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Development of Fungal Mycelia as Skin Substitutes II: Effects on the Wound Healing Process

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ABSTRACT

The effect of SACCHACHITIN membrane, a skin substitute prepared from the residue of the fruiting body of *Ganoderma tsugae*, on wound healing was evaluated in this study. Two mirror image wound areas were excised on the back of female Wistar rats by dissecting a 2.0 × 2.0 cm^2 skin area of full thickness. SACCHACHITIN membrane was placed randomly on one of the wounds and gauze on the other. Changes in the wound area were examined after a predetermined amount of time postoperatively. Histological examination of the wound and surrounding tissue was also performed but only on the 4th, 7th, and 16th days post-operation. The interaction of tissue with the dressing was evaluated by the implantation of these 2 materials. The results show that the wound area covered with SACCHACHITIN membrane was statistically significantly smaller than that covered with gauze for all time points measured. Histological examination revealed that SACCHACHITIN membrane induced mild inflammation and stimulated aggregation of polymorphonuclear leukocytes around the margin of the wound. The large number of macrophages and giant cells which infiltrated into the wound area covered with gauze indicates a response to a foreign body.

INTRODUCTION

One of the most urgent goals in the treatment of skin trauma is to provide an effective way of protecting any surface exposure of the skin. By covering with a suitable wound dressing, loss of body fluids is minimized, body temperature is maintained, infection of the wound area is controlled, and pain is relieved. Optimally, when the wound-healing process is accelerated, the original appearance and functions of the skin can be restored. Nowadays, the major method of treatment is skin grafting.However, the source of the

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