It was another object of the invention to provide tablets based on allulose, i.e. tablets exhibiting high amounts of allulose, and at the same time, satisfying hardness.

BRIEF DESCRIPTION OF THE INVENTION

In a first aspect, the invention is directed to the use of allulose as a direct compression excipient in a directly compressible composition, said allulose having a purity equal to or greater than 90.0% and being compressible in the sole presence of a lubricant, to form a tablet having a diameter of 13 mm, a weight of 800 +/-5 mg, a cylindrical shape with convex faces with a radius of curvature of 13 mm, whose hardness is greater than 50 N, preferably greater than 60 N, preferably greater than 70 N, preferably greater than 80 N, preferably greater than 90 N preferably greater than 100 N, preferably greater than 110 N, even more preferably greater than 120 N, at at least one compression force ranging from 5 to 20 kN, the ejection force being lower than 1200 N, preferably lower than 1000 N, preferably lower than 600 N, even more preferably lower than 500 N.

In one embodiment, the invention is directed to the use of allulose as a direct compression excipient in a directly compressible composition.

In a second aspect, the invention is directed to allulose, having a purity equal to or greater than 90.0%, which is compressible in the sole presence of a lubricant, to form a tablet having a diameter of 13 mm, a weight of 800 +/-5 mg, a cylindrical shape with convex faces with a radius of curvature of 13 mm, whose hardness is greater than 50 N, preferably greater than 60 N, preferably greater than 70 N, preferably greater than 80 N, preferably greater than 90 N preferably greater than 100 N, preferably greater than 110 N, even more preferably greater than 120 N, at least one compression force ranging from 5 to 20 kN, the ejection force being lower than 1200 N, preferably lower than 1000 N, preferably lower than 600 N, even more preferably lower than 500 N.

In another embodiment, the invention provides allulose, particularly suitable for such use, which is compressible in the sole presence of a lubricant, to form a tablet having a diameter of 13 mm, a weight of 800 +/-5 mg, a cylindrical shape with convex faces with a radius of curvature of 13 mm, whose hardness is greater than 50 N, at at least one compression force chosen within the range of 5 to 20 kN, the ejection force being lower than 1200 N.

In third aspect, the invention provides a directly compressible composition comprising allulose, wherein allulose represents at least 30 % of said directly compressible composition, said percentage being expressed in dry weight, with respect to the total dry weight of said directly compressible composition.

In a fourth aspect, the invention provides a method for the manufacture of a tablet, comprising the steps of: providing a directly compressible composition according to the invention; followed by directly compressing the composition to form the tablet.

In a fifth aspect, the invention provides a tablet comprising allulose and wherein allulose represents at least 30 % of said tablet, said percentage being expressed in dry weight, with respect to the total dry weight of said tablet.

In another aspect, there is disclosed a process for the manufacture of allulose as disclosed herein, the process comprising:a step (a) of providing allulose obtained by crystallization in water or in a mixture of ethanol and water, preferably in water alone; a step (b) of grinding allulose obtained in step (a); a step (c) of sieving the allulose obtained in step (b), so as to obtain allulose having mean volume diameter D 4.3 greater than 45 µm and equal to or lower than 310 µm, preferably equal to or lower than 250 µm, preferably equal to or lower than 200 µm, preferably equal to or lower than 125 µm; a step (d) of recovering the allulose obtained in step (c).

DETAILED DESCRIPTION OF THE INVENTION

The inventors succeeded in obtaining compositions based on allulose, suitable for direct compression, as evidenced in Examples 1, section 2), Figure 1. These directly compressible compositions allowed the formation of tablets having great hardness, greater than 50 N, when compressed at satisfying compression forces which do not need to exceed 20 kN, and at the same time, satisfying ejection forces were measured. These compositions had high amounts of allulose, and no other compression excipient was required to obtain these results.

CLAIMS

1. Use of allulose as a direct compression excipient in a directly compressible composition, said allulose having a purity equal to or greater than 90.0% and being compressible in the sole presence of a lubricant, to form a tablet having a diameter of 13 mm, a weight of 800 +/-5 mg, a cylindrical shape with convex faces with a radius of curvature of 13 mm, whose hardness is greater than 50 N, preferably greater than 60 N, preferably greater than 70 N, preferably greater than 80 N, preferably greater than 90 N preferably greater than 100 N, preferably greater than 110 N, even more preferably greater than 120 N, at at least one compression force ranging from 5 to 20 kN, the ejection force being lower than 1200 N, preferably lower than 1000 N, preferably lower than 600 N, even more preferably lower than 500 N.

