

## TOMATINE SOAP: A NEW APPROACH TO FOOD DERIVED WASTE MANAGEMENT

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**Introduction:** Natural cosmetics, without the presence of chemically synthesized constituents and obtained by sustainable methods are becoming consumers favourite options. In particular, the incorporation of food-derived ingredients in cosmetics has been an increasing trend in recent years. Tomatine is a glycoalkaloid present in unripe tomato fruit, wasted by the food industry.

**Aim:** To develop a soap from natural ingredients with antioxidant activity, containing tomatine extract obtained from green tomatoes. The produced soap was compared with a commercial soap claiming antioxidant activity.

**Methods:** Soap was produced by the “cold method” [1] containing olive, coconut and castor oils, water, sodium hydroxide, green clay, cypress wood and Eucalyptus citridora essential oil and tomatine enriched green tomato extract. Both tomatine soap and the commercial soap underwent a physico-chemical characterization, in terms of pH level, moisture content, total fat matter and antioxidant activity.

**Results and Discussion:** The tomatine soap retained the colour of the green clay for 6 months. Both soaps presented a pH of around 11 and a similar moisture content. Tomatine soap had 2 times more fat matter. According to our finding the antioxidant activity of the commercial soap was higher compared to the natural tomatine extract soap prepared in this study, however its formulation is not known.

**Conclusion:** Tomatine has never been introduced in a soap to the best of our knowledge. This work added value to an industry waste, contributing to a circular economy process. More research on the benefits of the tomatine extract in the skin are needed. We hope this study encourage further studies to use non-obvious sources of bioactive compounds that can be of great value to the cosmetic industry."

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[1] Prieto Vidal, N., Adeseun Adigun, O., Pham, T. H., Mumtaz, A., Manful, C., Callahan, G., Stewart, P., Keough, D., and Thomas, R. H. (2018). The Effects of Cold Saponification on the Unsaponified Fatty Acid Composition and Sensory Perception of Commercial Natural Herbal Soaps. *Molecules* (Basel, Switzerland), 23(9), 2356. *Cosmetic Dermatology*, 2022, 1–7