04-4  New perspectives for the employment of Brenta’s silt-clay in anticellulite treatments

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\textbf{Introduction:} Brenta’s silt-clay (BrentaKer\textsuperscript{®}, EGAP, Italy) is a natural sediment containing minerals pertaining to Italian Dolomite Alps mountains, which is extracted from the catchment area of Brenta river. Particle-size distribution, mineralogical, chemical, tensiometric investigations with some observational findings open to new perspectives for its application in beauty & wellness field. On these basis, surface energy evaluations of tensiometric affinity with the skin by TVS modelling\textsuperscript{1)} and in-vivo clinical studies of anti-cellulite properties of Brenta’s silt-clay were performed.

\textbf{Objectives:} The aim of this work was to evaluate the properties of the Brenta’s silt-clay in anti-cellulite cosmetic treatments. These properties were hypothesized on the basis of its tensiometric affinity for the skin, as determined by the Bio-adhesive TVS index\textsuperscript{1)}.

\textbf{Materials and Methods:} Surface energy studies were performed by contact angle method, using the DSA10-Kruss tensiometer (diiodomethane, FomblinHC/25\textsuperscript{®}PFPE, glycerine as liquid tests). Bio-adhesive TVS index levels were originated from overlapping Brenta’s silt-clay and skin’s tensiometric prints. $\gamma$-rays irradiated Brenta’s silt-clay (Oroscare, EGAP, Italy) was inserted in a formulation composed by demineralised water, diazolidinyl urea, carboxymethyl cellulose, carbomer, glycerine, phenoxyethanol. Clinical efficacy of Brenta’s silt-clay was tested versus placebo in 10 females with cellulite on their thighs and/or gluteus (degree 1-3, Nurberger and Muller scale) for 8 weeks considering (a) skin hydration value (Corneometer CM825, C&K, Germany), (b) vertical deformation, elasticity, skin extensibility (Cutometer MPA580, C&K, Germany), (c) thigh circumference (measuring tape), (d) microcirculatory flow (Flowmeter Periflux PF4001, Perimed, UK), (e) length of dermo-hypodermic junction (Ultrasound Scanner Dermascan C\textsuperscript{®}Ver.3, Cortex Technology, Germany), (f) skin smoothness (Skin replicas image analysis, Monaderm, France).

\textbf{Results:} In three subjects the Bio-adhesive TVS index showed maximal affinity between Brenta’s silt-clay (DC=17.8±4 mN/m, PC=32.0±4.6 mN/m, SFE=49.8 mN/m) and untreated skin (DC=13.5±4.1, PC=19.67±13.4, SFE=33.2±16.2), indicating that the surface energy of Brenta’s silt-clay was higher than that of the skin and suggesting its capability to modify skin’s selective permeability. After 4 (T1) and 8 (T2) weeks, the subjects treated with Brenta’s silt-clay were compared with respect to placebo. Derma-hypodermal junction length significantly
decreased (-10.7%, p<0.05) in T1, whereas an increase of skin microcirculatory flow (+26.0%, p<0.05) and a decrease of the derma-hypodermal junction length (-16.8%, p=0.052) and of skin maximum average roughness (-4.2%, p=0.057) were observed in T2.

Conclusions: In subjects with cellulite blemish, the application of Brenta’s silt-clay is capable to increase skin blood micro-flow, improve dermo-hypodermal junction length and decrease skin maximum average roughness, suggesting its efficacy in anti-cellulite treatments. Bio-adhesive TVS index analysis suggests that this efficacy is probably related to its capability to modify skin’s selective permeability.

Keywords: BrentaKer, Bio-adhesive TVS index, Skin interface, Skin selective permeability, Cellulite

Bibliography