Fabrication of anti-vitiligo ointment containing *Psoralia corylifolia*: In vitro and in vivo characterization

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Vitiligo vulgaris is an ailment that has profound impact on pigmentation of the human skin. Different therapeutic regimens are used to treat vitiligo but none of them alone is too successful to be called as vitiligo cure. Recently, a change has been observed with the development of anti-vitiligo ointment containing hydroalcoholic extract (distilled water and methanol in 1:1 ratio) of ground seed of *Psoralia corylifolia* (P.C). The study aimed to explore the clinical outcome of ointment formulation containing hydroalcoholic extract of *Psoralia corylifolia*. 20 patients (aged 25-65 years) were included in this study. Formulation was applied on effected white patches of patients and some effected portion of the same patient was regarded as control (self control study design). The formulation that passed the required tests (pH, the temperature stability tests in 8±0.1 °C, 25±0.1 °C, 40±0.1 °C and the physical properties like color, bleeding and rheology) was selected. FTIR studies of hydroalcoholic extract of P.C seeds and formulation were performed. The pigmentation of white spots of vitiligo was photographically evaluated before, during and after 12 weeks of treatment. A significant (p≤ 0.05) reduction in the pigmentation of skin was determined in the volunteers used herbal extract. Pre and post treatment difference in the levels of pigmentation was statistically significant (p=0.05). Hydrophilic ointment prepared from herbal extract was found effective in vitiligo as compared to self control. Ointment formulation containing hydroalcoholic extract of P.C could be an effective monotherapy for vitiligo.

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1, 3-Bis (3, 5-dichlorophenyl) urea compound ‘COH-SR4’ inhibits proliferation and activates apoptosis in melanoma

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The current clinical interventions in malignant melanomas are met with poor response to therapy due to dynamic regulation of multiple melanoma signaling pathways following administration of single target agents. In this context of limited response to single target agents, novel candidate molecules capable of effectively inducing tumor inhibition along with targeting multiple critical nodes of melanoma signaling assume translational significance. In this regard, we investigated the anti-cancer effects of a novel dichlorophenyl urea compound called COH-SR4 in melanoma. The SR4 treatment decreased the survival and inhibited the clonogenic potential of melanomas along with inducing apoptosis in the in vitro cultures. SR4 treatments lead to inhibition of GST activity along with causing G2/M phase cell cycle arrest. Oral administration of 4 mg/kg SR4 leads to effective inhibition of tumor burdens in both syngeneic and nude mouse models of melanoma. The SR4 treatment was well tolerated and no overt toxicity was observed. The histopathological examination of resected tumor sections revealed decreased blood vessels, decrease in the levels of angiogenesis marker, CD31 and proliferation marker Ki67, along with an increase in pAMPK levels. Western blot analyses of resected tumor lysates revealed increased PARP cleavage, Bim, pAMPK along with decreased pAkt, vimentin, fibronectin, CDK4 and cyclin B1. Thus, SR4 represents a novel candidate for the further development of mono and combinatorial therapies to effectively target aggressive and therapeutically refractory melanomas.

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