in an amount of about 5.0 µg/day during the first and/or second treatment period.

296. The method of claim 294, wherein the ethinyl estradiol is administered to the patient in an amount of about 2.5 µg/day during the first and/or second treatment period.

297. The method of claim 290, wherein the estrogen is a conjugated estrogen.

298. The method of claim 297, wherein the conjugated estrogen is administered to the patient in an amount of about 0.625 mg/day during the first and/or second treatment period.

299. The method of claim 297, wherein the conjugated estrogen is administered to the patient in an amount of about 0.45 mg/day during the first and/or second treatment period.

300. The method of claim 297, wherein the conjugated estrogen is administered to the patient in an amount of about 0.3 mg/day during the first and/or second treatment period.

301. The method of any one of claims 282-300, wherein the add-back therapy comprises a progestin.

302. The method of claim 301, wherein the progestin is selected from the group consisting of norethindrone or an ester thereof, progesterone, norgestimate, medroxyprogesterone, and drospirenone.

303. The method of claim 302, wherein the progestin is norethindrone or norethindrone acetate.

304. The method of claim 303, wherein the norethindrone or norethindrone acetate is administered to the patient in an amount of about 1.0 mg/day during the first and/or second treatment period.

305. The method of claim 303, wherein the norethindrone or norethindrone acetate is administered to the patient in an amount of about 0.5 mg/day during the first and/or second treatment period.

306. The method of claim 303, wherein the norethindrone or norethindrone acetate is administered to the patient in an amount of about 0.1 mg/day during the first and/or second treatment period.

307. The method of claim 302, wherein the progestin is progesterone.

308. The method of claim 307, wherein the progesterone is administered to the patient in an amount of about 200 mg/day during the first and/or second treatment period.

309. The method of claim 307, wherein the progesterone is administered to the patient in an amount of about 100 mg/day during the first and/or second treatment period.

~~310. The method of claim 302, wherein the progestin is norgestimate.~~

~~311. The method of claim 310, wherein the norgestimate is administered to the patient in an amount of about 0.09 mg/day during the first and/or second treatment period.~~

~~312. The method of claim 302, wherein the progestin is medroxyprogesterone.~~

~~313. The method of claim 312, wherein the medroxyprogesterone is administered to the patient in an amount of about 5 mg/day during the first and/or second treatment period.~~

~~314. The method of claim 312, wherein the medroxyprogesterone is administered to the patient in an amount of about 2.5 mg/day during the first and/or second treatment period.~~

~~315. The method of claim 312, wherein the medroxyprogesterone is administered to the patient in an amount of about 1.5 mg/day during the first and/or second treatment period.~~

~~316. The method of claim 302, wherein the progestin is drospirenone.~~

~~317. The method of claim 316, wherein the drospirenone is administered to the patient in an amount of about 0.5 mg/day during the first and/or second treatment period.~~

~~318. The method of claim 316, wherein the drospirenone is administered to the patient in an amount of about 0.25 mg/day during the first and/or second treatment period.~~

~~319. The method of any one of claims 282-318, wherein the add-back therapy comprises about 1.0 mg of β17-estradiol and about 0.5 mg of norethindrone acetate.~~

~~320. The method of any one of claims 282-318, wherein the add-back therapy comprises about 0.5 mg of β17-estradiol and about 0.1 mg of norethindrone acetate.~~

~~321. The method of any one of claims 1-320, wherein the patient is a pre-menopausal female of from about 18 to about 48 years of age.~~

~~322. The method of any one of claims 1-321, wherein the patient has been determined to exhibit a serum concentration of follicle-stimulating hormone (FSH) of about 20 IU/L or less prior to commencement of the first and/or second treatment period.~~

~~323. The method of any one of claims 1-322, wherein the patient has been determined to exhibit a rectal (type II) and/or vaginal (type III) endometriosis node of at least 2 cm prior to commencement of the first and/or second treatment period.~~

~~324. The method of claim 323, wherein the length of the type II and/or type III endometriosis node is assessed by way of magnetic resonance imaging (MRI).~~

~~325. The method of any one of claims 1-324, wherein the patient has been determined to exhibit a junctional-zone width of about 12 mm or more prior to commencement of the first and/or second treatment period.~~

~~326. The method of claim 325, wherein the junctional-zone width is assessed by way of MRI.~~

327. The method of any one of claims 1-326, wherein the patient exhibits a reduction in serum concentration of luteinizing hormone (LH), follicle-stimulating hormone (FSH), and/or β17-estradiol (E2) following administration of the GnRH antagonist to the patient.

