

# PRODUCTION OF DECELLULARIZED RAT SKIN AS A SUBSTITUTE FOR SKIN LESION TREATMENT

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## INTRODUCTION

One of the goals of bioengineering is to produce biomaterials that can replace damaged tissue. Many dermal substitutes are currently available but their high cost makes them less affordable for the general population. Decellularized skin presents a great potential as a skin substitute. The aim of this study has been to develop a protocol for decellularization of murine skin and to analyze its structure to produce a dermal substitute.

## METHODOLOGY (OR MATERIALS METHODS)

Discarded rat skin (CEUA 32510) was decellularized by incubation in hypertonic solutions, Triton X-100 and trypsin under continuous agitation; three different incubation times were tested. The genomic DNA was quantified and compared with non-decellularized skin. In order to verify the efficiency, histological analyses were performed. The samples were sectioned on microtome OF 5µm thickness and stained with DAPI, Masson's Trichrome and haematoxylin and eosin (HE).

## RESULTS AND DISCUSSION

The DNA quantification analysis showed that the decellularized samples presented a much lower DNA content compared to the control skin ( $3.026 \pm 1.06$  and  $111.8 \pm 7.02$  mg gDNA/mgtissue, respectively). The histological sections stained with DAPI presented normal nuclear distribution of the control skin but cell nuclei were not detected on the decellularized samples. The HE staining of the decellularized samples exhibited a conserved matrix structure, with the maintenance of the dermis extracellular matrix. The samples stained with Masson's Trichrome showed a structure consisting predominantly of collagen.

## FINAL CONSIDERATIONS

It was possible to establish an efficient decellularization protocol of the rat skin, which conserved the skin extracellular matrix and

collagen content, thereby offering a promising technique for the production of dermal substitutes in regenerative medicine.

**Key words:** Biomaterials; Decellularization, Skin, Skin substitute.