Claims

1. A pharmaceutical composition comprising multiple dosage forms each comprising a core and an enteric coating comprising a pH sensitive polymer being selected such that the coating substantially dissolves and/or is substantially degraded in the terminal jejunum of a subject such that the core is released into the terminal jejunum of the subject, wherein the core comprises at least one compound selected from the group consisting of carbohydrates, fatty acids, bile acids, peptides, amino acids, alcohol amides, and anthocyanins, wherein the size of the dosage forms, with respect to the largest dimension of the dosage forms, is below 3 mm, wherein the composition further comprises a gelling composition containing one or more gelling agents, and wherein the multiple dosage forms and the gelling composition form a heterogenous mixture.

2. The composition of claim 1 wherein the size of each of the dosage forms, with respect to the largest dimension of the dosage forms, is from 0,6 mm to 2,6 mm, more preferably from 0,6 mm to 1,7 mm, even more preferred from 0,8 mm to 1,2 mm.

3. The composition of claim 2 containing 10000 to 40000 dosage forms, preferably 20000 to 30000 dosage forms.

4. The composition of claim 1 wherein the pH sensitive polymer substantially degrades and/or dissolves at a pH value of 5.5 to 7.5, preferably 7.2 to 7.3.

5. The composition of claim 4 wherein the pH sensitive polymer is selected from the group consisting of hydroxypropylmethyl celluloses and anionic copolymers of methacrylic acid and methacrylmethacrylate.

6. The composition of claim 1 wherein the core contains glucose, and optionally one or more compounds selected from sucralose, fatty acids having 2 to 6 carbon atoms, oleic acid, bile acids, peptides, amino acids, ethanolamides and anthocyanins.

7. The composition of claim 6 wherein the multiple dosage forms each have a glucose content of form 5 % (w/w) to 95 % (w/w). (w/w), preferably from 25 % (w/w) to 75 % (w/w), more preferably from 40 % (w/w) to 70 % (w/w).

8. The composition of claim 6 or 7 containing 0.5 g to 30 g glucose, preferably 5 g to 20 g glucose, more preferably 7 g to 15 g glucose, per unit dose of the composition.

9. The composition according to any one of the preceding claims wherein the enteroendocrine cells are selected from the group consisting of I cells, K cells and L cells.

10. The composition according to any one of the preceding claims wherein the core further contains a substance, preferably caffeine, enhancing enterokine release by the enteroendocrine cells effected by the compound stimulating enteroendocrine cells to release at least one enterokine, preferably the release of GLP-1 and/or PYY by L cells,

11. The composition according to any one of the preceding claims wherein the core further contains an enteroendocrine cell maturation agent, preferably a human milk oligosaccharide (HMO).

12. The composition according to any one of the preceding claims wherein the core contains at least one disintegrant providing a burst release of the ingredients of the core from the dosage form upon at least partial dissolving and/or degradation of the enteric coating.

13. The composition according to any one of the preceding claims wherein the multiple dosage forms and the gelling composition are present in a liquid medium, preferably water or an aqueous solution.

14. The composition according to any one of the preceding claims further comprising one or more pH modifiers, preferably contained in the gelling composition.

15. A pharmaceutical article comprising multiple dosage forms as defined according to any one of claims 1 to 12 and a gelling composition comprising at least one gelling agent and, optionally, one or more pH modifiers, wherein the multiple dosage forms and the gelling composition are physically separated.

16. The article of claim 15 further comprising a liquid medium physically separated from the multiple dosage forms and from the composition.

17. The article of claim 15 or 16 wherein the multiple dosage forms and the gelling composition and, optionally, the liquid medium, are provided in a single container comprising at least one compartment containing the multiple dosage form, at least one compartment containing the gelling composition and, optionally, at least one compartment containing the water or aqueous solution, wherein said compartments are separated by a breakable physical separation.

18. A pharmaceutical article comprising the composition according to any one of claims 1 to 14 and comprising a liquid medium physically separated from said composition.

19. The article of claim 18 wherein the composition and the liquid medium are provided in a single container comprising at least one compartment containing the composition and at least one compartment containing the liquid medium, wherein said compartments are separated by a breakable physical separation.

20. The article according to any one of claims 15 to 19 wherein the liquid medium is water or an aqueous solution.

21. Use of the pharmaceutical composition according to any one of claims 1 to 14 or the article according to any one of claim 15 to 20 in the manufacture of a medicament for the prevention and/or treatment of conditions and/or disorders and/or diseases associated with disturbed enterokine release by enteroendocrine cells and/or a condition and/or disorder and/or disease amenable to increased enterokine release by enteroendocrine cells.

22. The use of claim 21 wherein the condition, disorder or disease is selected from metabolic disorders, vascular disorders, neurodegenerative diseases, skeletal diseases and gastroenterologic disorders.

23. The use of claim 22 wherein the metabolic disorder is selected from the group consisting of insulin resistance, type 2 diabetes mellitus, non-alcoholic fatty liver disease, non-alcoholic steatohepatosis, metabolic syndrome, hyperlipidemia and obesity; and/or
wherein the vascular disorder is selected from microvascular dysfunction, cardiovascular diseases, cerebrovascular diseases and pulmonary vascular diseases; and/or
wherein the skeletal disease is osteoporosis, and/or

wherein the gastroenterological disorder is selected from the group consisting of impaired gastro-intestinal function and malabsorption conditions.

24. The use of claim 23 wherein the metabolic disorder, is associated with adipose tissue inflammation.

25. The use of claim 23 wherein the pulmonary disease is associated with pneumonia.

26. The composition or article for use of claim 25 wherein the pneumonia is caused by or associated with a viral infection., preferably an infection by a coronavirus causing a respiratory condition, more preferably the viral infection is an infection by a coronavirus selected from the group consisting of SARS-COV-1, SARS-COV-2 and MERS.

27. The composition or article for use according to any one of claims 21 to 26 wherein said condition, disorder or disease is accompanied by at least one condition selected from the group consisting of swallowing difficulty, impaired esophageal peristalsis, gastroparesis and impaired intestinal peristalsis.