

Melanoidins as an adjuvant for sun protection in 5 siblings with Bloom Syndrome

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Introduction: Bloom syndrome (BS) is a rare autosomal recessive genetic disorder. Patients present with telangiectatic, painful, photosensitive facial rash, "café au lait" macules and skin hyperpigmentation and require a careful sun protection in order to avoid cumulative skin damage and malignancies.

Objective: to evaluate the impact of melanoidins as an adjuvant to sun protection.

Materials and Methods: coffee beans were grown in Guaxupé and the melanoidins were obtained by subcritical extraction in water, in which the variation of dielectric constant with temperature optimizes the process. These melanoidins were generated in a condition rich in chlorogenic acid and have a large spectrum of protection, for UVA and UVB and an extended half-life (10 hours).

The family enrolled for this study consisted of 5 siblings, 4 males and 1 female, aged between 12 and 24 years, with BS and multiple skin abnormalities exacerbated by sunlight (photo 1). In the first 90 days, they received conventional sun protection (avobenzone, and tinosorb) and didn't exhibit improvement. After that, they were instructed to apply, once a day, a thick layer of a cream containing 5% melanoidins. Photographs were taken at baseline and 90 days. A software for photograph analysis was used to evaluate erythema and pigmentation. Statistical analysis was performed using ANOVA, considering a level of significance of 5% ($\alpha = 0.05$).



Results: pigmentation and erythema improved significantly 90 days after melanoidins were introduced ($p = 0.001$). Additionally, quality of life was improved by reduction of social stigmata and physical pain associated to photosensitivity.

Conclusions: melanoidins confirmed its potential as adjuvant in rigorous and long lasting sun protection. Besides, although the melanoidins used here were produced under specific conditions, it is worth noting that melanoidins are a ubiquitous waste in coffee and sugar cane industry and its re-use in sun protection would represent an ecologic initiative ("upcycling").

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