SUMMARY

The object of the disclosure is a nutrition composition, typically an anti–regurgitation and/or anti–reflux composition (designated below more generally as an "anti–regurgitation nutrition composition" or "anti–regurgitation composition"), for infants or children, which preferably alters less than the compositions of the prior art, ideally does not alter the gut motility of said infant or said child, or in other words allows preserving his/her gut motility and therefore limiting or reducing, ideally avoiding, constipation, soft stools, liquid stools, too frequent stools and/or colics, preferably constipation, soft stools, liquid and/or too frequent stools. In a particular embodiment, the composition according to the disclosure is, independently of its anti–regurgitation and/or anti–reflux action, capable of restoring gut motility in infants or children suffering from annoyances associated with an alteration of said transit. This composition comprises cold–soluble carob and pectins, preferably cold–soluble carob and at least two pectins of different natures.

In an aspect, there is provided a nutritional composition for infants or children, characterized in that said composition comprises cold–soluble carob having solubility fo more than 60% in an aqueous medium at a temperature between 10°C and 45°C and at least two pectins of different natures.

In another aspect, there is provided a method for preparing a nutritional composition for infants or children as a powder, ~~said composition being a nutritional composition for infants or children described herein, which preferably is an anti–regurgitation and/or anti–reflux composition, and/or a composition not altering the gut motility or allowing it to be restored,~~ said method comprising the steps of:

a) preparing a liquid composition base, for which the dry material content is of at least 20% by weight based on the total weight of said composition, by mixing, with stirring, at a temperature of at least 60°C, the constitutive elements of said composition, said elements comprising at least two pectins of different nature and cold–soluble carob having solubility fo more than 60% in an aqueous medium at a temperature between 10°C and 45°C, the cold–soluble carob concentration being less than or equal to about 1% by weight based on the total weight of said composition,

b) homogenizing the liquid base obtained at the end of step a) by fractionation of the constitutive elements during a first step i) carried out under a pressure comprised

between 100 and 300 bars and during a step ii) carried out under a pressure comprised between 10 and 60 bars,

c) drying by atomization of the mixture obtained at the end of step b), and

d) recovering the composition obtained at the end of step c) as a powder.

Another aspect relates to a nutritional composition for infants or children as a powder obtainable by the methods disclosed herein.

Another aspect relates to the use of the compositions described herein for preventing, limiting or suppressing the regurgitation and/or reflux symptoms.

In a further aspect, there is provided the use of the composition described herein, in the manufacture of a medicament for reducing or avoiding at least one, preferably at least two, still more preferentially the whole of the following intestinal disorders: constipation, soft, liquid and/or too frequent stools.

In another aspect, there is provided the use of the composition described herein, in the manufacture of a medicament for preserving or restoring gut motility of the infant or of the child.~~; or wherein the medicament is for the treatment of regurgitation and the prevention of intestinal disorders of the infant or of the child.~~

In yet another aspect, there is provided the use of the composition described herein, in the manufacture of a medicament for ~~restoring gut motility of the infant or of the child; or wherein the medicament is for the~~ preventing or treating~~ment of~~ regurgitation and/or reflux, ~~as well as of~~ and constipation, soft stools and/or ~~of~~ diarrheas of the infant or of the child.

The compositions according to the disclosure, notably the anti–regurgitation (and/or anti–reflux) compositions, advantageously have a viscosity of at least 150 mPa.s (i.e. at least 150 centipoises or 150 cP), preferably of at least 300 mPa.s, still more preferentially of at least 600 mPa.s, from pH = 6, at a temperature comprised between 35 and 40°C, typically of about 37°C.

These compositions allow reducing or avoiding at least one, preferably at least two, still more preferentially the whole of the following intestinal disorders: constipation, soft stools, liquid and/or too frequent stools (diarrhea), colics.

Advantageously, the viscosity is evaluated by means of a viscosimeter of the Brookfield (DV–I Prime) type at a temperature comprised between 35 and 40°C, typically of about 37°C, with a cylinder–shaped module S61 or a disc–shaped module S62 and rotary speeds varying from 12 to 100, for example from 20 to 100 revolutions per minute (rpm) depending on the measured viscosity values.

It is also possible to measure the time of flow of a constant volume of product through a calibrated orifice.

CLAIMS

1. A nutritional composition for infants or children, characterized in that said composition comprises cold–soluble carob having solubility of more than 60% in an aqueous medium at a temperature between 10°C and 45°C and at least two pectins of different natures.

~~2. The composition according to claim 1, characterized in that said composition is an anti–regurgitation and/or anti–reflux composition.~~

~~3. The composition according to claim 1 or 2, characterized in that said composition does not alter gut motility (intestinal transit) of the infant or of the child.~~

~~4. The composition according to any one of claims 1 to 3, characterized in that said composition allows restoration of gut motility of the infant or of the child.~~

~~5.~~2. The composition according to ~~any one of~~ claim~~s~~ 1 ~~to 4~~, characterized in that the concentration of cold–soluble carob is less than or equal to about 1% by weight based on the total weight of the composition.

~~6.~~3. The composition according to ~~any one of~~ claim~~s~~ 1 ~~to~~or ~~5~~2, characterized in that the pectins are highly methylated pectins, weakly methylated pectins, or a mixture of both.

~~7.~~4. The composition according to any one of the preceding claims, characterized in that it further comprises starch.

~~8.~~5. The composition according to any one of the preceding claims, characterized in that it further comprises carbohydrates, said carbohydrates preferably being lactose and/or maltodextrins; lipids; proteins, said proteins being either hydrolyzed or not; and/or amino acids.

