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Proposing Chitosan/Snail Slime Blended Films As Sustainable Functional Masks/Patches for Cosmetics and Biomedical Applications

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Extended Abstract

Due to the growing pollution problem, the use of novel sustainable and more biodegradable materials for reducing the environmental impact is needed worldwide in different fields, particularly in cosmetics and biomedicine. For this purpose, our research focused the attention on realizing Chitosan-based films blended with Snail Slime to develop functional masks or patches for potential cosmetics and biomedical applications. After preliminarily investigating their morphology, a physical and chemical characterization was performed by attaining SEM, UV-Vis, ATR-FTIR analyses, and Water Vapor Transmission Rate measurements, evidencing a quite uniform distribution of the Snail Slime inside the chitosan films. As a result, compacted and strongly cross-linked structures were observed. XRD analyses demonstrated their amorphous nature. For assessing their stability in water medium, the swelling measurements were acquired when changing the pH, ionic strength, and temperature. The antioxidant features were finally investigated by means of the ABTS assay, resulting in a boosted activity when the Snail Slime added amount was increased, occurring to be as dose dependent. [1] For further confirming these findings, the oxidation of a sulphur nucleoside, the 4-thiotymidine, was monitored overtime; as a result, its H_2O_2-induced degradation was prevented when increasing the Snail Slime amount. Work is in progress for testing *in-vitro* Chitosan-based blended films' antioxidant, as well as anti-inflammatory properties, with the aim also to assess their potential effect on improving wound healing, thanks to the Snail Slime components content. [1, 2] Furthermore, Chitosan/Snail Slime blended films' sunscreen, moisturizing, and skin-lightening properties will be explored, for making them suitable also as potential cosmetic multifunctional formulations. [3]

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