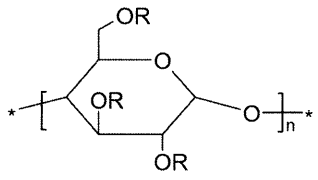
[CLAIMS]

1. A glycogen-based polymer comprising at least one repeating unit represented by the following formula (I)

[CHEMICAL FORMULA 1]



(I)

wherein

each group R, which may be identical or different, is a hydrogen atom, an alkyl group having from 1 to 9 carbon atoms, an alkenyl group having from 2 to 12 carbon atoms, an arylalkyl group having from 7 to 18 carbon atoms, or an arylalkenyl group having from 8 to 18 carbon atoms, the alkyl or alkenyl chain of said groups being optionally substituted by a hydroxyl group and/or interrupted by an oxygen atom, and the aryl residue of said groups being optionally substituted by a halogen atom, provided that at least one of said R group is different from hydrogen, and

n is an integer greater than or equal to 1.

2. The glycogen-based polymer according to claim 1, wherein said alkyl group has from 2 to 9 carbon atoms.

3. The glycogen-based polymer according to claim 1, wherein said alkyl group has from 2 to 8 carbon atoms.

4. The glycogen-based polymer according to claim 1, wherein said alkyl group has from 4 to 8 carbon atoms.

5. The glycogen-based polymer according to claim 1, wherein said alkenyl group has from 2 to 10 carbon atoms.

6. The glycogen-based polymer according to claim 1, wherein said alkenyl group has from 2 to 8 carbon atoms.

7. The glycogen-based polymer according to claim 1, wherein said alkenyl group has from 4 to 8 carbon atoms.

8. The glycogen-based polymer according to claim 1, wherein said arylalkyl group has from 8 to 16 carbon atoms.

9. The glycogen-based polymer according to claim 1, wherein said arylalkyl group has from 8 to 14 carbon atoms.

10. The glycogen-based polymer according to claim 1, wherein said arylalkyl group has from 10 to 14 carbon atoms.

11. The glycogen-based polymer according to claim 1, wherein said arylalkenyl group has from 8 to 16 carbon atoms.

12. The glycogen-based polymer according to claim 1, wherein said arylalkenyl group has from 8 to 14 carbon atoms.

13. The glycogen-based polymer according to claim 1, wherein said arylalkenyl group has from 10 to 14 carbon atoms.

14. The glycogen-based polymer according to claim 1, wherein each of said groups R, which may be identical or different, is a hydrogen atom; an alkyl group having from 2 to 9 carbon atoms, or an arylalkyl group having from 8 to 16 carbon atoms.

15. The glycogen-based polymer according to claim 1, wherein each of said groups R, which may be identical or different, is a hydrogen atom; an alkyl group having from 2 to 9 carbon atoms, or an arylalkyl group having from 8 to 14 carbon atoms.

16. The glycogen-based polymer according to claim 1, wherein each of said groups R, which may be identical or different, is a hydrogen atom; an alkyl group having from 2 to 8 carbon atoms, or an arylalkyl group having from 10 to 14 carbon atoms.

17. The glycogen-based polymer according to claim 1, wherein the glycogen used to prepare said glycogen-based polymer has a molecular weight of from 2.7×10^5 to 3.5×10^6 daltons.

18. The glycogen-based polymer according to claim 1, wherein the glycogen used to prepare said glycogen-based polymer has a molecular weight of $(2.5\pm0.1)\times10^6$ daltons.

19. A complex between the glycogen-based polymers as defined in any one of the preceding claims and a lipophilic compound.

20. The complex according to claim 19, wherein said lipophilic compound is selected from the group comprising a poorly water soluble drug, a carotenoid or a lipophilic compound structurally related with carotenoid.

21. The complex according to claim 20, wherein said poorly water soluble drug is selected from the group consisting of (i) BCS class II drugs and (ii) BCS class IV drugs.

22. The complex according to claim 21, wherein said BCS class II drug is selected from the group consisting of amiodarone, atorvastatin, azithromycin, carbamazepine, carvedilol, celecoxib, chlorpromazine, cisapride, ciprofloxacin, cyclosporine, danazol, dapsone, diclofenac, diflunisal, digoxin, erythromycin, flurbiprofen, glipizide, glyburide, griseofulvin, ibuprofen, indinavir, indomethacin, itraconazole, ketoconazole, lansoprazolel, lovastatin, mebendazole, naproxen, nelfinavir, ofloxacin, oxaprozin, phenazopyridine, phenytoin, piroxicam, raloxifene, repaglinide, ritonavir, saquinavir, sirolimus, spironolactone, tacrolimus, talinolol, tamoxifen, and terfenadine.

23. The complex according to claim 21, wherein said BCS class IV drug is selected from the group consisting of amphotericin B, chlorthalidone, chlorothiazide, colistin, ciprofloxacin, docetaxel, furosemide, hydrochlorothiazide, mebendazole, methotrexate, neomycin, and paclitaxel.

24. The complex according to claim 19, wherein said lipophilic compound is selected from the group comprising (i) carotenes, (ii) xanthophylls, (iii) apocarotenoids, (iv) vitamin A retinoids, (v) retinoid drugs, and (vi) other lipophilic vitamins/nutritional factors.

25. The complex according to claim 24, wherein said (i) carotenes are selected from the group comprising α-carotene, β-carotene, γ-carotene, δ-carotene, ε-carotene, lycopene, phytoene, phytofluene, and torulene

26. The complex according to claim 24, wherein said (ii) xanthophylls are selected from the group comprising antheraxanthin, astaxanthin, canthaxanthin, citranaxanthin, cryptoxanthin, diadinoxanthin, diatoxanthin, dinoxanthin, flavoxanthin, fucoxanthin, lutein, neoxanthin, rhodoxanthin, rubixanthin, violaxanthin and zeaxanthin.

27. A pharmaceutical composition comprising (i) a complex between the glycogen-based polymers as defined in any one of the preceding claims 1 to 18 and a lipophilic compound selected from the group comprising poorly water soluble drugs, and (ii) at least one pharmaceutically acceptable excipient.

28. A nutraceutical composition comprising (i) a complex between the glycogen-based polymers as defined in any one of the preceding claims 1 to 18 and a lipophilic compound selected from the group comprising carotenoids or lipophilic compounds structurally related with carotenoids, and (ii) at least one nutraceutically acceptable excipient.

29. A cosmetic composition comprising (i) a complex between the glycogen-based polymers as defined in any one of the preceding claims 1 to 18 and a lipophilic compound selected from the group comprising carotenoids or lipophilic compounds structurally related with carotenoids, and (ii) at least one cosmetically acceptable excipient.

30. Use of the glycogen-based polymers as defined in any one of the preceding claims 1 to 18 for enhancing the solubility in water of lipophilic compounds.