

13

The two tables which follow show the results of two independent tests, one carried out with Tissucol as control and the other with Biocol as control.

The results show that the adhesion which is observed with the adhesive composition over 3 days is at least equal to the control glues Biocol and Tissucol.

In the absence of adhesive product, no wound remains correctly glued.

	Day 1	Day 2	Day 3
ADHESIVE COMPOSITION EXAMPLE 3	49/51	44/51	34/51
Tissucol	51/51	46/51	39/51

Test on 17 rats.

	Day 1	Day 2	Day 3*
ADHESIVE COMPOSITION EXAMPLE 3	24/24	23/24	15/21
Biocol	17/24	16/24	15/21

Test on 8 rats (* 1 rat died on day 3; its death was unrelated to the product but prevented the observation of 3 sides).

This test therefore demonstrates that the adhesive according to the invention makes it possible to obtain a degree of adhesion which is just as satisfactory as that of fibrin glue.

We claim:

1. Non-crosslinked and potentially crosslinkable pepsin-treated collagen or gelatin powder modified by oxidative cleavage in an aqueous solution, which is soluble at an acidic pH and stable on storage at a temperature of below 0° C. and for a period of at least one month.

2. Powder according to claim 1, characterized in that it comprises collagen or gelatin oxidized using a solution of periodic acid or one of its salts at a concentration of between approximately 1 and 10⁻⁵M.

3. Powder according to claim 1, characterized in that it is stored at a temperature of below 0° C.

4. Powder according to claim 3, characterized in that it is stored at a temperature of between approximately -10° C. and -80° C.

5. Powder according to claim 1, characterized in that the collagen or gelatin is of human or animal origin.

6. Process for the preparation of a powder according to claim 1, characterized in that it consists in:

preparing an acidic solution of pepsin-treated collagen; subjecting the said acidic aqueous solution at room temperature to controlled oxidation by a solution of periodic acid or one of its salts at a concentration of between approximately 1 and 10⁻⁵M;

precipitating the oxidized and non-crosslinked pepsin-treated collagen at an acidic pH; and

isolating and concentrating, and then dehydrating, the said non-crosslinked pepsin-treated collagen modified by oxidative cleavage so as to obtain it in the form of a reactive acidic powder;

freezing and storing the obtained reactive acidic powder at a temperature of below 0° C.

7. Process according to claim 6, characterized in that the oxidized and non-crosslinked collagen is precipitated at an acidic pH by addition of a salt, in particular by addition of sodium chloride.

8. Process according to claim 6, characterized in that collagen of human or animal origin is used.

14

9. Concentrated reactive acidic solution of non-crosslinked and potentially crosslinkable pepsin-treated collagen or gelatin modified by oxidative cleavage, substantially free from iodine or iodine derivatives and which is stable for a period of time of at least one month on storage at a temperature of below 0° C., to form an adhesive composition.

10. Reactive acidic solution according to claim 9, characterized in that it is prepared from a non-crosslinked and potentially crosslinkable pepsin-treated collagen or gelatin powder modified by oxidative cleavage by dissolution in water at an acidic pH.

11. Solution according to claim 9, characterized in that the concentration of collagen or gelatin is between approximately 5 and 30% by weight.

12. Solution according to claim 9, characterized in that it is stored at a temperature of below 0° C.

13. Solution according to claim 9, characterized in that it is stored at a temperature of between approximately -10° C. and -80° C.

14. Process for the preparation of a stable reactive acidic solution according to claim 10, characterized in that it consists in:

preparing a sterile powder of non-crosslinked and potentially crosslinkable pepsin-treated collagen or gelatin modified by

preparing an acidic solution of pepsin-treated collagen, subjecting the said acidic aqueous solution at room temperature to controlled oxidation by a solution of periodic acid or one of its salts at a concentration of between approximately 1 and 10⁻⁵M,

precipitating the oxidized and non-crosslinked pepsin-treated collagen at an acidic pH, and

isolating and concentrating, and then dehydrating, the said non-crosslinked pepsin-treated collagen modified by oxidative cleavage so as to obtain it in the form of a reactive acidic powder,

dissolving the required quantity of this powder in water by heating at a temperature of between approximately 40° C. and 80° C.,

cooling and storing the obtained reactive acidic solution at a temperature of below 0° C.

15. Process according to claim 14, characterized in that the non-crosslinked collagen or gelatin powder modified by oxidative cleavage is dissolved in sterile water in a proportion of approximately 5% (weight/weight).

16. Biocompatible, bioresorbable and non-toxic adhesive kit intended for surgical use for the bonding, in particular, of biological tissues to one another or to an implanted biomaterial, characterized in that it consists of:

a reactive acidic solution of non-cross-linked and potentially crosslinkable pepsin-treated collagen or gelatin modified by oxidative cleavage, and substantially free from iodine or iodine derivatives stored at a temperature of below 0° C.;

a neutralizing solution; and

mixing means for extemporaneous mixing of the said solutions.

17. Kit according to claim 16, characterized in that the reactive acidic solution is a concentrated reactive acidic solution of non-crosslinked and potentially crosslinkable collagen or gelatin modified by oxidative cleavage.

18. Kit according to claim 16, characterized in that the reactive acidic solution is stored at a temperature of below 0° C.