Hermosura Natural: Development and Analysis of an Antimicrobial Lipstick Using Epazote, Guayaba Leaf, Jamaica, and Cochineal Pigment

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Microbial contamination in cosmetic products such as lipsticks, can lead to health issues and skin irritations due to constant contact with the mouth and exposure to bacteria and fungi. Commercial lipsticks often rely on chemical preservatives that irritate skin and do not always prevent microbial growth. This research analyzed traditional Mexican plant extracts, including Epazote, Guayaba, and Jamaica, incorporated with cochineal pigment to develop a natural antimicrobial lipstick that reduces contamination while preserving cosmetic quality. Plant extracts and cochineal pigment were mixed into a lipstick base formulated with candelilla wax, tacuma butter, shea butter, coconut oil, and vitamin E. The mixture was poured into silicone molds to make the lipstick. Antimicrobial activity was measured using the Kirby–Bauer sensitivity assay against Staphylococcus epidermidis and Candida albicans. Zones of inhibition were recorded after incubation at 35°C for 24 hours. Physical properties were analyzed through colorimetric Lab* evaluation and hardness testing with a penetrometer. Epazote and Guayaba lipsticks showed significantly larger zones of inhibition against both microorganisms, unfortunately Jamaica formulation had a smaller zone of inhibition. The commercial lipstick was the lowest zone of inhibition which proves that my results were significant. Color Consistency analysis showed that all formulations remained within a similar Lab* color space. Hardness testing indicated comparable strength to commercial products, showing that plant extracts did not mess with the structure or usability. This research presents a potential opportunity to improve lipstick production while keeping physical properties the same.

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