CLAIMS

1. A kit comprising: a first component and a second component, the first component comprises a crosslinkable polysaccharide and a multivalent cation salt at a concentration ratio (mg/ml) of 30:1 to 1:60, the second component comprises a crosslinkable polysaccharide and a buffering agent, the buffering agent has a pH value of between 2 to 7 and comprises an acid and its acid addition salt.

2. A kit according to Claim 1, in which the crosslinkable polysaccharide is alginate.

3. A kit according to Claim 1, in which the crosslinkable polysaccharide and the multivalent cation salt are at a concentration ratio (mg/ml) of 1:1 to 1:4.

4. A kit according to Claim 1, in which the multivalent cation salt is selected from:

a calcium salt selected from the group comprising: $CaCO_3$, $(C_{17}H_{35}COO)_2Ca$, $CaNa_2P_2O_7$, $Ca_2P_2O_7$, or any combination thereof;

a multivalent cation salt present at a concentration of 20 to 40 mg/ml within the first component; and

a particle size between 0.1 microns and 150 microns.

5. A kit according to Claim 1, in which the crosslinkable polysaccharide is present at a concentration of 5 to 100 mg/ml within the first component and the crosslinkable polysaccharide is present at a concentration of 5 to 100 mg/ml within the second component.

6. A kit according to Claim 1, in which the buffering agent has a concentration selected from: a buffering agent having a concentration of between 1 to 2000 mM and a buffering agent having a concentration of 100 to 500 mM.

7. A kit according to Claim 1, in which the buffering agent is selected from a buffering agent having a pH value of between 4 to 5 and a buffering agent comprises acetic acid and sodium acetate salt.

8. A kit according to Claim 1, in which the concentration of the multivalent cation salt in the first component is 1.5 to 10 times higher than the stoichiometric ratio of the buffering agent having a concentration of between 100 to 500 mM.

9. A kit according to Claim 1, in which the multivalent cation salt is $CaCO_3$ at a concentration of 20 to 40 mg/ml, the crosslinkable polysaccharide is present at a concentration of 10 to 30 mg/ml in the first component, the crosslinkable polysaccharide is present at a concentration of 10 to 30 mg/ml in the second component, the buffering agent is buffer acetate having a pH value between 4 to 5 and a concentration of between 150 to 300 mM.

10. A kit according to Claim 1, further comprising an instruction manual, optionally in which the instruction manual provides instruction with respect to quantities of the first component and the second component to be applied, further optionally in which the instruction manual provides a spectrum of gelation time, in which the gelation time is affected by the particle size of the calcium salt, the particular calcium salt, the type of buffering agent, the pH value of the buffering agent, or any combination thereof.

11. A kit according to Claim 1, in which the combination of the first component and/or the second component have a viscosity of between 100 cP and 100000 cP.

12. A method for forming a sealant, comprising contacting a first composition and a second composition, in which the first composition comprises a crosslinkable polysaccharide and a multivalent cation salt at a concentration ratio (mg/ml) of 30:1 to 1:60, the second composition comprises a crosslinkable polysaccharide and a buffer, the buffer has a pH value of between 2 to 7 and comprises an acid and its acid addition salt, thereby forming a sealant.

13. A method according to Claim 12, in which the crosslinkable polysaccharide and the multivalent cation salt are at a concentration ratio (mg/ml) of 1:1 to 1:4 or in which the crosslinkable polysaccharide is present at a concentration of 5 to 100 mg/ml within the first composition and the crosslinkable polysaccharide is present at a concentration of 5 to 100 mg/ml in the second composition, optionally in which the crosslinkable polysaccharide is alginate.

14. A method according to Claim 12, in which the multivalent cation salt is selected from:

a calcium salt selected from the group comprising: $CaCO_3$, $(C_{17}H_{35}COO)_2Ca$, $CaNa_2P_2O_7$, $Ca_2P_2O_7$, or any combination thereof;

a multivalent cation salt present at a concentration of 20 to 40 mg/ml within the first component;

a particle size between 0.1 microns and 150 microns; and

a multivalent cation salt having a concentration in the first composition of 1.5 to 10 times higher than the stoichiometric ratio of the buffer having a concentration of between 100 to 500 mM.

15. A method according to Claim 12, in which the buffer is selected from:

a buffer has a concentration of between 1 to 2000 mM;

a buffer having a pH value of between 4 to 5; and

a buffer having comprising acetic acid and sodium acetate salt.

16. A method according to Claim 12, in which the multivalent cation salt is calcium salt is $CaCO_3$ at a concentration of 20 to 40 mg/ml, the crosslinkable polysaccharide is present at a concentration of 10 to 30 mg/ml in the first composition, the crosslinkable polysaccharide is present at a concentration of 10 to 30 mg/ml in the second composition, the buffer is buffer acetate having a pH value between 4 to 5 and a concentration of between 150 to 500 mM.

17. A method according to Claim 12, in which the forming a sealant further comprises controlling gelation time, in which the pH value of less than 4.5 increases gelation time, in which smaller particle size of the bivalent cation salt decreases gelation time or in which the forming a sealant is forming a sealant having a viscosity of between 100 cP and 100000 cP.

18. A sealant or an adhesion barrier produced by mixing a first composition comprising a crosslinkable polysaccharide and a bivalent cation salt at a concentration ratio (mg/ml) of 30:1 to 1:60 and a second composition comprising a crosslinkable polysaccharide and a buffer, the buffer has a pH value of between 2 to 7 and comprises an acid and its acid addition salt.

19. A method comprising the steps of:

(a) providing a first composition and a second composition, the first composition comprises a crosslinkable polysaccharide and a multivalent cation salt at a concentration ratio (mg/ml) of 30:1 to 1:60, the second composition comprises a crosslinkable polysaccharide and a buffer, the buffer has a pH value of between 2 to 7 and comprises an acid and its acid addition salt, and optionally mixing the first composition and the second composition; and

(b) applying the first composition and the second composition to the target site thereby forming an adhesion barrier in situ, in which the adhesion barrier adheres to the target site,

thereby preventing, inhibiting, or reducing fibrosis, scarring, and/or adhesion in the target site.

20. A method according to Claim 19 for preventing, inhibiting, or reducing fibrosis, scarring, and/or adhesion in a target site, or for securing or holding a graft in a target site.