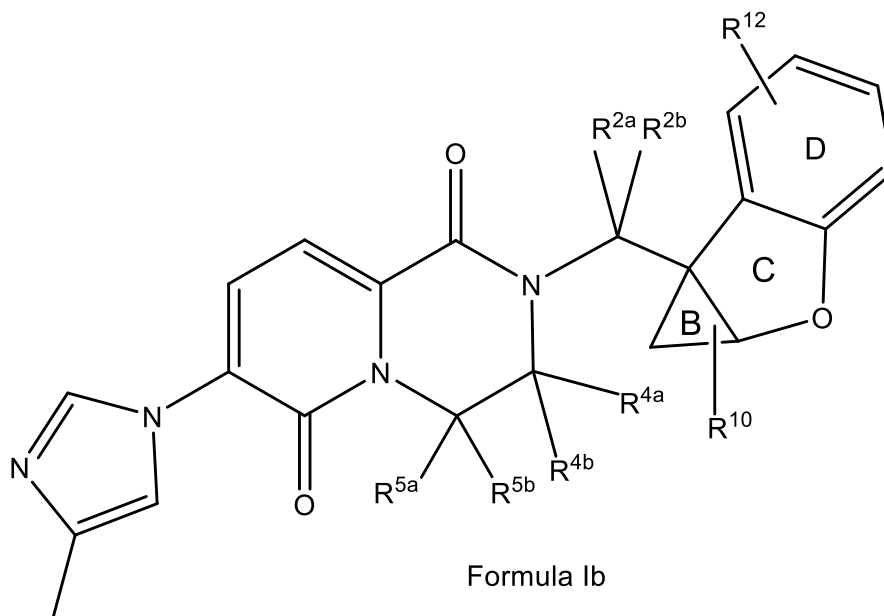


Claims

1. A compound having the structure of Formula Ib:



or a pharmaceutically acceptable salt thereof, wherein:

R2a , R2b , R4a , R4b , R5a and R5b are each hydrogen;

ring B is optionally substituted with one R10 , which is methyl; and

ring D is substituted with one to three R11 , wherein each R11 is independently selected from chloro, fluoro, fluoromethyl, difluoromethyl, trifluoromethyl, fluoromethoxy, difluoromethoxy, trifluoromethoxy.

2. (-)-7-(4-methyl-1*H*-imidazol-1-yl)-2-{[(1*aS*,7*bS*)-6-(trifluoromethyl)-1*a*,2-dihydrocyclopropa[*c*]chromen-7*b*(1*H*)-yl]methyl}-3,4-dihydro-2*H*-pyrido[1,2-*a*]pyrazine-1,6-dione, or a pharmaceutically acceptable salt thereof.

3. (+)-7-(4-methyl-1*H*-imidazol-1-yl)-2-{[(1*aR*,7*bR*)-6-(trifluoromethyl)-1*a*,2-dihydrocyclopropa[*c*]chromen-7*b*(1*H*)-yl]methyl}-3,4-dihydro-2*H*-pyrido[1,2-*a*]pyrazine-1,6-dione, or a pharmaceutically acceptable salt thereof.

4. *rel*-7-(4-methyl-1*H*-imidazol-1-yl)-2-{[(1*aS*,6*bS*)-5-(trifluoromethyl)-1,1*a*-dihydro-6*bH*-cyclopropa[*b*][1]benzofuran-6*b*-yl]methyl}-3,4-dihydro-2*H*-pyrido[1,2-*a*]pyrazine-1,6-dione, or a pharmaceutically acceptable salt thereof.

5. 2-{[(1*aR*,7*bR*)-4-chloro-6-(trifluoromethyl)-1*a*,2-dihydrocyclopropa[*c*]chromen-7*b*(1*H*)-yl]methyl}-7-(4-methyl-1*H*-imidazol-1-yl)-3,4-dihydro-2*H*-pyrido[1,2-*a*]pyrazine-1,6-dione,

6. 2-{[(1*aS*,7*bS*)-4-chloro-6-(trifluoromethyl)-1*a*,2-dihydrocyclopropa[*c*]chromen-7*b*(1*H*)-yl]methyl}-7-(4-methyl-1*H*-imidazol-1-yl)-3,4-dihydro-2*H*-pyrido[1,2-*a*]pyrazine-1,6-dione, or a pharmaceutically acceptable salt thereof.

