CLAIMS

1. A method for providing a food grade thickener, the method comprising the steps of:

providing an aqueous phase,

adding a polysaccharide to the aqueous phase thereby forming a gelled mixture, wherein the polysaccharide is selected from the group consisting of: sodium carboxymethylcellulose, agar, alginic acid, carrageenan, guar gum, gum tragacanth, gum ghatti, microcrystalline cellulose, methyl cellulose, hydroxypropylmethylcellulose, hydroxypropylcellulose, methylethylcellulose, gum karaya, locust bean gum, tara gum, psyllium seed gum, quince seed gum, a pectin, furcellaran, gellan gum, konjac, sodium alginate, xanthan gum or a combination thereof,

hydrolysing the gelled mixture for a duration of 2 hours to 72 hours to reduce the viscosity of the gelled mixture to a viscosity of less than 140 cP measured at 20°C using a Brookfield viscometer #3 spindle at 5 rpm, and

adding a gum to the hydrolysed gelled mixture, wherein the gum is added in a concentration of 2 to 30 wt%, and wherein the gum is selected from the group consisting of: xanthan gum, agar, alginic acid, carrageenan, guar gum, gum tragacanth, gum ghatti, microcrystalline cellulose, sodium carboxymethylcellulose, methyl cellulose, hydroxypropylmethylcellulose, hydroxypropylcellulose, methylethylcellulose, gum karaya, locust bean gum, tara gum, psyllium seed gum, quince seed gum, a pectin, furcellaran, gellan gum, konjac, sodium alginate, fenugreek gum, guar gum, tara gum and locust bean gum and any combination thereof,

thereby forming the food grade thickener.

2. The method according to any one of the preceding claims, wherein the polysaccharide is added to the aqueous phase in a concentration of 0.5 to 30 wt%.

3. The method according to any one of the preceding claims, wherein the gelled mixture is hydrolysed at a temperature of 50 to 95°C.

4. The method according to any one of the preceding claims, wherein the gelled mixture is acid hydrolysed to produce the hydrolysed gelled mixture.

5. The method according to any one of the preceding claims, wherein the hydrolysed gelled mixture has a viscosity of between 40-150 cP measured at 20°C using a Brookfield viscometer #1 spindle at 10 rpm.

6. The method according to any one of claims 1 to 5, wherein the polysaccharide comprises sodium carboxymethylcellulose.

7. The method according to any one of claims 1 to 6, wherein the gum comprises xanthan gum.

8. A food grade thickenercomprising:
a hydrolysed polysaccharide selected from the group consisting of: sodium carboxymethylcellulose, agar, alginic acid, carrageenan, guar gum, gum tragacanth, gum ghatti, microcrystalline cellulose, methyl cellulose, hydroxypropylmethylcellulose, hydroxypropylcellulose, methylethylcellulose, gum karaya, locust bean gum, tara gum, psyllium seed gum, quince seed gum, a pectin, furcellaran, gellan gum, konjac, sodium alginate, xanthan gum or a combination thereof, wherein a 2% solution of the hydrolysed polysaccharide has a viscosity of less than 140 cP measured at 20°C using a Brookfield viscometer #3 spindle at 5 rpm,
a gum selected from the group consisting of: xanthan gum, agar, alginic acid, carrageenan, guar gum, gum tragacanth, gum ghatti, microcrystalline cellulose, sodium carboxymethylcellulose, methyl cellulose, hydroxypropylmethylcellulose, hydroxypropylcellulose, methylethylcellulose, gum karaya, locust bean gum, tara gum, psyllium seed gum, quince seed gum,

a pectin, furcellaran, gellan gum, konjac, sodium alginate, fenugreek gum, guar gum, tara gum and locust bean gum and any combination thereof.

9. The food grade thickener according to claim 8, wherein the food grade thickener is stable for at least six months.

10. The food grade thickener according to claim 8 or claim 9, wherein the food grade thickener has a viscosity of 500 cP to 10,000 cP measured at 20°C using a Brookfield viscometer #3 spindle at 5 rpm.

11. The food grade thickener according to any one of claims 8 to 10, wherein the food grade thickener has a resistance to flow of greater than 12cm at 20°C at 30 seconds measured using a Bostwick consistometer.

