Birigel: Phytotherapeutic Hydrogel Based on Biri-biri (Averrhoa bilimbi) for Natural Treatment of Acne

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It is estimated that approximately 9.8% of the world's population suffers from acne, a dermatological condition that can have significant clinical and psychosocial impacts, compromising the quality of life of affected individuals. Although several treatments are available, such as retinoids and systemic antibiotics, the high cost and side effects limit access. In this context, the biri-biri (Averrhoa bilimbi), a fruit-bearing plant cultivated in tropical regions, including the Amazon, stands out as an effective and accessible phytotherapeutic alternative due to its anti-inflammatory and antioxidant properties, which can reduce skin oiliness. Therefore, this project aimed to develop a hydrogel based on biri-biri extract for topical acne treatment. The hydrogel was synthesized from a biopolymeric matrix of bovine gelatin, carboxymethylcellulose, vegetable glycerin, and A. bilimbi extract. In vitro tests were conducted to evaluate antimicrobial, antioxidant, cytotoxic, and antifungal activity, skin compatibility, and rheological properties (pH and texture), and to compare the results with the scientific literature. The results demonstrated the potential of biri-biri to inhibit acne, the skin compatibility of the hydrogel, and its favorable antimicrobial, antioxidant, cytotoxic, and antifungal activity, validating its topical use. Thus, the hydrogel constitutes an innovative, natural, and economical alternative in the fight against acne, promoting the use of natural resources and showing potential impact in the phytocosmetics and dermatology markets.

Awards Won: