Introduction: Brenta’s silt-clay (BrentaKer®, 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 [1] and in-vivo clinical studies of anti-acne properties of Brenta’s silt-clay were performed.

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

Materials and Methods: Surface energy studies were performed by contact angle method, using the DSA10-Kruss tensiometer (diiodomethane, FomblinHC/25®PFPE, glycerine as liquid tests). Bio-adhesive TVS index levels were originated from overlapping Brenta’s silt-clay and skin’s tensiometric prints. 10 healthy volunteers with mild-moderate facial acne vulgaris with a maximum of 20 comedones, 50 papules and pustules, without nodules or cysts were enrolled [2]. A mud composed by 15g of γ-rays irradiated Brenta’s silt-clay (Oroscare, EGAP, Italy) and 10g of water was prepared and applied on the areas of the face to be treated (15 minutes, twice a week, 30 days). Number of a) comedones, papules and pustules, (b) quantity of sebum (Sebumeter-CK), (c) pH (pH-Meter-CK), and (d) soothing effect evaluated by skin’s colour (Mexameter-CK) were analysed at baseline (T0), after 15 (T15) and 30 (T30) days.

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. In T0-T30 period the number of papules significantly decreased from 11.3±3, 83 to 10.6±3, 74 (p=0.033). In the same period, the number of postules decreased from to 2.5±1.5 to 1.9±2.02 (p=0.055) whereas the papular colorimetric measurement diminished from 618±13.5 to 613.0±6.80 (p=0.046). Sebum values significantly decreased both in T0-T15 (~28.7%, p=0.027) and in T0-T30 (~32.7%, p=0.017) periods. Finally, significant changing of pH
and colorimetric measurements on healthy skin were not observed.

Conclusions: In subjects with mild to moderated facial acne vulgaris, a mask based on Brenta’s silt-clay regulates the sebum, reduces papular inflammatory, maintains cutaneous physiological conditions, suggesting its efficacy in anti-acne treatment. 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, Acne