12. The food grade thickener according to any one of claims 8 to 11, wherein a 7 wt% solution of the food grade thickener and water has a transmittance of > 90% at 650nm when measured using a 1cm path length.

13. The food grade thickener according to any one of claims 8 to 12, wherein the hydrolysed polysaccharide comprises sodium carboxymethylcellulose.

14. The food grade thickener according to any one of claims 8 to 13, wherein the gum comprises xanthan gum.

15. A method for increasing the viscosity of an aqueous liquid or aqueous liquid solid mixture foodstuff, the method comprising the step of adding to the foodstuff the food grade thickener according to any one of claims 8 to 14.

16. The method according to claim 15, wherein the amount of food grade thickener that is added is 1 to 30 wt%.

17. The method according to claim 15 or claim 16, wherein adding the food grade thickener to the foodstuff causes the viscosity of the foodstuff is increased to at least 95 cP.

18. Use of the food grade thickener according to any one of claims 8 to 14, or produced by the method according to any one of claims 1 to 7, in the preparation of a food for feeding a subject suffering a mastication and/or deglutition disease, disorder or condition.

19. A storage and delivery system for a food grade thickener, comprising:

the food grade thickener according to any one of claims 8 to 14, or produced by the method according to any one of claims 1 to 7,

a container containing the food grade thickener, and

a pump dispenser sealingly attached to the container, said dispenser comprising a valve for inhibiting or preventing drying of the food grade thickener in the container.

20. A kit for a storage and delivery system for a food grade thickener, comprising:

the food grade thickener according to any one of claims 8 to 14, or produced by the method according to any one of claims 1 to 7,

a container containing the food grade thickener, and

a pump dispenser for attachment to the container, wherein said pump dispenser comprises a valve for inhibiting or preventing drying of the food grade thickener in the container.

21. A method of delivering a food grade thickener to an aqueous liquid or aqueous liquid solid mixture foodstuff, the method comprising the steps of:

providing a container containing the food grade thickener according to any one of claims 8 to 14, or produced by the method according to any one of claims 1 to 7 and

applying a force to a pump dispenser sealingly attached to the container,

said dispenser comprising a valve for inhibiting or preventing drying of the food grade thickener in the container, to thereby deliver one or more doses of a predetermined volume of the food grade thickener to the foodstuff.

22. The system of claim 17, or the kit of claim 18, or the method of claim 19, wherein one, two and three doses of a predetermined volume of the food grade thickener increases the viscosity of said foodstuff to first, second and third viscosity levels respectively and wherein a nonlinear relationship exists between the first, second and third viscosity levels.

23. The system of claim 19 or claim 22, or the kit of claim 20 or claim 22, or the method of claim 21 or claim 22, wherein the valve is or comprises a self- sealing valve.

24. The system of claim 23, or the kit of claim 23, or the method of claim 23, wherein the valve is selected from the group consisting of a cross-slit valve, a ball valve, a flapper valve, an umbrella valve, a duck bill valve, a reed valve and any combination thereof.

25. The system of claim 23, or the kit of claim 23, or the method of claim 23, wherein the valve is biased to a closed position and is actuated to an open position upon application of a force to the pump dispenser forcing said composition to flow through the valve.

26. The system of any one of claims 19 or 22-25, or the kit of any one of claims 20 or 22-25, or the method of any one of claims 21-25, wherein the pump dispenser comprises a dispenser tip, the dispenser tip including the valve disposed therein.

27. A composition for feeding a subject with a swallowing disorder comprising a

pourable, food grade thickener, having a viscosity of between 500 cP to 10 000 cP measured at 20°C using a Brookfield viscometer #3 spindle at 5 rpm, and a resistance to flow of greater than 12cm at 20°C at 30 seconds measured using a Bostwick consistometer and wherein a 7 wt% solution of the food grade thickener and water has a transmittance of > 90% at 650nm when measured with a 1 cm path length,

wherein the food grade thickener comprises:

a hydrolysed polysaccharide selected from the group consisting of: sodium carboxymethylcellulose, agar, alginic acid, carrageenan, guar gum, gum tragacanth, gum ghatti, microcrystalline cellulose, methyl cellulose, hydroxypropylmethylcellulose, hydroxypropylcellulose, methylethylcellulose, gum karaya, locust bean gum, tara gum, psyllium seed gum, quince seed gum, a pectin, furcellaran, gellan gum, konjac, sodium alginate, xanthan gum or a combination thereof, wherein a 2% solution of the hydrolysed polysaccharide has a viscosity of less than 140 cP measured at 20°C using a Brookfield viscometer #3 spindle at 5 rpm

