gelatin) to manufacture a hemostatic matrix. The present composition use non-animal, plant based polysaccharide/starch polymers to make the hemostatic matrix.

[0006a] In one aspect of the present disclosure, there is provided a hemostatic composition comprising a cross-linked amylopectin, icodextrin or maltodextrin or a cross-linked modified amylopectin, icodextrin or maltodextrin, wherein the composition is a flowable hydrogel, the hemostatic composition further comprising a procoagulant.

[0006b] In a second aspect of the present disclosure, there is provided a hemostatic composition according to the first aspect, for use in treating an injury selected from the group consisting of a wound, a hemorrhage, damaged tissue and bleeding tissue.

[0006c] In a third aspect of the present disclosure, there is provided a use of a hemostatic composition according to the first aspect in the manufacture of a medicament for treating an injury selected from the group consisting of a wound, a hemorrhage, damaged tissue and bleeding tissue, wherein the medicament is to be administered to the site of injury.

[0006d] In a fourth aspect of the present disclosure, there is provided a use of a hemostatic composition according to the first aspect in the manufacture of a medicament for slowing or stopping bleeding, wherein the medicament is to be applied to a bleed area.

[0006e] In a fifth aspect of the present disclosure, there is provided a kit for the treatment of an injury selected from the group consisting of a wound, a hemorrhage, damaged tissue and bleeding tissue or for slowing or stopping bleeding comprising a) a hemostatic composition according to the first aspect and b) instructions for use.

[0007] In various embodiments, the disclosure provides a hemostatic composition comprising a cross-linked polysaccharide or starch, such as amylopectin, amylose, a dextrin, such as maltodextrin or icodextrin, or cross-linked modified forms thereof. In various embodiments, the disclosure provides a hemostatic composition comprising a cross-linked amylopectin, icodextrin or maltodextrin or a cross-linked modified amylopectin, icodextrin or maltodextrin.

[0008] In various embodiments, the hemostatic composition is a flowable hydrogel. In various embodiments, the hemostatic composition is in a powdered form, a sprayable form, or is used in a sponge, pad, film or fiber.

[0009] In various embodiments, the hemostatic composition comprises a crosslinking agent selected from the group consisting of epichlorohydrin, bis-epoxypropylether, ethylene glycol-bis-epoxy propyl ether, sodium trimetaphosphate (STMP), adipic-acetic anhydride, phosphorous oxychloride, a diepoxide, vinylcyclohexene dioxide, butadiene dioxide, formaldehyde, glutaraldehyde and genipin.

[0010] In various embodiments, the hemostatic composition further comprises one or more procoagulants. Exemplary procoagulants include, but are not limited to, clotting factors, such as thrombin, fibrin, Factor VIII (FVIII), Factor VII (FVII), Factor IX (FIX), von Willebrand Factor (vWF), Factor II (FII), Factor V (FV), Factor X (FX), Factor XI (FXI), Factor XII (FXII), and Factor XIII (FXIII), tissue factor, collagen; styptics including anti-hemorrhagic agents and astringents; and other hemostatic agents. In one embodiment, the hemostatic composition further comprises thrombin.

[0011] In various embodiments, the hemostatic composition further comprises a functional group selected from the group consisting of an amine, an aldehyde, a phosphate, a phosphonate, a sulfate, a sulfonate, and a carboxylate group.

[0012] In various embodiments, the hemostatic composition activates the coagulation cascade or enhances binding to tissues.

[0013] In various embodiments, the amylopectin, amylose or dextrin composition is between 2000 to 500,000 Da, between 10,000 to 300,000 Da, between 20,000 to 250,000 Da between

WHAT IS CLAIMED:

1. A hemostatic composition comprising a cross-linked amylopectin, icodextrin or maltodextrin or a cross-linked modified amylopectin, icodextrin or maltodextrin, wherein the composition is a flowable hydrogel, the hemostatic composition further comprising a procoagulant.

2. The hemostatic composition of any of the preceding claims, further comprising one or more agents selected from the group consisting of, a blood clotting factor, a styptic, an astringent, and other hemostatic agent.

3. The hemostatic composition of claim 1, wherein the procoagulant is thrombin.

4. The hemostatic composition of any of the preceding claims, wherein amylopectin, icodextrin or maltodextrin further comprises a functional group selected from the group consisting of an amine, an aldehyde, a phosphate, a phosphonate, a sulfate, a sulfonate, and a carboxylate group.

5. The hemostatic composition of any of the preceding claims, wherein the composition activates the coagulation cascade or enhances binding to tissues.

6. The hemostatic composition of any of the preceding claims, wherein the cross-linked amylopectin, icodextrin or maltodextrin or cross-linked modified amylopectin, icodextrin or maltodextrin comprises a crosslinking agent selected from the group consisting of epichlorohydrin, bis-epoxypropylether, ethylene glycol-bis-epoxy propyl ether, sodium trimetaphosphate (STMP), adipic-acetic anhydride, phosphorous oxychloride, formaldehyde, a diepoxide, vinylcyclohexene dioxide, butadiene dioxide, formaldehyde, gluaraldehyde and genipin.

7. The hemostatic composition of any of the preceding claims, wherein the maltodextrin is selected from the group consisting of low molecular weight, medium molecular weight or high molecular weight maltodextrin.

8. The hemostatic composition of claim 7, wherein the low molecular weight maltodextrin is less than 2,000 Da.

9. The hemostatic composition of claim 7, wherein the medium molecular weight maltodextrin is between 2,000 and 45,000 Da.

10. The hemostatic composition of claim 7, wherein the high molecular weight maltodextrin is greater than 45,000 Da.

11. The hemostatic composition of any of the preceding claims, further comprising one or more of an additive or active agent selected from the group consisting of a polysaccharide, polyvinylalchohol, polyethyleneimine, chitosan, alginic acid, a fucoidan, hyaluronic acid, heparin, heparan, chondroitin sulfate, amylopectin, amylose, xanthan gum, guar gum, carageenans, carboxymethyl cellulose, carboxymethyl maltodextrin, carboxymethyl icodextrin, carboxymethyl starch, agarose, and natural or synthetic polymers.

12. The hemostatic composition of any of the preceding claims, wherein the amylopectin, icodextrin or maltodextrin is derived from plant material, bacteria, fungi or algae.

13. The hemostatic composition of claim 12, wherein plant material is selected from the group consisting of corn, soy, rice, tapioca, wheat, waxy corn and waxy rice.

14. A hemostatic composition according to any of the preceding claims, for use in treating an injury selected from the group consisting of a wound, a hemorrhage, damaged tissue and bleeding tissue.

15. Use of a hemostatic composition according to any of claims 1-13 in the manufacture of a medicament for treating an injury selected from the group consisting of a wound, a hemorrhage, damaged tissue and bleeding tissue, wherein the medicament is to be administered to the site of injury.

16. Use of a hemostatic composition according to any of claims 1-13 in the manufacture of a medicament for slowing or stopping bleeding, wherein the medicament is to be applied to a bleed area.

17. The use of claim 15 or 16, wherein the injury or bleeding occurs during surgery.

18. The use of claim 15 or 16, wherein the medicament is used in a sponge, pad, film or fiber.

19. The use of claim 16, wherein the medicament stops bleeding within seconds or minutes.

20. A kit for the treatment of an injury selected from the group consisting of a wound, a hemorrhage, damaged tissue and bleeding tissue or for slowing or stopping bleeding comprising a) a hemostatic composition according to any of claims 1-13 and b) instructions for use.