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A comparative study of bee pollen, Aloe vera and commercially available ointment on the treatment of freckles

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Freckles are hyper-pigmented skin lesions, presenting a common cosmetic concern and affecting the beauty and confidence of a person. Several commercial products are available to treat freckles but due to their chemical nature, they affect the skin adversely. For centuries, Bee pollen and Aloe Vera have been used as natural antioxidants. This study hypothesizes that bee pollen and Aloe vera have ameliorative effects and may help in the removal of these skin lesions. To test this hypothesis, the current study aimed to design and formulate Aloe Vera gel and bee pollen to investigate their ameliorative effect on freckles. The samples of Bee pollens were collected from the KUST apiary and Aloe Vera from the local garden. An ointment of bee pollen and Aloe Vera was prepared by using the Vaseline base (paraffin), 2% Aloe vera gel, 1% pollen grain tincture, and vitamin E as a preservative. Overall four diverse formulations A1, A2, A3, and A4 were prepared using different concentrations of pollen grains, Aloe vera gel, and Vaseline base. Thirty patients (30 females) were divided into two experimental groups; Group A was treated with ointment prepared, and Group B was treated with commercial ointment having formula magnesium ascorbyl phosphate 5% for four weeks. Five patients out of each group were controls and received only a cream base. Physical characteristics of herbal ointments, such as color, odor, smoothness, and grittiness, were recorded. It was observed that herbal ointment showed compliance with the parameters of acceptable ointment. The formulation A4 presented significantly ($p<0.05$) better results compared to the standard drug and a marked decrease in dark spots was observed compared to the standard drug. Moreover, the formulations didn't show any allergic reaction, itching, or redness on the skin of patients. These findings highlight the potential of bee pollen and Aloe Vera as effective and safe alternatives for freckle treatment.