CLAIMS

1. Collagen ink for 3D printing comprising a dispersion of native collagen fibers in an acid medium at a concentration by weight between 0.1% and 10% with a pH between 0.1 and 5, which has a viscosity between 2 McP and 15 McP (Brookfield method at a temperature between 18ºC and 22ºC) and wherein the 75% of the mass of collagen fibers in the dispersion comprises fibers whose length is in a range of 50 µm to 1000 µm and in that 80% of the mass of collagen fibers comprises fibers whose diameter is between 5 µm and 35 µm, measured at a pH between 1 and 2.

2. Collagen ink for 3D printing according to claim 1 characterized in that 50% of the mass of collagen fibers in the dispersion comprises fibers whose length is in a range between 100 µm and 500 µm.

3. Collagen ink for 3D printing according to one of the claims 1 to 2 characterized in that the concentration is between 1% and 5%.

4. Collagen ink for 3D printing according to one of the claims 1 to 3 characterized in that the pH is between pH 1 and 3.

5. Hydrogel comprising the ink according to any of claims 1 to 4.

6. Method of obtaining the ink according to claims 1 to 4 from a collagen-containing tissue comprising the steps of:

a) washing, and chopping a collagen-containing tissue;

b) chemically macerating the chopped tissue in the presence of an alkaline agent treatment with calcium hydroxide, sodium hydroxide, or with a combination of sulfur salts and the alkaline treatments;

c) washing the product obtained from step b) with water;

d) adjusting the pH of the side product obtained in c), to values between 0.5 and 5 to swell the side product of step c):

e) mechanically mincing the product of step d);

f) dispersing in water to a concentration preferably between 0.1% and 10%.

7. Method according to claim 6 characterized in that the collagen-containing tissue is connective tissue.

8. Method according to claim 7 characterized in that the connective tissue is dermis tissue of the layer called corium.

9. Method according to any one of claims 6 to 7, characterized in that the connective tissue is of bovine origin, with an age between 1 and 3 years.

10. Method according to any of the claims 6 a 9 characterized in that step c) is carried out in the presence of an alkaline agent.

11. Method according to any of the claims 6 to 10 characterized in that in step d) it is acidified between 1 and 3.

12. Method according to any of claims 6 to 11, characterized in that there is a stage of homogenization of the precipitate obtained in stage d) prior to stage e).

13. Method according to any of claims 6 to 12, characterized in that the aqueous dispersion of fibrous collagen is carried out at a concentration that is between 1% and 5%.

14. Use of the ink according to any one of claims 1 to 4 in printing 3D structures.

15. Structures comprising the ink according to any one of claims 1 to 4.

16. Method of printing with the ink described in any of claims 1 to 4, characterized in that it comprises the step of mixing the ink described in any of claims 1 to 8 with cells before printing.

17. Method according to claim 16 characterized in that the cells are selected from: astrocytes, embryonic cardiomyocytes, fetal cardiomyocytes, neonatal cardiomyocytes, cardiomyocytes, embryonic ventricular myocytes, corneal endothelial cells, corneal epithelial cells, iris pigment epithelial cells, retinal pigment epithelial cells, fetal dopamine neuronal cells, fetal neocortical neuronal cells, enteric neuronal cells, hepatocytes, adipose tissue mesenchymal stem cells, bone marrow mesenchymal stem cells, osteoblasts, chondrocytes, pancreatic cells, urothelial cells.

18. Method of printing the ink described in any of claims 1 to 4, characterized in that it comprises the steps of:
neutralizing the ink to a physiological pH, preferably between 7 and 8;
printing the structure.

19. Method according to claim 18 characterized in that ink mixes with cells.

20. Method according to claim 18 characterized in that the neutralization is carried out with salts or buffers selected from: phosphate buffer saline (PBS 1X and 10X), Tricine, MOPS, HEPES, Tris, sodium carbonate.