328. The method of claim 327, wherein the patient exhibits the reduction in serum concentration of LH, FSH, and/or E2 within from about one day to about 36 weeks of commencement of the second treatment period, optionally wherein the patient exhibits the reduction within from about 12 weeks to about 24 weeks of commencement of the second treatment period.

329. The method of any one of claims 1, 2, 4-12, 14-22, 24-31, 33-37, 39-47, 49-57, 59-66, 68-73, 75-83, 85-93, 95-102, and 104-328, wherein the patient exhibits a reduction in uterine bleeding following administration of the GnRH antagonist to the patient.

330. The method of any one of claims 3, 13, 23, 32, 38, 48, 58, 67, 74, 84, 94, 103, and 329, wherein the patient exhibits the reduction in uterine bleeding within from about one day to about 36 weeks of commencement of the second treatment period, optionally wherein the patient exhibits the reduction within from about 12 weeks to about 24 weeks of commencement of the second treatment period.

331. The method of any one of claims 3, 13, 23, 32, 38, 48, 58, 67, 74, 84, 94, 103, 329, and 330, wherein the reduction in uterine bleeding is assessed by way of an alkaline hematin method.

332. The method of any one of claims 1-3, 5-13, 15-23, 25-32, 34-38, 40-48, 50-58, 60-67, 69-74, 76-84, 86-94, 96-103, and 105-331, wherein the patient exhibits amenorrhea following administration of the GnRH antagonist to the patient.

333. The method of any one of claims 4, 14, 24, 33, 39, 49, 59, 68, 75, 85, 95, 104, and 332, wherein the patient exhibits the amenorrhea within from about one day to about 36 weeks of commencement of the second treatment period, optionally wherein the patient exhibits the amenorrhea within from about 12 weeks to about 24 weeks of commencement of the second treatment period.

334. The method of any one of claims 1-25, 27-60, 62-96, and 98-333, wherein the patient exhibits a reduction in the volume of one or more rectovaginal endometriosis nodes following administration of the GnRH antagonist to the patient.

335. The method of any one of claims 26, 61, 97, and 334, wherein the patient exhibits the reduction in volume of the one or more rectovaginal endometriosis nodes within from about one day to about 36 weeks of commencement of the second treatment period, optionally wherein the patient exhibits the reduction within from about 12 weeks to about 24 weeks of commencement of the second treatment period.

336. The method of any one of claims 26, 61, 97, 334, and 335, wherein the reduction in volume of the one or more rectovaginal endometriosis nodes is assessed by way of MRI or TVUS.

337. The method of any one of claims 1-336, wherein the patient exhibits a reduction in bowel involvement of one or more type III endometriosis nodes following administration of the GnRH antagonist to the patient.

~~338. The method of claim 337, wherein the patient exhibits the reduction in bowel involvement of the one or more type III endometriosis nodes within from about one day to about 36 weeks of commencement of the second treatment period, optionally wherein the patient exhibits the reduction within from about 12 weeks to about 24 weeks of commencement of the second treatment period.~~

~~339. The method of any one of claims 1-8, 10-17, 19-27, 29-43, 45-52, 54-62, 64-79, 81-88, 90-98, and 100-338, wherein the patient exhibits a reduction in pelvic pain following administration of the GnRH antagonist to the patient.~~

~~340. The method of any one of claims 9, 18, 28, 44, 53, 63, 80, 89, 99, and 339, wherein the patient exhibits the reduction in pelvic pain within from about one day to about 36 weeks of commencement of the second treatment period, optionally wherein the patient exhibits the reduction within from about 12 weeks to about 24 weeks of commencement of the second treatment period.~~

~~341. The method of any one of claims 9, 18, 28, 44, 53, 63, 80, 89, 99, 339, and 340, wherein the reduction in pelvic pain is assessed by way of a modified Biberoglu & Behrman (mB&B) score, Numerical Rating Scale (NRS) score, or Verbal Rating Scale (VRS) score.~~

~~342. The method of any one of claims 1-9, 11-18, 20-28, 30-44, 46-53, 55-63, 65-80, 82-89, 91-99, and 101-340, wherein the patient exhibits a reduction in dysmenorrhea following administration of the GnRH antagonist to the patient.~~

