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Artificial Skin Developed for Research, Potential Future Therapy

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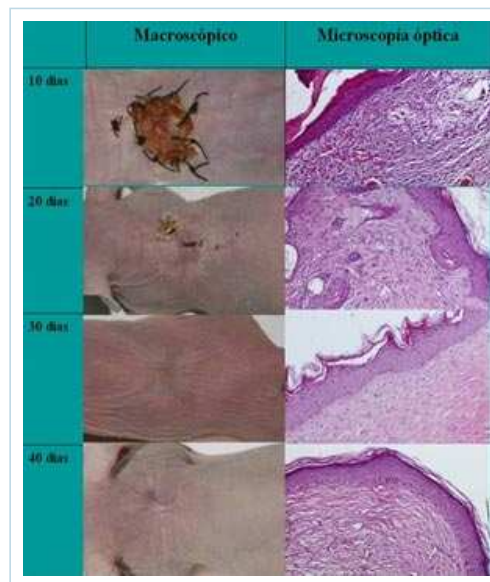
Spanish scientists at the University of Granada have developed a new recipe for making artificial human skin by using agarose-fibrin biomaterial as a foundation. The new skin was grafted onto laboratory mice and showed positive results in a number of tests.

Researchers from the University of Granada firstly selected the cells that would be employed in generating artificial skin. Then, they analysed the evolution of the in-vitro culture and, finally, they performed a quality control of the tissues grafted onto nude mice. To this purpose, several immunofluorescence microscopy techniques had to be developed. These techniques allowed researchers to evaluate such factors as cell proliferation, the presence of differentiating morphological markers, the expression of cytokeratin, involucrine and filaggrin, angiogenesis and artificial skin development into the recipient organism.

To make this assay, researchers obtained human skin from small biopsies belonging to patients following surgery at the Plastic Surgery Service of the University Hospital Virgen de las Nieves in Granada. All patients gave their consent to take part in this research study.

To create artificial human skin, human fibrin from plasma of healthy donors was used. Researchers then added tranexamic acid -to prevent fibrinolysis-, and calcium chloride to precipitate fibrin coagulation, and 0.1% agarose. These artificial-skin substitutes were grafted on the back of the nude mice, with the purpose of observing its evolution in vivo. The equivalent skin substitutes were analysed by transmission and scanning light and electron microscopy and immunofluorescence.

The skin created in the laboratory showed adequate biocompatibility rates with the recipient and no rejection, dehiscence or infection was registered. Additionally, the skin of all animals used in the study started to show



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