Collagen-calcium alginate film dressing with therapeutic ultrasound to treat open wound in rats

ABSTRACT

About 24 healthy female Sprague-Dawley rats weighing between 300-350 g were used in this study over a 20 day period. They were allocated randomly into 4 groups of 6 animals each. After the creation of 2x2 cm open wound, group 1 was control treated with Gentamycin ointment. Groups 2-4 were treated with Therapeutic ultrasound massage, collagen-calcium alginate film and collagen-calcium alginate film with therapeutic ultrasound. On application, the collagen-calcium alginate film with therapeutic ultrasound was well accepted by the animals without any adverse reaction. Mean percentage of wound contraction were significantly better in group 4 ($p<0.05$). Faster epithelialization was also seen in the collagen-calcium alginate film with therapeutic ultrasound treated group as compared to the other groups. Collagen is a biocompatible protein that does not interfere with the body's normal immunologic response and can be used in non-healing chronic wounds which require a trigger to stimulate the normal healing process. In extensive wounds when there is lack of autologous tissue, biomaterials like collagen-calcium alginate may be beneficial and can be used.

Keyword: Ultrasound; Collagen; Calcium alginate; Wound; Biomaterials; Tissues