7. *rel*-2-{[(1*aS*,7*bS*)-6-chloro-2,2-dimethyl-1*a*,2-dihydrocyclopropa[*c*]chromen-7*b*(1*H*)-yl]methyl}-7-(4-methyl-1*H*-imidazol-1-yl)-3,4-dihydro-2*H*-pyrido[1,2-*a*]pyrazine-1,6-dione, or a pharmaceutically acceptable salt thereof.

8. 2-{[(1*aS*,7*bS*)-6-chloro-2,2-dimethyl-1*a*,2-dihydrocyclopropa[*c*]chromen-7*b*(1*H*)-yl]methyl}-7-(4-methyl-1*H*-imidazol-1-yl)-3,4-dihydro-2*H*-pyrido[1,2-*a*]pyrazine-1,6-dione, or a pharmaceutically acceptable salt thereof.

9. 2-{[(1*aR*,7*bR*)-6-chloro-2,2-dimethyl-1*a*,2-dihydrocyclopropa[*c*]chromen-7*b*(1*H*)-yl]methyl}-7-(4-methyl-1*H*-imidazol-1-yl)-3,4-dihydro-2*H*-pyrido[1,2-*a*]pyrazine-1,6-dione, or a pharmaceutically acceptable salt thereof.

10. 2-{[(1*aR*,7*bR*)-6-chloro-1*a*,2,2-trimethyl-1*a*,2-dihydrocyclopropa[*c*]chromen-7*b*(1*H*)-yl]methyl}-7-(4-methyl-1*H*-imidazol-1-yl)-3,4-dihydro-2*H*-pyrido[1,2-*a*]pyrazine-1,6-dione, or a pharmaceutically acceptable salt thereof.

11. 2-{[(1*aS*,7*bS*)-6-chloro-1*a*,2,2-trimethyl-1*a*,2-dihydrocyclopropa[*c*]chromen-7*b*(1*H*)-yl]methyl}-7-(4-methyl-1*H*-imidazol-1-yl)-3,4-dihydro-2*H*-pyrido[1,2-*a*]pyrazine-1,6-dione, or a pharmaceutically acceptable salt thereof.

12. *rel*-2-{[(1*aS*,7*bS*)-5-fluoro-6-(trifluoromethyl)-1*a*,2-dihydrocyclopropa[*c*]chromen-7*b*(1*H*)-yl]methyl}-7-(4-methyl-1*H*-imidazol-1-yl)-3,4-dihydro-2*H*-pyrido[1,2-*a*]pyrazine-1,6-dione, or a pharmaceutically acceptable salt thereof.

13. 7-(4-methyl-1*H*-imidazol-1-yl)-2-{[(1*aR*,7*bR*)-6-(trifluoromethoxy)-1*a*,2-dihydrocyclopropa[*c*]chromen-7*b*(1*H*)-yl]methyl}-3,4-dihydro-2*H*-pyrido[1,2-*a*]pyrazine-1,6-dione, or a pharmaceutically acceptable salt thereof.

14. 7-(4-methyl-1*H*-imidazol-1-yl)-2-{[(1*aS*,7*bS*)-6-(trifluoromethoxy)-1*a*,2-dihydrocyclopropa[*c*]chromen-7*b*(1*H*)-yl]methyl}-3,4-dihydro-2*H*-pyrido[1,2-*a*]pyrazine-1,6-dione, or a pharmaceutically acceptable salt thereof.

15. 7-(4-methyl-1*H*-imidazol-1-yl)-2-{[(1*R*,1*aR*,7*bR*)-1-methyl-6-(trifluoromethyl)-1*a*,2-dihydrocyclopropa[*c*]chromen-7*b*(1*H*)-yl]methyl}-3,4-dihydro-2*H*-pyrido[1,2-*a*]pyrazine-1,6-dione, or a pharmaceutically acceptable salt thereof.

