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Formulation and evaluation of antifungal gel for tinea corporis by using *Achyranthes aspera* leaves extract

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Background: Tinea corporis is a common fungal skin infection in Sri Lanka, impacting individuals' and communities' quality of life. Herbal gel formulations are gaining attention as alternative medicine due to their natural origin and fewer side effects compared to conventional drugs.
Objective: To develop an herbal gel incorporating *Achyranthes aspera* extract, assess its physicochemical properties, and evaluate its effectiveness against *Trichophyton rubrum*.
Methods: The leaves of *A. aspera* were collected from Agriculture farm in Kilinochchi district, and shade dried and powdered. The leaves were extracted with ethyl acetate using Soxhlet extraction process and filtered, followed by removing the solvent with rotary evaporator. A gel base was prepared using Carbopol-940, propylene glycol 400, methylparaben, propylparaben, and the required amount of distilled water. The gel was formulated with 1 % (formulation A) and 3 % (formulation B) and 5% (formulation C) of plant extract. The skin pH (6.8–7) was maintained by the dropwise addition of triethanolamine. Each formulation was tested for physiochemical property such as organoleptic characteristics, homogeneity, pH, viscosity, spreadability and screen their antifungal activity against *T. rubrum* using the agar well diffusion method, with ketoconazole gel solution as a positive control and 5% DMSO solution and blank gel as a negative control. The statistical analysis of the results was done using one-way ANOVA at 5% significance level.
Results: Green homogenous, opaque and smooth, semi-solid consistency formulations were obtained. Formulation A demonstrated superior viscosity, while Formulation C exhibited better spreadability and antifungal activity against *T. rubrum* compared to the other formulations. Mean values of zones of inhibition of formulated gels against the *T. rubrum* was 12.33±0.57 mm, 21.00±1.00 mm and 23.33±0.57 mm for formulation A, formulation B and formulation C respectively while standard was 25.66±0.57 mm.
Conclusions: Formulation C exhibited optimum physicochemical characteristics and superior antifungal activity compared to other formulations. Further preclinical, clinical, and long-term stability studies are necessary.