

Formulation and evaluation of poly herbal topical anti-bacterial ointment

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Introduction: Treatment of skin infection is one of the main challenges in human due to emerging antibiotic resistance. Nowadays the usage of the herbal product is increasing and become popular among consumers. Many polyherbal formulations are developed and used for the different ailments. Polyherbal ointments could be used against skin infections. Neem, Henna and Bracteated birthwort showed good antimicrobial activity and are used in the treatment of several skin conditions.

Objective: To formulate and evaluate polyherbal topical antibacterial ointment using leaves of extracts of *Azadirachta indica*, *Lawsonia inermis* and *Aristolochia bracteata*.

Methodology: The herbal extract was prepared by maceration method and the minimum inhibitory concentrations (MIC) of plant extracts were determined using micro-broth dilution method. Based on the MICs values, polyherbal mixture was prepared and incorporated into ointment bases. The ointments were formulated with 1% (F1), 2% (F2), 4% (F3) and 6% (F4) of polyherbal extracts. Parameters of ointments such as viscosity, pH, spreadability and stability studies after 30 days were estimated. Antibacterial activity was evaluated by agar well diffusion method against *Staphylococcus aureus*, *Streptococcus pyogenes* and *Pseudomonas aeruginosa* using Mupirocin ointment as standard. The statistical significance was evaluated by Paired sample t-test for stability studies and two-way ANOVA for anti-bacterial activity and P value < 0.05 was considered statistically significant.

Results: F4 ointment had comparable zone of inhibition (mm) 33.67, 10.83 and 5.00 to Mupirocin ointment 32.00, and 15.50 and 7.00 against *Staphylococcus aureus*, *Streptococcus pyogenes* and *Pseudomonas aeruginosa* respectively. pH, viscosity and spreadability of F4 were 5.72, 32.37 cPs and 10.04 gcms⁻¹ respectively. Stability studies confirmed that no significant changes were observed in the prepared ointments after storage period of 30 days.

Conclusion: This study revealed that the polyherbal ointment with 6% extract was effective against skin infections causing selected bacteria and comparable activity to Mupirocin ointment.

Key Words: Formulation, Evaluation, Polyherbal ointment, Neem, Henna, Bracteated birtwort.