~~343. The method of any one of claims 10, 19, 29, 45, 54, 64, 81, 90, 100, and 342, wherein the patient exhibits the reduction in dysmenorrhea within from about one day to about 36 weeks of commencement of the second treatment period, optionally wherein the patient exhibits the reduction within from about 12 weeks to about 24 weeks of commencement of the second treatment period.~~

~~344. The method of any one of claims 10, 19, 29, 45, 54, 64, 81, 90, 100, 342, and 343, wherein the reduction in dysmenorrhea is assessed by way of an mB&B score, NRS score, or VRS score.~~

~~345. The method of any one of claims 1-10, 12-19, 21-29, 31-45, 47-54, 56-64, 66-81, 83-90, 92-100, and 102-344, wherein the patient exhibits a reduction in dyspareunia following administration of the GnRH antagonist to the patient.~~

~~346. The method of any one of claims 11, 20, 30, 46, 55, 65, 82, 91, 101, and 345, wherein the patient exhibits the reduction in dyspareunia within from about one day to about 36 weeks commencement of the second treatment period, optionally wherein the patient exhibits the reduction within from about 12 weeks to about 24 weeks of commencement of the second treatment period.~~

~~347. The method of any one of claims 11, 20, 30, 46, 55, 65, 82, 91, 101, 345, and 346, wherein the reduction in dyspareunia is assessed by way of an mB&B score, NRS score, or VRS score.~~

~~348. The method of any one of claims 1-11, 13-20, 22-30, 32-46, 48-55, 57-65, 67-82, 84-91, 93-101, and 103-347, wherein the patient exhibits a reduction in dyschezia following administration of the GnRH antagonist to the patient.~~

~~349. The method of any one of claims 12, 21, 31, 47, 56, 66, 83, 92, 102, and 348, wherein the patient exhibits the reduction in dyschezia within from about one day to about 36 weeks of commencement of the second treatment period, optionally wherein the patient exhibits the reduction within from about 12 weeks to about 24 weeks of commencement of the second treatment period.~~

~~350. The method of any one of claims 12, 21, 31, 47, 56, 66, 83, 92, 102, 348, and 349, wherein the reduction in dyschezia is assessed by way of an mB&B score, NRS score, or VRS score.~~

~~351. The method of any one of claims 1-15, 17-50, 52-86, and 88-349, wherein the patient exhibits a reduction in uterine volume following administration of the GnRH antagonist to the patient.~~

~~352. The method of any one of claims 16, 51, 87, and 351, wherein the patient exhibits the reduction in uterine volume within from about one day to about 36 weeks of commencement of the second treatment period, optionally wherein the patient exhibits the reduction within from about 12 weeks to about 24 weeks of commencement of the second treatment period.~~

~~353. The method of any one of claims 16, 51, 87, 351, and 352, wherein the reduction in uterine volume is assessed by way of MRI or transvaginal ultrasound (TVUS).~~

~~354. The method of any one of claims 1-16, 18-51, 53-87, and 89-353, wherein the patient exhibits a reduction in the thickness of the anterior and/or posterior region of the uterine myometrium following administration of the GnRH antagonist to the patient.~~

~~355. The method of any one of claims 17, 52, 88, and 354, wherein the patient exhibits the reduction in thickness of the anterior and/or posterior region of the uterine myometrium within from about one day to about 36 weeks of commencement of the second treatment period, optionally wherein the patient exhibits the reduction within from about 12 weeks to about 24 weeks of commencement of the second treatment period.~~

~~356. The method of any one of claims 1-21, 23-56, 58-92, and 94-355, wherein the patient exhibits a reduction in uterine tenderness following administration of the GnRH antagonist to the patient.~~

~~357. The method of any one of claims 22, 57, 93, and 356, wherein the patient exhibits the reduction in uterine tenderness within from about one day to about 36 weeks of commencement of the second treatment period, optionally wherein the patient exhibits the reduction within from about 12 weeks to about 24 weeks of commencement of the second treatment period.~~

~~358. The method of any one of claims 1-357, wherein the patient exhibits a reduction in the diameter of a junctional zone of adenomyosis following administration of the GnRH antagonist to the patient.~~

~~359. The method of claim 358, wherein the patient exhibits the reduction in the diameter of the junctional zone of adenomyosis within from about one day to about 36 weeks of commencement of the second treatment period, optionally wherein the patient exhibits the reduction within from about 12 weeks to about 24 weeks of commencement of the second treatment period.~~

360. The method of any one of claims 1-359, wherein the patient exhibits an improvement in Endometriosis Health Profile questionnaire (EHP-30) score following administration of the GnRH antagonist to the patient.

361. The method of claim 360, wherein the patient exhibits the improvement in the EHP-30 score within from about one day to about 36 weeks of commencement of the second treatment period, optionally wherein the patient exhibits the improvement within from about 12 weeks to about 24 weeks of commencement of the second treatment period.

362. The method of any one of claims 1-361, wherein the patient exhibits a positive Patient Global Impression of Change (PGIC) score core following administration of the GnRH antagonist to the patient.

363. The method of claim 362, wherein the patient exhibits the positive PGIC score within from about one day to about 36 weeks of commencement of the second treatment period, optionally wherein the patient exhibits the positive PGIC score within from about 12 weeks to about 24 weeks of commencement of the second treatment period.

364. The method of any one of claims 1-363, wherein the patient does not exhibit a reduction in bone mineral density (BMD) of greater than 5% at the end of the second treatment period relative to a measurement of the patient's bone mineral density obtained prior to, or during, the first treatment period.

365. The method of claim 364, wherein the patient does not exhibit a reduction in BMD of greater than 3% at the end of the second treatment period relative to a measurement of the patient's bone mineral density obtained prior to, or during, the first treatment period.

366. The method of claim 365, wherein the patient does not exhibit a reduction in BMD of greater than 2% at the end of the second treatment period relative to a measurement of the patient's bone mineral density obtained prior to, or during, the first treatment period.

367. The method of claim 366, wherein the patient does not exhibit a reduction in BMD of greater than 1% at the end of the second treatment period relative to a measurement of the patient's bone mineral density obtained prior to, or during, the first treatment period.

368. The method of any one of claims 364-367, wherein the BMD is assessed by dual energy X-ray absorptiometry.

369. The method of claim 368, wherein the BMD is assessed in the spine or femur of the patient.

370. The method of any one of claims 364-367, wherein the BMD is assessed by comparing the concentration of bone specific alkaline phosphatase (BAP) in a sample isolated from the patient following the administration to the concentration of BAP in a sample isolated from the patient prior to the administration.

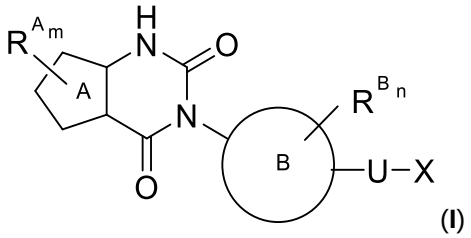
371. The method of any one of claims 364-367, wherein the BMD is assessed by comparing the concentration of deoxypyridinoline (DPD) in a sample isolated from the patient following the administration to the concentration of DPD in a sample isolated from the patient prior to the administration.

~~372. The method of any one of claims 364-367, wherein the BMD is assessed by comparing the concentration of type I collagen C-terminal telopeptide (CTX) in a sample isolated from the patient following the administration to the concentration of CTX in a sample isolated from the patient prior to the administration.~~

~~373. The method of any one of claims 364-367, wherein the BMD is assessed by comparing the concentration of procollagen 1 N-terminal peptide (P1NP) in a sample isolated from the patient following the administration to the concentration of P1NP in a sample isolated from the patient prior to the administration.~~

~~374.~~17. A kit comprising a GnRH antagonist and a package insert instructing a user of the kit to administer the GnRH antagonist to a human patient in accordance with the method of any one of claims 1-~~373~~16.

~~375.~~18. The kit of claim ~~374~~17, wherein the GnRH antagonist is a compound represented by formula (**I**)



(**I**)

wherein ring A is a thiophene ring;

each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$, NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

m is an integer from 0 to 3;

ring B is an aryl group or a monocyclic heteroaryl group;

each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;

n is an integer from 0 to 2;

U is a single bond;

X is a group represented by —S—L—Y, —O—L—Y, —CO—L—Y, or —SO_2—L—Y, wherein L is an optionally substituted lower alkylene group;

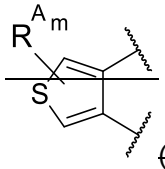
Y is a group represented by Z or —NW^7W^8, wherein W^7 and W^8 independently are a hydrogen atom, an optionally substituted lower alkyl group, or Z with the proviso that W^7 and W^8 are not simultaneously hydrogen atoms, or W^7 and W^8 may bind together with the neighboring nitrogen atom to

form an optionally substituted cyclic amino group; and

Z is an optionally fused and optionally substituted cycloalkyl group, an optionally fused and optionally substituted heterocycloalkyl group, an optionally fused and optionally substituted aryl group, or an optionally fused and optionally substituted heteroaryl group;

or a pharmaceutically acceptable salt thereof.