~~9.~~6. The composition according to any one of the preceding claims, characterized in that it has a viscosity ~~of at least~~ between 1 600 mPa.s and 150 mPa.s when ~~from pH=6~~the pH is between 6 and 3.5 and the temperature is between 35°C and 40°C.

~~10. The composition according to any one of claims 1 to 9, characterized in that it allows reducing or avoiding at least one, preferably at least two, still more preferentially the whole of the following intestinal disorders: constipation, soft, liquid and/or too frequent stools.~~

~~11.~~7. The composition according to any one of the preceding claims, characterized in that it comprises cold–soluble carob at a percentage of less than about 1% by weight, preferably about 0.5% by weight; weakly methylated amidated pectins at a concentration comprised between about 4% and about 5% by weight; highly methylated pectins at a concentration of about 1% by weight; and preferably starch at a concentration comprised between about 0.5% and about 5% by weight; said percentages being expressed by weight based on the total weight of the composition.

~~12.~~8. The composition according to any one of the preceding claims, characterized in that it is a powder.

~~13.~~9. The composition according to any one of the preceding claims, for use in an infant milk, a food supplement for infants, a follow–up milk, a growth milk, or a dietetic food.

~~14.~~10. A method for preparing a nutritional composition for infants or children as a powder, ~~said composition being a nutritional composition for infants or children according to claim 1, which preferably is an anti regurgitation and/or anti reflux composition, and/or a composition not altering the gut motility or allowing it to be restored~~, said method comprising the steps of:

a) preparing a liquid composition base, for which the dry material content is of at least 20% by weight based on the total weight of said composition, by mixing, with stirring, at a temperature of at least 60°C, the constitutive elements of said composition, said elements comprising at least two pectins of different nature and cold–soluble carob having solubility of more than 60% in an aqueous medium at a temperature between 10°C and 45°C, the cold–soluble carob concentration being less than or equal to about 1% by weight based on the total weight of said composition,

b) homogenizing the liquid base obtained at the end of step a) by fractionation of the constitutive elements during a first step i) carried out under a pressure comprised

between 100 and 300 bars and during a step ii) carried out under a pressure comprised between 10 and 60 bars,

c) drying by atomization of the mixture obtained at the end of step b), and

d) recovering the composition obtained at the end of step c) as a powder.

~~15~~11. A method for preparing a nutritional composition as a powder according to claim ~~14~~ 10, characterized in that said at least two pectins of different natures correspond to at least one weakly methylated pectin and to at least one highly methylated pectin.

~~16~~12. A method for preparing a nutritional composition according to claim ~~14 or 15~~10 or 11, further comprising a step for applying to the liquid base obtained at the end of step a) or at the end of step b), a heat treatment at a temperature comprised between 60°C and 110°C for a sufficient time for pasteurizing said base, and allowing recovery of a pasteurized composition as a powder at the end of step d).

~~17~~13. The method according to any one of claims ~~14 to 16~~10 to 12, characterized in that the composition is a dietetic food intended for special medical purposes, in particular an anti–regurgitation and/or anti–reflux infant milk, and/or not altering the gut motility or allowing it to be preserved or to be restored, and in that the liquid base is a liquid base of a dietetic food intended for special medical purposes, in particular a liquid infant milk base.

~~18~~14. The method according to any one of claims ~~14 to 17~~10 to 13, characterized in that the dry material content of the liquid base is of at least 35% by weight based on the total weight of the liquid base.

~~19~~15. The method according to any one of claims ~~14 to 18~~10 to 14, characterized in that the constitutive elements of the composition further comprise pre–cooked and/or pre–gelatinized starch.

~~20. The composition according to claim 1, characterized in that said composition preserves gut motility of the infant or of the child for a combined use in the treatment of regurgitation and prevention of intestinal disorders of the infant or of the child.~~

~~21. The composition according to claim 1, characterized in that said composition restores gut motility of the infant or of the child for a combined use in the treatment of regurgitation, as well as of constipation, soft stools and/or of diarrheas of the infant or of the child.~~

16. A nutritional composition for infants or children as a powder obtainable by the method according to any one of claims 10 to 15.

17. Use of the composition according to claim 1 or 16 for preventing, limiting or suppressing the regurgitation and/or reflux symptoms.

18. Use of the composition according to claim 1, 16 or 17, characterized in that said composition does not alter and/or restores gut motility of infants or children.

~~22~~19. Use of the composition according to any one of claims 1 to ~~9~~8, in the manufacture of a medicament for reducing or avoiding at least one, preferably at least two, still more preferentially the whole of the following intestinal disorders: constipation, soft, liquid and/or too frequent stools.

~~23~~20. Use of the composition according to any one of claims 1 to 8, in the manufacture of a medicament for preserving or restoring gut motility of the infant or of the child~~; or wherein the medicament is for the treatment of regurgitation and the prevention of intestinal disorders of the infant or of the child~~.

21. Use of the composition according to any one of claims 1 to 8, in the manufacture of a medicament for preventing or treating regurgitation and/or reflux of the infant or of the child.

~~24~~22. Use ~~of the composition~~ according to claim 21~~, in the manufacture of a medicament for restoring gut motility of the infant or of the child; or wherein the medicament is~~ for preventing or treating ~~the treatment of~~ regurgitation and/or reflux~~, as well as of~~ and constipation, soft stools and/or ~~of~~ diarrheas of the infant or of the child.