

What is TH-SCA?



There are a number of scientific texts published throughout Spain and internationally that praise the benefits of the powerful “natural cutaneous cytoprotective” action of the active ingredient TH-SCA, and which support its double effect: an antioxidant effect owing to the presence of enzymes such as superoxide dismutase (SOD) and glutathione-s-transferase (GST), and their ability to capture and inhibit the formation of free radicals; and a regenerative effect resulting from the increase in the formation of new collagen, elastane, fibroblasts and other epidermal elements, stimulating the skin’s cell renovation cycle. This demonstrated ability for cutaneous regeneration has led to its application and proven effectiveness against radiodermatitis and for anti-aging treatments as well as for treating breakouts of atopic dermatitis. The ingredient also has a re-oxidant effect, from its high levels of haemocyanin, which has the principal function of trapping, carrying and releasing oxygen into the cells, thus improving the collagen production of their fibroblasts.

Some of the most relevant studies published that support the positive effects of TH-SCA:

- “A secretion of the mollusk *Cryptomphalus aspersa* promotes proliferation, migration and survival of keratinocytes and dermal fibroblasts in vitro” (Iglesias-De la Cruz et al., *Int J Cosmet Sci.* 2012; 34:183-189): The purpose of this research was an in vitro study of the effects of the secretion on cellular proliferation and migration, and of the expression of protein adhesion in cell-cell (E-cadherin and β -catenin) and cell-substrate (vinculin and β 1-integrin) systems, using one human cell line of keratinocytes (HaCaT cells) and one of primary dermic fibroblasts (HF). The results shed light on the molecular mechanisms underlying the regenerative properties of SCA, based on its promoting effect on skin cell migration, proliferation and survival, and indicating its effect from reorganisation of the cytoskeleton to the formation of new adhesion structures between the cells and their extra-cellular matrix.

Molecular basis for the regenerative properties of a secretion of the mollusk “*Cryptomphalus aspersa*” (Brieva et al., *Skin Pharmacol Physiol* ; 21:15–22):

It was found that the secretion contained antioxidant SOD and GST activities. In addition, it was observed that the secretion stimulated the proliferation and the reorganisation of the actin cytoskeleton. Additional mechanisms involved in the regenerative effect of SCA included the stimulation of extra-cellular matrix assembly and the regulation of metalloproteinase activities. Together, these effects provide an array of molecular mechanisms underlying SCA-induced cellular regeneration, and postulate its use in the regeneration of wounded tissue.

In addition to these studies, several more have been published that support the use of TH-SCA in diverse applications:

- “The efficacy of *Helix aspersa* Müller extract in the healing of partial thickness burns: a novel treatment for open burn management protocols (Tsoutsos et al., *Int J Dermatol Treat.* 2009; 20:219–222.)”: This study demonstrated how a cream containing extract of *Helix aspersa* accelerated apoptosis of burn scars and the epithelialisation of partial thickness facial burns. This study suggested that it could also have a soothing effect on post-burn pain, for possible use as a safe alternative to creams used on open wounds and as a topical treatment for partial-thickness burns in adults.

“Clinical and Histological Efficacy of a Secretion of the Mollusk *Cryptomphalus aspersa* in the Treatment of Cutaneous Photo-Aging (Tribó-Boixareu et al., *Cosmet Dermatol.* 2009; 5:247-252)”

Clinical assessment of the effect of SCA using an arbitrary scale for cutaneous photo-aging established the efficacy of SCA in reversing some of the features of photo-aging. In addition, profilometry analysis of selected areas of the skin of the patients revealed a positive effect of SCA in the overall roughness of the skin and particularly in wrinkle depth. This is likely due to its antioxidant and matrix-remodelling effect, but contributions from the vehicle components of the secretion cannot be ruled out. The observed improvement in roughness is likely related to improved hydration due to a number of factors, such as replenishment of the skin cellularity and rearrangement of the fibrillary components of the skin. These effects were confirmed using conventional histological techniques. We also observed that continuous use of SCA increased skin thickness and decreased the signs of elastosis, suggesting enhanced skin cell proliferation and rearrangements of the fibrillary components of dermis and epidermis. The beneficial effect of SCA can be direct via its effect on skin cell proliferation and matrix remodelling, or indirect by enhancing vascularisation of the skin. Proper blood traffic provides the neighbouring tissue with the nutrients and oxygen required for proliferation, thus enhanced irrigation is essential for a rejuvenation effect on photo damaged skin.

“The Effects of Filtrate of the Secretion of *Cryptomphalus aspersa* on Photo-Aged Skin (Guillen et al., *J Drugs Dermatol.* 2013; 12:453-457)”

Results showed that daily application of 8% *Cryptomphalus aspersa* snail secretion emulsion and 40% SCA serum significantly improved periorcular rhytides after 12 weeks, when compared with an inactive placebo. Furthermore, both periorcular and perioral texture improved to a greater degree in the active side when compared with the placebo side at 8, 12, and 14 weeks (2 weeks after being off the product).

- The Effects of Snail Secretion Filtrate on Damaged Skin Barrier’s Recovery of Atopic Dermatitis (Min-Jee et al., *J Korean Orient Med Ophthalmol Otolaryngol Dermatol.*, 2010; 23:138-153).

The purpose of this study was to detect the effects of snail secretion and hyaluronic acid solution on the damaged skin barrier’s recovery in cases of atopic dermatitis. The results showed a statistically significant decrease in the control group and the experimental group, but the experimental group showed a greater statistical significance than the control group. In the variable skin hydration index there was no significant statistical increase in either the control group or the experimental group, but the level of skin hydration in the experimental group was higher than that of the control group. In the global assessment, effectiveness was higher in the experimental group than in the control group for both subjects and researchers. The safety assessment of the products for human use was carried out by haematological and biochemical tests carried out on both groups, demonstrating in both the safety of the product for the human body. In accordance with all experiments, it was concluded that the filtrate was highly effective and safe for the treatment of atopic dermatitis.

- “Treatment of experimental radiodermatitis with a regenerative glycoprotein mucopolysaccharide complex (Abad, *Cosmet Dermatol.* 1999; 9:53-57)” ; It was observed in this study that diverse patients in the study with acute or chronic radiodermatitis, with assessment of the study parameters such as erythema, flaking skin, pigmentation, pruritus and burns (some also common in acute dermatitis) suffered a statistically significant decrease after three months of treatment, which demonstrates the effectiveness of the product on the wound-healing process (an increase in the healing time) .

“Together, these results show the highly significant role that snail secretion of *Cryptomphalus aspersa* can have on some of the most important processes involved in skin regeneration, which are slowed down by age or UV radiation damage. Skin photo-aging is the cutaneous damage resulting from the accumulative effects of solar radiation and the normal aging process of the skin. The activity of *Cryptomphalus aspersa* secretion in key to preventing this damage due to: