Claims

~~1. A method of reducing the formation of post-surgery tissue adhesion in a subject in need thereof by administering an adhesion barrier composition, the adhesion barrier composition comprising:~~
~~a) sporopollenin; and~~
~~b) a biodegradable polymer;~~
~~wherein the weight ratio of sporopollenin is about 1 wt/wt% to about 80 wt/wt% relative to the total composition.~~

~~2. A method of preventing the formation of tissue adhesion during or post-surgery in a subject in need thereof by administering an adhesion barrier composition, the adhesion barrier composition comprising:~~
~~a) sporopollenin; and~~
~~b) a biodegradable polymer;~~
~~wherein the weight ratio of sporopollenin is about 1 wt/wt% to about 80 wt/wt% relative to the total composition.~~

~~3~~1. An adhesion barrier composition for use in reducing the formation of post-surgery tissue adhesion in a subject in need thereof or for use in preventing the formation of tissue adhesion during or post-surgery in a subject in need thereof, the adhesion barrier composition comprising:
a) sporopollenin; and
b) a biodegradable polymer;
wherein the weight ratio of sporopollenin is ~~about~~ 1 wt/wt% to ~~about~~ 80 wt/wt% relative to the total composition.

~~4. An adhesion barrier composition for use in preventing the formation of tissue adhesion during or post-surgery in a subject in need thereof, the adhesion barrier composition comprising:~~
~~a) sporopollenin; and~~
~~b) a biodegradable polymer;~~
~~wherein the weight ratio of sporopollenin is about 1 wt/wt% to about 80 wt/wt% relative to the total composition.~~

~~5~~2. A use of an adhesion barrier composition in the manufacture of a medicament for reducing the formation of post-surgery tissue adhesion in a subject in need thereof or for preventing the formation of tissue adhesion during or post-surgery in a subject in need thereof, the adhesion barrier composition comprising:

a) sporopollenin; and

b) a biodegradable polymer;

wherein the weight ratio of sporopollenin is ~~about~~ 1 wt/wt% to ~~about~~ 80 wt/wt% relative to the total composition.

~~6. A use of an adhesion barrier composition in the manufacture of a medicament for preventing the formation of tissue adhesion during or post-surgery in a subject in need thereof, the adhesion barrier composition comprising:~~

~~a) sporopollenin; and~~

~~b) a biodegradable polymer;~~

~~wherein the weight ratio of sporopollenin is about 1 wt/wt% to about 80 wt/wt% relative to the total composition.~~

~~7~~3. The ~~method or~~ adhesion barrier composition for use or use according to ~~any one of~~ claim~~s~~ 1 or 2~~to 6~~, wherein the surgery is selected from peritoneal, pericardial, obstetric, gynaecological, neurosurgical, arthroscopic, orthopaedic, plastic, reconstructive, muscle or tendon surgery.

~~8~~4. An adhesion barrier composition comprising:

a) sporopollenin; and

b) a biodegradable polymer;

wherein the weight ratio of sporopollenin is ~~about~~ 1 wt/wt% to ~~about~~ 80 wt/wt% relative to the total composition.

~~9. The adhesion barrier composition according to claim 8, wherein the weight ratio of sporopollenin is about 20 wt/wt% to about 80 wt/wt% relative to the total composition.~~

~~10~~5. The adhesion barrier composition or use according to any one of claims ~~8 or 9~~1 to 4, wherein the sporopollenin comprises at least one of the following:

i) a polymer having ester bonds, wherein the sporopollenin is characterised with

having at least 2% of the ester bond hydrolysed~~;~~.

~~11. The method, adhesion barrier composition, or use according to any one of claims 1 to 10, wherein the sporopollenin comprises~~

ii) a polymer having ether bonds, wherein the sporopollenin is characterised with having at least 2% of the ether bond hydrolysed~~;~~.

~~12. The method, adhesion barrier composition, or use according to any one of claims 1 to 11, wherein the sporopollenin comprises~~

iii) a polymer having peptide bonds, wherein at least 2% of the peptide bond is hydrolysed~~.~~; and

~~13. The method, adhesion barrier composition, or use according to any one of claims 1 to 12, wherein the sporopollenin comprises~~

iv) a lipid, wherein at least 2% of the lipid is saponificated.

~~14~~6. The ~~method,~~ adhesion barrier composition, or use according to any one of claims 1 to ~~13~~5, wherein the sporopollenin is derived from a pollen, the pollen originating from a flowering plant of the genus Baccharis, Helianthus or Camellia, Coreopsis, Callistephus, Dahalia, Solidago or a combination thereof.

