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EFFECTS OF 4 CALCIUM ALGINATE-BASED MEDICAL DEVICES ON HUMAN FIBROBLAST CULTURES

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Objective: We compared the effects of 4 calcium alginate-based dressings* on human fibroblast cultures.

Methods: One-layer cultures were used to study the morphology and production of collagen I and III by fibroblasts. Equivalent dermises allowed the observation of myofibroblastic differentiation (alpha-SM-actin) and morphology (F-actin), in dressings after immunohistochemical tagging.

Results: The fibroblasts were put in the presence of either the dressing or its extract, contingent on their compatibility with the culture environment. None of the dressings manifested a cytotoxic effect and one dressing** even displayed a proliferative effect. The morphology of fibroblasts was not changed in the presence of dressings as confirmed by the immunotagging of the F-actin. The myofibroblastic differentiation (alpha-SM-actin) was not disturbed. The 4 calcium alginate-based dressings increased the collagen I production of fibroblasts. The effects of the dressings were also beneficial on the collagen III production, but statistical differences were observed only with 2 calcium alginate-based dressings***.

Conclusion: These 4 calcium alginate-based dressings mainly increased the production of collagen I and III due to their composition. This can explain their beneficial effect on the formation and maturation of healing buds.

* Hemoionic, Coalgan-H, Algosteril and FOREseal
** FOREseal
***Hemoionic and Coalgan-H