

## TECH OFFER

### Natural Proteins And Growth Factors For Topical Skin Rejuvenating Product



#### KEY INFORMATION

TECHNOLOGY CATEGORY:

Personal Care - Cosmetics & Hair

Personal Care - Wellness & Spa

Healthcare - Pharmaceuticals & Therapeutics

TECHNOLOGY READINESS LEVEL (TRL): **TRL5**

COUNTRY: **THAILAND**

ID NUMBER: **TO175022**

#### OVERVIEW

Skin rejuvenating products that contain proteins, growth factors, and amino acids are commonly known for its potent anti-aging and skin condition-improving effects. Many exogenous protein and growth factors from placenta extracts have been reported as a potential regenerative medicine to replace or repair damaged cells, tissues, and organs, in which the stimulation of dermal fibroblasts and collagen production have also been found. However, the rejuvenating effects of natural proteins and growth factors on the skin are normally applied either via mesotherapy by using transdermal hypodermic injection or topically along with cosmeceutical aesthetic procedure, resulting in a common cause of pain and the requirement of health professionals for injection.

This solution proposes the incorporation of microspicules, which take the form of micron-sized needles, into skin care product formulations that contain high concentration of natural proteins and growth factors. This can overcome the limitations of conventional approaches and more effectively deliver hydrophilic macromolecular proteins and growth factors, bypassing the

layer of stratum corneum, entering into the skin, and leading to skin regeneration. Such self-administered transdermal systems can also improve patient compliance and are generally inexpensive.

The technology owner is seeking collaboration opportunities with industry players to increase product innovations in market niches within the cosmeceutical product sphere.

## TECHNOLOGY FEATURES & SPECIFICATIONS

The technology comprises the use of natural proteins and growth factors extracted from goat placenta as active ingredients for skin rejuvenating products. In addition, micron-sized needle, known as microspicule, is used as a skin penetration enhancer to improve the skin permeability of hydrophilic macromolecular proteins and growth factors.

The green extraction method uses an aqueous solution and without organic solvents to produce high yield of active compounds such as total protein and growth factors from goat placenta, at a lower cost. The skin ampoule formulation contains high concentration of natural proteins and growth factors (e.g. EGF, FGF, IGF-1 and TGF- $\beta$ 1, etc.) in a hydrating serum base with microspicules (needle-like structure with the tip growing out from two opposite sites at 11.89  $\mu$ m wide and 176.77  $\mu$ m long).

This safe, pain-free, and self-care application can be used as topical and localised treatment on the skin. After applying this formulation onto the skin, natural proteins and growth factors can penetrate into and through the skin.

The technology has been dermatologically- and irritation-tested by evaluating the acute cutaneous tolerance of a cosmetic product on adult subjects by single patch test on 21 subjects with every skin type (19 female and 2 males) aged 30 to 59 years old and is considered safe and non-irritating.

## POTENTIAL APPLICATIONS

This technology can be deployed in the cosmetic industry, especially in the development of hydrating and anti-aging products. The product formulation contains:

- Natural proteins and growth factors from goat placenta extract as active ingredients with potent skin rejuvenating and anti-aging properties.
- Hydrating serum base containing microspicules which can be used as the skin delivery system, as well as an anti-aging and moisture control product.

This technology is also applicable for skin care products in the anti-ageing therapeutic market.

## UNIQUE VALUE PROPOSITION

- Green and low-cost extraction technology to produce natural proteins and growth factors from goat placenta at high yield
- Proprietary formulation achieving high concentration of natural proteins and growth factors
- Formulated with microspicules for more effective, passive delivery of macromolecular and hydrophilic active ingredients for natural and potent skin rejuvenating properties