~~15~~7. The ~~method,~~ adhesion barrier composition, or use according to any one of claims 1 to ~~14~~6, wherein the sporopollenin has a particle size of about 20 µm to about 50 µm.

~~16~~8. The ~~method,~~ adhesion barrier composition, or use according to any one of claims 1 to ~~15~~7, wherein the biodegradable polymer is selected from poly(glycolic) acid, polylactic acid, polydioxanone, polycaprolactone, calcium alginate, sodium hyalurate, hyaluronic acid or a combination thereof, and preferably polylactic acid (PLA).

~~17~~9. The adhesion barrier composition or use according to any of claims 1~~8~~ to 8~~16~~, wherein the adhesion barrier composition further comprises~~ing a solvent.~~

~~18. The adhesion barrier composition according to claim 17, wherein the solvent is~~ an aqueous medium.

~~19~~10. The adhesion barrier composition or use according to any of claims ~~8~~ 1 to ~~18~~9, wherein the adhesion barrier composition further comprises~~ing~~ a lipid~~.~~

~~20. The adhesion barrier composition according to claim 19, wherein the lipid is~~ selected from lauric acid, palmitic acid, α-linolenic acid, myristic acid, stearic acid, oleic acid, linoleic acid, eicosenoic acid, glycerides or a combination thereof.

~~21~~11. The adhesion barrier composition or use according to any of claims ~~8~~ 1 to ~~20~~10, wherein the adhesion barrier composition further comprising pollenkitt~~.~~

~~22. The adhesion barrier composition according to claim 21, wherein the pollenkitt is~~ selected from an angiosperm.

~~23~~12. The adhesion barrier composition or use according to any of claims ~~8~~ 1 to ~~22~~11, wherein the adhesion barrier composition further comprising intine~~.~~

~~24. The adhesion barrier composition according to claim 23, wherein the intine is~~ selected from polysaccharides, cellulose, hemicellulose and pectin, or a combination thereof.

~~25~~13. The adhesion barrier composition or use according to any of claims ~~8~~ 1 to ~~24~~12, wherein the adhesion barrier composition further comprising phenolic compound~~.~~

~~26. The adhesion barrier composition according to claim 25, wherein the phenolic compound is~~ selected from gallic acid, caffeic acid, ferulic acid, p-coumaric, benzoic acid or a combination thereof~~.~~

~~27. The adhesion barrier composition according to claims 25 or 26~~,
wherein a weight ratio of the phenolic compound is at least 1 wt/wt% relative to the total composition.

~~28~~14. The adhesion barrier composition or use according to any of claims ~~8~~ 1 to ~~27~~13, wherein the adhesion barrier composition is capable of being completely resorbed after 6 months on application.

~~29~~15. The adhesion barrier composition or use according to any of claims ~~8~~ 1 to ~~28~~14, wherein the adhesion barrier composition is a film, gel or a liquid.

~~30~~16. The adhesion barrier composition or use according to any of claims ~~8~~ 1 to ~~29~~15, wherein the adhesion barrier composition is an adhesion barrier film, the adhesion barrier film comprising:

a) a coating of sporopollenin; and

b) a biodegradable polymer film having two surfaces;

wherein the weight ratio of sporopollenin is ~~about~~ 1 wt/wt% to ~~about~~ 80 wt/wt% relative to the total composition; and

wherein sporopollenin coats at least one surface of the biodegradable polymer film.

~~31~~17. The adhesion barrier composition or use according to claim ~~30~~16, wherein the sporopollenin coats both surfaces of the biodegradable polymer film.

~~32~~18. The adhesion barrier composition or use according to claim~~s~~ ~~30~~ 16 or ~~31~~17, wherein the at least one surface of the biodegradable polymer film is 100% covered by sporopollenin.

~~33~~19. The adhesion barrier composition or use according to any of claims ~~30~~ 16 to ~~32~~18, wherein the coating of sporopollenin has a thickness of ~~about~~ 50 µm to ~~about~~ 200 µm.

~~34~~20. A method of fabricating an adhesion barrier composition, comprising:

a) dispersing a sporopollenin in or on a biodegradable polymer;

wherein the weight ratio of sporopollenin is ~~about~~ 1~~0~~ wt/wt% to ~~about~~ 80 wt/wt% relative to the total composition.