a gum selected from the group consisting of: xanthan gum, agar, alginic acid, carrageenan, guar gum, gum tragacanth, gum ghatti, microcrystalline cellulose, sodium carboxymethylcellulose, methyl cellulose, hydroxypropylmethylcellulose, hydroxypropylcellulose, methylethylcellulose, gum karaya, locust bean gum, tara gum, psyllium seed gum, quince seed gum, a pectin, furcellaran, gellan gum, konjac, sodium alginate, fenugreek gum, guar gum, tara gum and locust bean gum and any combination thereof.

28. The composition according to claim 27, wherein the hydrolysed polysaccharide comprises sodium carboxymethylcellulose.

29. The composition according to claim 27 or claim 28, wherein the gum comprises xanthan gum.

30. A method for providing a food grade thickener, the method comprising the steps

of:

establishing an aqueous continuous phase of a first polysaccharide, wherein the first polysaccharide is selected from the group consisting of: gellan gum, agar, alginic acid, carrageenan, guar gum, gum tragacanth, gum ghatti, microcrystalline cellulose, sodium carboxymethylcellulose, methyl cellulose, hydroxypropylmethylcellulose, hydroxypropylcellulose, methylethylcellulose, gum karaya, locust bean gum, tara gum, psyllium seed gum, quince seed gum, a pectin, furcellaran, konjac, sodium alginate or xanthan gum and any combination thereof,

adding a second polysaccharide to the continuous phase thereby forming a gelled mixture, wherein the second polysaccharide is selected from the group consisting of: sodium carboxymethylcellulose, agar, alginic acid, carrageenan, guar gum, gum tragacanth, gum ghatti, microcrystalline cellulose, methyl cellulose, hydroxypropylmethylcellulose, hydroxypropylcellulose, methylethylcellulose, gum karaya, locust bean gum, tara gum, psyllium seed gum, quince seed gum, a pectin, furcellaran, gellan gum, konjac, sodium alginate, xanthan gum or a combination thereof,

hydrolysing the gelled mixture for a duration of 2 hours to 72 hours to reduce the viscosity of the gelled mixture a viscosity of less than 140 cP measured at 20°C using a Brookfield viscometer #3 spindle at 5 rpm, and adding a gum to the hydrolysed gelled mixture, wherein the gum is added in a concentration of 2 to 30 wt%, and wherein the gum is selected from the group consisting of: xanthan gum, agar, alginic acid, carrageenan, guar gum, gum tragacanth, gum ghatti, microcrystalline cellulose, sodium carboxymethylcellulose, methyl cellulose, hydroxypropylmethylcellulose, hydroxypropylcellulose, methylethylcellulose, gum karaya, locust bean gum, tara gum, psyllium seed gum, quince seed gum, a pectin, furcellaran, gellan gum, konjac, sodium alginate, fenugreek gum, guar gum, tara gum and locust bean gum and any combination thereof,

thereby forming the food grade thickener.

31. The method according to claim 30, wherein the aqueous continuous phase comprises between 0.002 to 1.0 wt.% of the first polysaccharide.

32. The method according to claim 30 or claim 31, wherein the aqueous continuous phase is heated to melt the first polysaccharide.

33. The method according to any one of claims 30-32, wherein the second polysaccharide is added in a concentration of 0.5 to 30 wt% to the aqueous phase.

34. The method according to any one of claims 30-33, wherein the gelled mixture is hydrolysed at a temperature of 50 to 95°C.

35. The method according to any one of claims 30-34, wherein the gelled mixture is acid hydrolysed to produce a hydrolysed gelled mixture.

36. The method according to any one of claims 30-35, wherein the hydrolysed gelled mixture has a viscosity of between 40-150 cP measured at 20°C using a Brookfield viscometer #1 spindle at 10 rpm.

37. The method according to any one of claims 30 to 36, wherein the first polysaccharide comprises gellan gum.

38. The method according to any one of claims 30 to 37, wherein the second polysaccharide comprises sodium carboxymethylcellulose.

39. The method according to any one of claims 30 to 38, wherein the gum comprises xanthan gum.