Broad spectrum repairing properties of an extract of *Aquaphilus dolomiae* on *in vitro* and *ex vivo* models of injured skin

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Several studies have shown the clinical efficacy of Avène thermal spring water (TSW) in atopic dermatitis, psoriasis or in reducing erythema post laser resurfacing. In addition to these soothing and immunomodulatory properties, *in-vitro* experiments have also demonstrated effects of Avène TSW on stimulation of keratinocyte differentiation and improvement of membrane fluidity, suggesting a potential effect on skin barrier and repair.

An investigation of the deep aquifer of the Avène TSW pointed out a new microorganism as a potential source of these unique properties. Based on its distinctive phenotypic and genotypic characteristics, this newly identified strain was assigned to a new genus, as a representative of a novel species called Aquaphilus dolomiae. It is a chemoorganotrophic non-spore-forming bacterium of the b-Proteobacteria class.

In the present study, the activity of AD-S0, an original biological extract of A. dolomiae, was evaluated on *in-vitro* models of injured skin. The compound showed positive properties on primary fibroblast proliferation and keratinocyte migration. When formulated, it favored skin re-epithelialization on a 3D model of wounded skin explants. Moreover, we showed that AD-S0 could prevent wound infection by up-regulating numerous antimicrobial peptide genes and inducing hBD2 peptide release. All together, these results show broad repairing properties of the A. dolomiae extract S0, helping skin repair and preventing complicated wounds.

Keywords: skin repair, re-epithelialization, antimicrobial peptides.

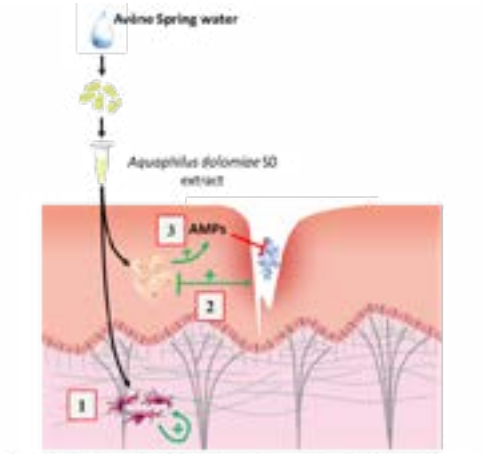

Figure 1. An overview of the broad spectrum of effects of AD-S0 on skin wound healing. AD-S0 resulted in a positive effect on the dermal matrix via fibroblast proliferation (1); migration and re-epithelialization of keratinocytes (2); and enhanced innate and stimulated immunity by inducing AMP secretion (3).

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Biography

Noizet Maite has been Graduated from the national institute of applied sciences, INSA, of Toulouse, France, as Biological and Biochemical engineer. Later on she works on master regulators in fibroblast on *ex-vivo* model of chronic wounds at the Ecole Normale Supérieure (ENS) of Paris, and then started working at The Curie Institute in Paris where she worked on triple negative breast cancer. Presently she has been working at the Pharmacology department of the Laboratoires Pierre Fabre Dermo-cosmetiques group on wound healing, aging and photoprotection in Toulouse, France.

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