16. 7-(4-methyl-1*H*-imidazol-1-yl)-2-{[(1*S*,1*aS*,7*bS*)-1-methyl-6-(trifluoromethyl)-1*a*,2-dihydrocyclopropa[*c*]chromen-7*b*(1*H*)-yl]methyl}-3,4-dihydro-2*H*-pyrido[1,2-*a*]pyrazine-1,6-dione, or a pharmaceutically acceptable salt thereof.

17. 7-(4-methyl-1*H*-imidazol-1-yl)-2-{[(1*aR*,7*bR*)-5-(trifluoromethyl)-1*a*,2-dihydrocyclopropa[*c*]chromen-7*b*(1*H*)-yl]methyl}-3,4-dihydro-2*H*-pyrido[1,2-*a*]pyrazine-1,6-dione, or a pharmaceutically acceptable salt thereof.

18. 7-(4-methyl-1*H*-imidazol-1-yl)-2-{[(1*aS*,7*bS*)-5-(trifluoromethyl)-1*a*,2-dihydrocyclopropa[*c*]chromen-7*b*(1*H*)-yl]methyl}-3,4-dihydro-2*H*-pyrido[1,2-*a*]pyrazine-1,6-dione, or a pharmaceutically acceptable salt thereof.

19. 2-{[(1*aR*,7*bR*)-6-chloro-4,5-difluoro-1*a*,2-dihydrocyclopropa[*c*]chromen-7*b*(1*H*)-yl]methyl}-7-(4-methyl-1*H*-imidazol-1-yl)-3,4-dihydro-2*H*-pyrido[1,2-*a*]pyrazine-1,6-dione, or a pharmaceutically acceptable salt thereof.

20. 2-{[(1*aS*,7*bS*)-6-chloro-4,5-difluoro-1*a*,2-dihydrocyclopropa[*c*]chromen-7*b*(1*H*)-yl]methyl}-7-(4-methyl-1*H*-imidazol-1-yl)-3,4-dihydro-2*H*-pyrido[1,2-*a*]pyrazine-1,6-dione, or a pharmaceutically acceptable salt thereof.

21. 2-{[(1aR,7bR)-4,6-dichloro-1a,2-dihydrocyclopropa[c]chromen-7b(1H)-yl]methyl}-7-(4-methyl-1H-imidazol-1-yl)-3,4-dihydro-2H-pyrido[1,2-a]pyrazine-1,6-dione, or a pharmaceutically acceptable salt thereof.

22. 2-{[(1aS,7bS)-4,6-dichloro-1a,2-dihydrocyclopropa[c]chromen-7b(1H)-yl]methyl}-7-(4-methyl-1H-imidazol-1-yl)-3,4-dihydro-2H-pyrido[1,2-a]pyrazine-1,6-dione, or a pharmaceutically acceptable salt thereof.

23. 2-{[(1aR,7bR)-6-chloro-1a,2-dihydrocyclopropa[c]chromen-7b(1H)-yl]methyl}-7-(4-methyl-1H-imidazol-1-yl)-3,4-dihydro-2H-pyrido[1,2-a]pyrazine-1,6-dione, or a pharmaceutically acceptable salt thereof.

24. 2-{[(1aS,7bS)-6-chloro-1a,2-dihydrocyclopropa[c]chromen-7b(1H)-yl]methyl}-7-(4-methyl-1H-imidazol-1-yl)-3,4-dihydro-2H-pyrido[1,2-a]pyrazine-1,6-dione, or a pharmaceutically acceptable salt thereof.

25. The compound according to any one of claims 1 to 24 or a pharmaceutically acceptable salt thereof, for use in reducing the production of amyloid beta (A β) proteins in a subject in need thereof.

26. A pharmaceutical composition comprising a compound of any one of claims 1 to 24, or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable excipient.