potentially enhance the therapeutic outcome of the flavonoid. Further advantageously, the injection of the disclosed polymer-flavonoid conjugates of the first to third aspects may overcome the low bioavailability of flavonoids when administered orally. Further advantageously, the injection of the disclosed polymer-flavonoid conjugates of the first to third aspects may be at a low frequency.

In the present disclosure, there is provided a process for forming a polymer-flavonoid conjugate comprising the steps of:

(a) linking an amine-containing compound to one or more flavonoids to thereby form a flavonoid(s) bearing a free amine group; and

(b) conjugating the product of (a) with a polymer via nucleophilic addition.

Advantageously, the disclosed process of the fourth aspect may allow for the conjugation of the polymer to the flavonoid through an efficient and cost-effective process.

Definitions

The following words and terms used herein shall have the meaning indicated:

As used herein, the term "joint condition" refers to a condition involving the modulation of tumor-necrosis factor-α (TNF-α), interleukin-6 (IL-6), matrix metalloproteinase-1 (MMP-1), matrix metalloproteinase-3 (MMP-3) and/or matrix metalloproteinase-13 (MMP-13) expression(s). For example, the term "joint condition" refers to conditions associated with the joint and connective tissue of a subject and may include conditions such as arthritis, cartilage damage, joint pain, joint inflammation, systemic lupus erythematous, mixed

11. The use according to any one of claims 9 or 10, wherein the polysaccharide is hyaluronic acid, and the hyaluronic acid is conjugated to at least one epigallocatechin gallate.

12. The use according to any one of claims 10 or 11, wherein the polysaccharide is hyaluronic acid, and the hyaluronic acid is conjugated to two epigallocatechin gallate.

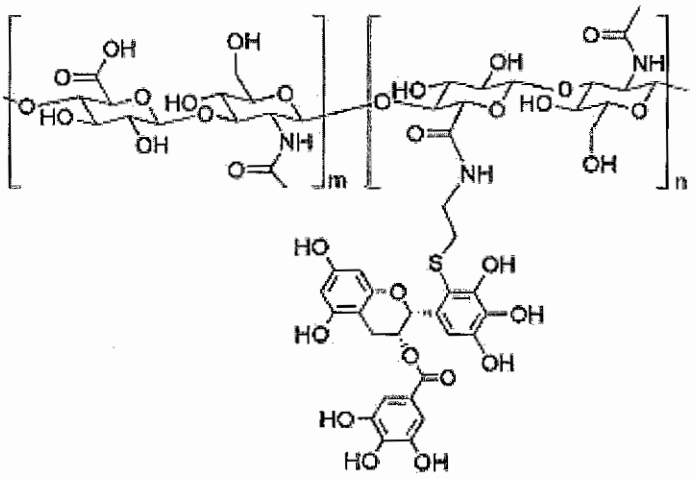
13. The use according to any one of claims 10 or 11, wherein the polysaccharide is hyaluronic acid, and the hyaluronic acid is conjugated to at least one epigallocatechin gallate via a thiol linker.

14. The use according to any one of claims 10, 11 or 13, wherein the polysaccharide is hyaluronic acid, and the hyaluronic acid is conjugated to at least one epigallocatechin gallate at the C2 and/or C6 ring of the B ring of said epigallocatechin gallate.

15. The use according to any one of claims 10 to 12 wherein the polysaccharide is hyaluronic acid, and the hyaluronic acid is conjugated to at least one epigallocatechin gallate at the C6 and/or C8 position of the A ring of said epigallocatechin gallate.

16. The use according to any one of claims 1 to 15, wherein the polymer-flavonoid conjugate is of Formula 1 or Formula 2:

17. Use of a polymer-flavonoid conjugate of Formula 1, or a pharmaceutically acceptable salt thereof, in the manufacture of a medicament for the therapeutic and/or prophylactic treatment of a joint condition in a subject:



Formula 1;

wherein:

each n is independently an integer from 0 to 50,000 inclusive; and each m is independently an integer from 0 to 50,000 inclusive, wherein n is not 0.

18. The use according to claim 16 or 17, wherein the polymer-flavonoid conjugate of Formula 1 or Formula 2 has a degree of conjugation from 0.1 to 50%.