TECHNOLOGY TRANSFER

LICENSING OPPORTUNITIES

Fondazione I.R.C.C.S.
Istituto Neurologico Carlo Besta

Sistema Socio Sanitario
Regione Lombardia

PATCHES FOR ULCERS, WOUNDS, SKIN ABRASIONS

Brevetto n. 0001421114

APPLICATIONS

Human and veterinary:

- Diabetic ulcers, infection-related skin ulcers
- Wounds, abrasions, infection-related skin damage
- Skin reconstruction from burns damage

KEY BENEFITS

- easy preparation of the treated patch
- limited costs
- easy preservation

OFFER

For companies interested in the development of new cell therapy systems combined with patches made of natural materials such as silk fibroin (SF) to be used for the therapy of diabetic ulcers, skin wounds and severe burns

- Licensing out.
- Co-Development

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INVENTION

The invention demonstrates for the first time that patches of silk fibroin coated with mesenchymal cells (MSCs-SF), either alive or killed by distilled water, are effective in chronic diabetic ulcers

BACKGROUND

Impaired wound healing is a serious clinical problem in diabetic patients. Definitive pharmacological treatment of this disease condition is currently unavailable, often leading to limb amputation. Recently, biosynthetic scaffolds, both bioresorbable and nonresorbable, have been used alone or in combination with cells for wound treatment. Among the different scaffolds, silk fibroin (SF), loaded with MSCs, has been shown to have some efficacy in experimental skin wound repair. However, the application of live cell-loaded scaffolds in vivo may have some risk, due to the possible transfer of pathogens or the induction of adverse allergic reactions in the host, particularly when allogeneic or xenogeneic MSCs are used for therapy. For these reasons, decellularized scaffolds are currently receiving much attention as they may reduce the risks of rejection or allergic reactions

TECHNOLOGY

The invention demonstrates that the combination of MSCs coating an SF patch is effective in accelerating wound repair in a model of diabetic mice that normally have a significantly delayed ability to heal the wound. More importantly, our invention claims to demonstrate for the first time that a nearly equivalent success in wound repair can be achieved using a decellularized SF patch simply by treatment with distilled water that kills the cells, but preserves the regenerative factors released by them and absorbed by the patch. Compared to other similar technologies, ours differs in ease of preparation, biological safety, and the ability to be stored at refrigerator temperatures without losing therapeutic efficacy.
In our opinion, this invention may represent an important step toward the successful treatment of ulcers in diabetic patients.

INVENTORS

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