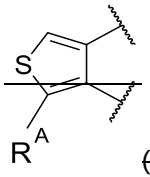
~~376. The kit of claim 375, wherein the ring A is a thiophene ring represented by formula (**IIa**)~~



~~(**IIa**).~~

~~377. The kit of claim 375 or 376, wherein m is 1.~~

~~378. The kit of claim 377, wherein the ring A is an optionally substituted thiophene ring represented by formula (**IIb**)~~



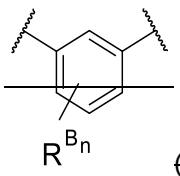
~~(**IIb**).~~

~~379. The kit of any one of claims 375-378, wherein each R^A is independently a halogen atom, an optionally substituted lower alkyl group, $COOW^1$, or $CONW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group.~~

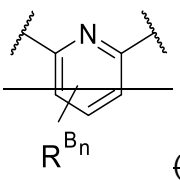
~~380. The kit of claim 379, wherein each R^A is COOH or pharmaceutically acceptable salt thereof.~~

~~381. The kit of any one of claims 375-380, wherein the ring B is an optionally substituted benzene ring, pyridine ring, or thiophene ring.~~

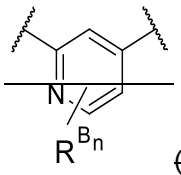
~~382. The kit of claim 381, wherein the ring B is represented by a formula selected from the group consisting of:~~



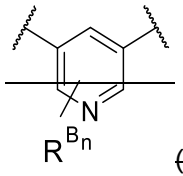
~~(**IIIa**);~~



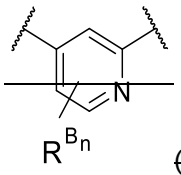
~~(**IIIb**);~~



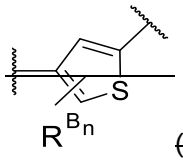
~~(IIIc);~~



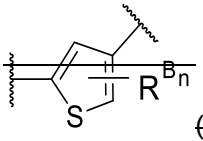
~~(IIId);~~



~~(IIIe);~~



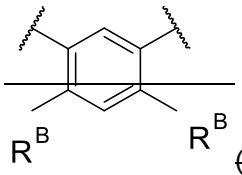
~~(IIIf); and~~



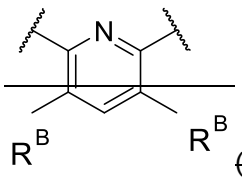
~~(IIIg).~~

~~383. The kit of any one of claims 375-382, wherein n is 2.~~

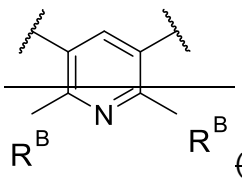
~~384. The kit of claim 383, wherein ring B is represented by a formula selected from the group consisting of:~~



~~(IVa);~~



~~(IVb); and~~



~~(IVc).~~

385. The kit of any one of claims 375-384, wherein each R^B is independently a halogen atom, an optionally substituted lower alkyl group, or OW^4, wherein each W^4 is independently a hydrogen atom or an optionally substituted lower alkyl group.

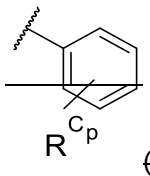
386. The kit of claim 385, wherein each R^B is independently a fluorine atom, chlorine atom, bromine atom, methyl group, or methoxy group.