2. The use of claim 1, wherein the allulose is further used as a sweetener.

3. Allulose, having a purity equal to or greater than 90.0%, which is compressible in the sole presence of a lubricant, to form a tablet having a diameter of 13 mm, a weight of 800 +/-5 mg, a cylindrical shape with convex faces with a radius of curvature of 13 mm, whose hardness is greater than 50 N, preferably greater than 60 N, preferably greater than 70 N, preferably greater than 80 N, preferably greater than 90 N preferably greater than 100 N, preferably greater than 110 N, even more preferably greater than 120 N, at at least one compression force ranging from 5 to 20 kN, the ejection force being lower than 1200 N, preferably lower than 1000 N, preferably lower than 600 N, even more preferably lower than 500 N.

4. The allulose of claim 3, wherein said allulose is crystalline allulose, preferably obtained by crystallization in water or in a mixture of ethanol and water, preferably in water alone, wherein said crystalline allulose has mean volume diameter D 4,3 greater than 45 µm and equal to or lower than 310 µm, preferably equal to or lower than 250 µm, preferably equal to or lower than 200 µm, preferably equal to or lower than 125 µm.

5. The allulose according to claims 3 or 4, wherein said allulose has a bulk density between 0.50 to 1.10 g/mL, preferably between 0.60 and 1.00 g/mL, preferably between 0.70 and 0.90 g/mL, even more preferably between 0.80 and 0.90 g/mL.

6. The allulose according to anyone of claims 3 to 5, wherein said allulose has a tapped density between 0.60 to 1.20 g/mL, preferably between 0.70 and 1.10 g/mL, preferably between 0.80 and 1.00 g/mL, even more preferably between 0.90 and 1.00 g/mL.

7. A directly compressible composition comprising the allulose of any one of claims 3 to 6, wherein said allulose represents at least 30 % of said directly compressible composition, preferably at least 40 %, preferably at least 50 %, preferably at least 60 %, preferably at least 70 %, preferably at least 80 %, preferably at

least 90 %, typically between 90 and 99 %, said percentage being expressed in dry weight with respect to the total dry weight of said directly compressible composition.

8. The directly compressible composition of claim 7, comprising no more than 60 % of direct compression excipient other than allulose, preferably no more than 50 %, preferably no more than 40 %, preferably no more than 30 %, preferably no more than 20 %, preferably no more than 10%, preferably no more than 5 %, more preferably no more than 2 %, and most preferably 0 %, said percentage being expressed in dry weight, with respect to the total dry weight of said directly compressible composition.

9. A method for the manufacture of a tablet, comprising the steps of:
- providing a directly compressible composition according to any one of claims 7 or 8; and
- directly compressing the composition to form the tablet.

10. A tablet comprising allulose of any one of the claims 3 to 6, wherein allulose represents at least 30 % of said tablet, preferably at least 40 %, preferably at least 50 %, preferably at least 60 %, preferably at least 70 %, preferably at least 80 %, preferably at least 90 %, typically between 90 and 99 %, said percentage being expressed in dry weight with respect to the total dry weight of said tablet.

11. The tablet of claim 10, wherein said tablets comprises no more than 60 % of direct compression excipient other than allulose, preferably no more than 50 %, preferably no more than 40 %, preferably no more than 30 %, preferably no more than 20 %, preferably no more than 10 %, preferably no more than 5 %, more preferably no more than 2 %, and most preferably 0 %, said percentage being expressed in dry weight with respect to the total dry weight of said tablet.

12. The tablet according to claims 10 or 11, wherein said tablet is a sweet tablet, having caloric value lower than 5 kcal/g, preferably lower than 4 kcal/g, preferably lower than 3 kcal/g, preferably lower than 2 kcal/g, even more preferably lower than 1 kcal/g.

13. The tablet according to anyone of claims 10 to 12, having hardness greater than 50 N, preferably greater than 60 N, preferably greater than 70 N, preferably greater than 80 N, preferably greater than 90 N preferably greater than 100 N, preferably greater than 110 N, preferably greater than 120 N, even more preferably greater than 130 N.

14. A process for the manufacture of allulose such as defined in anyone of claims 3 to 6, comprising:

- a step (a) of providing allulose obtained by crystallization in water or in a mixture of ethanol and water, preferably in water alone;