

Área: FIS

Incorporação de agente hidratante em formulação de álcool em gel

Gustavo de S. Corrêa (IC),¹ Chayene F. Lemos* (IC),² Gizelle I. Almerindo (PQ),³

Gustavo.8219591@edu.univali.br; chayferreira1503@outlook.com

¹Engenharia Química, Universidade do Vale do Itajaí;

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Highlights

Incorporation of moisturizing agents in gel alcohol formulation. Mineral oil: velvety feel, but with loss of transparency. Dimethicone: good elasticity and maintained transparency.

Resumo/Abstract

Hydration plays a fundamental role in preserving the integrity of the skin barrier. However, the frequent use of alcoholic gels to prevent infectious diseases has led to a significant increase in cases of dry hands. Given this challenge, there is a need to incorporate moisturizing agents into hydroalcoholic formulations, seeking to reconcile antimicrobial efficacy with dermatological care. In this context, the present study proposed the development of a hydroalcoholic gel (70° GL) enriched with emollients and occlusives, such as silicone oil, mineral oil and Aloe Vera extract, in different proportions, aiming to minimize skin dryness without compromising the disinfectant properties of the product. Nine formulations were developed, in which the concentration of moisturizing components was varied (2.5% glycerin, 2.0–2.5% USP mineral oil, 2.0–3.0% dimethicone 193, and 2.0–4.0% Aloe vera extract). The products were analyzed by physical and physicochemical methods, monitoring their stability at room temperature (25 °C) and thermal stress (40 °C), as well as chromatographic analysis of the ethanol concentration present (63.55 to 70.05%), a critical parameter to ensure antimicrobial efficacy. The formulations obtained were homogeneous, with aspects that varied between clear, translucent and opalescent, depending on the composition, in addition to exhibiting the characteristic odor of alcohol and adequate pHs (5,2 – 6,2). All systems demonstrated adequate stability, with no significant changes during the evaluation period (4 weeks). As a result, two formulations with moisturizing properties were selected (F2 - 2% mineral oil and F3 - 2% dimethicone 193), whose viscosity (texture analyzer equipped with a 10 mm cylindrical probe), spread ability, physicochemical stability, and density (0.91 and 0.98 g/mL) were considered suitable for cosmetic use. More specifically, F2 demonstrated that the simple inclusion of mineral oil provides a velvety feel, but imposes optical challenges, demanding the implementation of new technologies. F3, on the other hand, proved that dimethicone can be incorporated without compromising transparency, providing superior elasticity, and, consequently, reduced stickiness. This study highlights the potential of alcohol gel in replenishing water in the skin, as an alternative to reducing the adverse effects of the product itself, while maintaining protection against microorganisms. Finally, a brief economic study was carried out to verify the viability of large-scale production and the values showed increases of 18.6% and 22.3% for the formulations with mineral oil and dimethicone moisturizing agents, respectively, when compared to the standard formulation without the addition of moisturizing agents.

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