387. The kit of any one of claims 375-386, wherein U is a single bond.

388. The kit of any one of claims 375-387, wherein X is a group represented by —O—L—Y.

389. The kit of any one of claims 375-388, wherein L is a methylene group.

390. The kit of any one of claims 375-389, wherein Y is an optionally substituted benzene ring represented by formula (**V**)

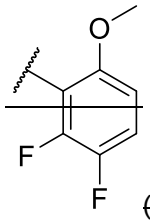


(**V**)

wherein each R^C is independently a halogen atom, an optionally substituted lower alkyl group, or OW^9, wherein each W^9 is independently a hydrogen atom or an optionally substituted lower alkyl group; and

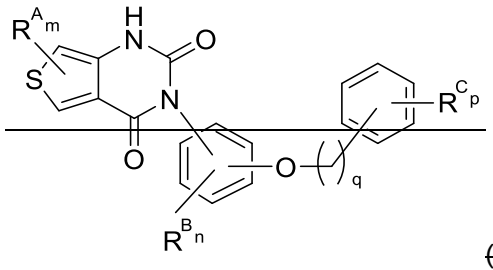
p is an integer from 0 to 3.

391. The kit of claim 390, wherein Y is a substituted benzene ring represented by formula (**Va**)



(**Va**).

392. The kit of claim 375, wherein the compound is represented by formula (**Ia**)



(**Ia**)

wherein each R^A is independently a halogen atom, a cyano group, a nitro group, an optionally substituted lower alkyl group, an optionally substituted lower alkenyl group, an optionally substituted lower alkynyl group, a hydroxyiminomethyl group, an optionally substituted sulfonyl group, an optionally substituted sulfinyl group, a tetrazolyl group, OW^1, SW^1, COW^1, $COOW^1$, $NHCOW^1$, $NHCONW^2W^3$,

~~NW^2W^3, $CONW^2W^3$, or $SO_2NW^2W^3$, wherein W^1 to W^3 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^2 and W^3 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;~~

~~m is an integer from 0 to 3;~~

~~each R^B is independently a halogen atom, a cyano group, an optionally substituted lower alkyl group, OW^4, COW^4, $COOW^4$, or $CONW^5W^6$, wherein W^4 to W^6 independently are a hydrogen atom or an optionally substituted lower alkyl group, or W^5 and W^6 may bind together with the neighboring nitrogen atom to form an optionally substituted cyclic amino group;~~

~~n is an integer from 0 to 2;~~

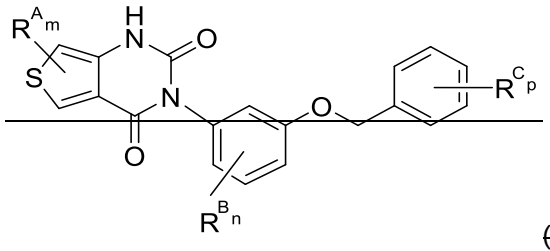
~~q is an integer from 0 to 3;~~

~~each R^C is independently a halogen atom, an optionally substituted lower alkyl group, or OW^9, wherein each W^9 is independently a hydrogen atom or an optionally substituted lower alkyl group; and~~

~~p is an integer from 0 to 3;~~

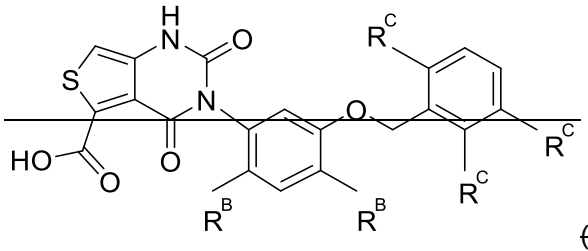
~~or a pharmaceutically acceptable salt thereof.~~

~~393. The kit of claim 392, wherein the compound is represented by formula (**Ib**)~~



~~(**Ib**).~~

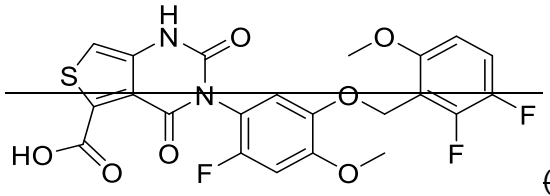
~~394. The kit of claim 393, wherein the compound is represented by formula (**Ic**)~~



~~(**Ic**)~~

~~or a pharmaceutically acceptable salt thereof.~~

~~395. The kit of any one of claims 375-394, wherein the compound is represented by formula (**VI**)~~



~~(**VI**)~~

~~or a pharmaceutically acceptable salt thereof.~~

~~396. The kit of claim 395, wherein the compound is the choline salt of the compound represented by formula (**VI**).~~

~~397. The kit of claim 374, wherein the GnRH antagonist is elagolix, relugolix, opigolix (ASP1707), BAY-784, or SK-2706.~~