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DEVELOPMENT OF OPHTALMIC FORMULATIONS WITH GREEN PROPOLIS STANDARDIZED EXTRACT FOR THE TREATMENT OF ALKALI-INDUCED SUPERFICIAL CORNEAL ULCERS

Giulia Stavrakas Miranda[1*], Daniela Gracia Zoca[2], Fernanda Gosuen Gonçalves Dias[2], Pedro Sandoval dos Santos Ribeiro Cavallari[2], Wilson Cunha[2], Márcio Luíz Andrade e Silva[2], Mario Ferreira Conceição Santos[1]

giustavrakas@gmail.com

1-Programa de Pós-Graduação em Genética e Melhoramento, UFES, Alto Universitário, S/N, Alegre, ES, Brazil. Departamento de Física e Química, UFES, Alto Universitário, S/N, Alegre, ES, 29500-000, Brazil. 2-Núcleo de Pesquisa em Ciências Exatas e Tecnológicas, Universidade de Franca, Parque Universitário, Franca, São Paulo, 14404-600, Brazil.

Corneal ulcers induced by alkali occur due to the saponification of triglycerides upon contact with hydroxyl ions, leading to lyses of cell membrane. Green propolis (GP), which main compound is Artepillin C, presents a variety of biological activities, including healing activity. The GP derived from plant species *Baccharis dracunculifolia* was provided by Apis Flora Comercial Ltda. (lot: 65400918). The hydroalcoholic extract was produced by maceration with ethanol:water (7:3 v/v). Artepillin C was obtained by filtration of GP with ethyl acetate. The content of Artepillin C was settled by RP-HPLC-PDA. The mobile phase was composed of a gradient system with Solvent A (acetic acid:water, 0.1:Solvent A) and Solvent B (acetonitrile), applied as follows: 30% B (0-10 min), 30-55% B (10-11 min), 55% B (11-32 min), 55-30% (32-33 min) and 30% B (33-42 min). The total content of Artepillin C was 266,86 µg/mL (21,05%). The ophthalmic formulations containing the standardized extract were prepared using polyethylene glycol 400 (PEG400), polysorbate 80 (Tween 80®), and distilled water (8:2:90 v/v/v). The final concentrations were 5, 10, and 15 mg/mL. *In vivo* tests were conducted with rats. The animals were randomly organized in 8 groups according to the treatment: GP5 (5 mg/mL formulation); GP10 (10 mg/mL formulation); GP15 (15 mg/mL formulation); SC (solvent control); PC (positive control with commercial drug); UC (untreated ulcers), PCT (positive control for genotoxicity); and NC (negative control). Histopathological, biochemical, and genotoxicity analyses were performed. The results revealed that groups treated with GP extract formulations exhibited significant reduction in ulceration compared to UC group. No significant differences were observed among the treated groups, indicating similar healing activity between the formulations and the commercial drug. Notably, GP5 achieved complete ulcer healing within 48h. Histopathological, genotoxicity, and biochemical analyses revealed no significant differences compared to NC group, confirming the absence of genotoxic, cytotoxic, hepatotoxic, of nephrotoxic effects. Overall, GP extract proved effective for the treatment of superficial chemical keratitis, representing a promising and cost-effective alternative

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