DERMOGLASS: Biodegradable microparticles for chronic ulcers

Challenge

Chronic wounds represent a silent epidemic caused by vascular pathological processes, with little or no tendency to healing and a high recurrence rate (60% in 3 years). Around 1-2% population in developed countries will experience a chronic wound (12-24 M people), and it is expected to rise with ageing population. Complications include infection, gangrene, haemorrhage and lower-extremity amputations. Derived disability worsens wound outcomes, resulting in a vicious cycle. Due to low healing rate, chronic wounds cause pain, loss of function and mobility, depression, anxiety, social isolation, financial burden, prolonged hospital stays, chronic morbidity, reduced lifespan and death. Wound care is a multibillion-dollar worldwide problem (only in USA it costs about US$20 billion) and impose an immense financial burden to society, due to economic spent on health care and a reduction in productivity. Thus, a strong economic and social driven exists to develop new strategies to improve wound healing rates.

Asset

DERMOGLASS is a novel approach that uses nanotechnology to deliver signals to trigger self-body regeneration capabilities, promoting revascularisation and faster wound closure compared to commercial widely used dressing. The restoration of blood supply promotes the arrival of oxygen, nutrients and new cells leading to tissue repair, faster tissue granulation and re-epithelisation. DERMOGLASS does not use neither proteins, nor cells, nor drugs, and still shows bioactivity properties; being the principal mode of action the control of the ionic wound environment, which enhance fibroblast and endothelial activity, wound revascularisation and cell homing.

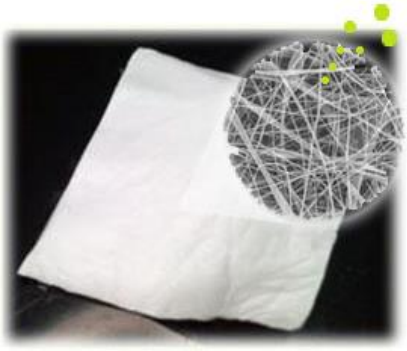
Market

The worldwide Skin Ulcer Treatment Market reached revenues of over 7 billion in 2013, representing 41% of the Global Wound Care Market. The prevalence of chronic ulcers in Spain was estimated around 315.000 cases in 2016, 6 million worldwide. The main treatment option for chronic ulcers are the advanced wound care topic products (60% of the global chronic ulcers market) which include specialised dressings such as films, foams and hydrogels. The advanced topic products market is characterised by high revenues (over $3,4bn) and is rapidly growing (53% increase over the past 6 years). The demand for advanced topic products is expected to rise steadily over the next 10 years.

Asset Value

A new bioactive technology for the revascularization and faster closure of chronic wounds, with low manufacturing costs and easier regulatory path.

- **Free from biological agents** such as cells, proteins, or drugs
- **Biodegradable**
- Enhanced angiogenesis and promoted cell proliferation
- **Versatile** as our nanoparticles can be combined with a variety of vehicles (dressings, gels, pastes, creams, etc.)
- **Sustained delivery**



Uses

- Chronic wound healing (pressure ulcers, diabetic ulcers, etc.)

Team

Elisabeth Engel - Scientific Leader

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Stage of Development

TRL: 3

- Wound healing and neovascularisation characterised in vitro (CAM assay) and in vivo (diabetic mice model and preliminary pig model)

Ongoing/next steps:

- Currently evaluating efficacy on wound pig model
- Standardisation and scale-up

Intellectual Property Status

Patent filed in June 2017

Current Status: national phases (EP, Ca) and granted in US and Mx

Patent owners: IBEC, UPC

Exploitation Plan

Patent available for licensing outside European countries

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