SUMMARY OF THE INVENTION

[004] In one ~~aspect~~embodiment, the ~~invention~~ disclosure provides a dry stabilizing composition for a bioactive material, including a carbohydrate component including between about 10% and 80% oligosaccharide, between about 5% and 30% disaccharide and between about 1% and 10%) polysaccharide; and a protein component including between about 0.5% and 40% hydrolyzed animal or plant proteins; based on the total weight of the composition. The composition may be combined with a bioactive material.

[005] In another ~~aspect~~embodiment, the ~~invention~~ disclosure provides a method of producing the above composition combined with the bioactive material, including: (a) combining the bioactive material with at least the carbohydrate component and the protein component in an aqueous solvent to form a viscous slurry; (b) snap-freezing the slurry in liquid nitrogen to form solid frozen particles, beads, droplets or strings; (c) primary drying by water removal under vacuum of the product of step (b) while maintaining it at a temperature above its freezing temperature; and (d) secondary drying of the product of step (c) at maximum vacuum and a temperature of 20°C or higher for a time sufficient to reduce the water activity to below 0.3 Aw.

[006] In another ~~aspect~~embodiment, the ~~invention~~ disclosure provides a tablet, pill or pellet made by compaction of a sensitive bioactive material embedded in a dry glassy and amorphous composition including one or more sugars and one or more hydrolyzed proteins, wherein the sugars include between about 10% and 60% and the hydrolyzed proteins include between about 1% and 40% based on the total dry weight of the composition.

[007] In yet another ~~aspect~~embodiment, the ~~invention~~ disclosure provides a method for producing the above-mentioned tablet, pill or pellet, including compacting the sensitive bioactive material embedded in the dry glassy and amorphous composition, wherein the dry glassy and amorphous composition is made by a process including: (a) combining a bioactive material with at least the one or more sugars and the one or more hydrolyzed proteins in an aqueous solvent to form a viscous slurry; (b) snap-freezing the slurry in liquid nitrogen to form solid frozen particles, beads, droplets or strings; (c) primary drying by water removal under vacuum of the product of step (b) while maintaining it at a temperature above its freezing temperature; and (d) secondary drying of the product of step (c) at maximum vacuum and temperature of 20°C or higher for a time sufficient to reduce the water activity to below 0.3 Aw.

[007a] In one aspect of the invention, there is provided a dry stabilizing composition for a bioactive material, comprising a carbohydrate component comprising one or more oligosaccharides, one or more disaccharides and one or more polysaccharides; and a protein

component comprising one or more hydrolyzed animal or plant proteins. The composition may be combined with the bioactive material.

[007b] In yet another aspect, there is provided a method for producing the composition disclosed above, the method comprising: (a) combining the bioactive material with at least the carbohydrate component and the protein component in an aqueous solvent to form a viscous slurry; (b) snap-freezing the slurry in liquid nitrogen to form solid frozen particles, beads, droplets or strings; (c) primary drying by water removal under vacuum of the product of step (b) while maintaining it at a temperature above its freezing temperature; and (d) secondary drying of the product of step (c) at maximum vacuum and a temperature of 20°C or higher for a time sufficient to reduce the water activity to below 0.3 Aw.

[007c] Another aspect provides a reconstituted liquid, a ground powder, a tablet, a pellet, a capsule, a food or feed or coated seed product comprising the composition disclosed above.

[007d] Still another aspect provides a nutraceutical, pharmaceutical agricultural or vaccine product comprising the composition disclosed above.

[007e] Another aspect provides a food, food additive, animal feed, animal feed additive, nutraceutical, pharmaceutical, agricultural or vaccine product in the form of a bar, liquid formula, colloidal suspension, powder, tablet, capsule and coated seed, comprising the composition disclosed above.

[007f] Yet another aspect provides a tablet, pill or pellet made by compaction of a sensitive bioactive material embedded in a dry glassy and amorphous composition comprising one or more sugars and one or more hydrolyzed proteins, wherein the sugars comprise between about 10% and 60% and the hydrolyzed proteins comprise between about 1 % and 40% based on the total dry weight of the composition.

[007g] Another aspect provides a method for producing the tablet, pill or pellet disclosed herein, comprising compacting the sensitive bioactive material embedded in the dry glassy and amorphous composition, wherein the dry glassy and amorphous composition is made by a process comprising: (a) combining a bioactive material with at least the one or more sugars and the one or more hydrolyzed proteins in an aqueous solvent to form a viscous slurry; (b) snap-freezing the slurry in liquid nitrogen to form solid frozen particles, beads, droplets or strings; (c) primary drying by water removal under vacuum of the product of step (b) while maintaining it at a temperature above its freezing temperature; and (d) secondary drying of the product of step (c) at maximum vacuum and temperature of 20°C or higher for a time sufficient to reduce the water activity to below 0.3 Aw.

[007h] Another aspect provides a beverage, food, animal feed, nutraceutical, pharmaceutical, agricultural or vaccine product comprising the tablet, pill or pellet disclosed herein.