

**FURANOCOUMARIN INDUCED CONTACT DERMATITIS DURING THE
TREATMENT OF SHWITRA USING BAKUCHI (*Psoralea corylifolia* Linn.): A CASE
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ABSTRACT

Bakuchi (*Psoralea corylifolia* Linn. Fabaceae) is an important plant in Ayurveda used in the treatment of various skin disorders especially *Shwitra* i.e. Vitiligo. The seeds are used for internal and external applications. The properties are described as *Kapha Vatashamaka* and *Pitta Vardhaka*. A number of chemical constituents, including Furanocoumarins especially Psoralenes and flavonoids have been isolated from this plant. The sepsoralenes have the ability to stimulate melanocytes and thereby causing normal pigmentation in vitiligo. Furanocoumarins is known to cause dermatitis with blistering. This paper reports a case of Dermatitis induced during the treatment of *Shwitra* using *P. corylifolia* and its possible management.

KEYWORDS: *Bakuchi*, *Psoralea corylifolia*, Furanocoumarins, Psoralene, Dermatitis, *Shwitra*, Vitiligo.**INTRODUCTION**

Bakuchi (*Psoralea corylifolia* Linn. Fabaceae) is an important plant in Ayurveda and Siddha systems of medicine, and also in Chinese medicine. Also called^[1] as *Avalguja*, *Chandraprabha*, *Somaraji* etc. This plant is also widely distributed in the tropical and subtropical regions of the world, especially China and Southern Africa.^[2] It grows throughout the plains of India, especially in the semi-arid regions of Rajasthan and Eastern districts of Punjab, adjoining Uttar Pradesh. It is also found in Himalayas, Dehradun, Oudh, Bundelkhand, Bengal, and Bombay, some valleys in Bihar, Deccan, and Karnataka. Used in the treatments of skin diseases, worm infestations, *Shwasa*, *Kasa*, inflammatory conditions of skin.^[3] *P. corylifolia* is a very ancient remedy for leukoderma; it has been tried extensively not only by the practitioners of the Indian medicine^[4] but also by the followers of the Western system.^[5]

Seeds, seed oil, roots, and leaves^[6] are used based on its properties.^[7,8] The seeds of *Bakuchi* alleviates *Kapha* and *Vatadoshas* but aggravates *Pitta*. Has *Katu Rasa*, *Tikta*, *Laghu*, *Ruksha Guna*, *Ushna Veerya*, *Katu Vipaka* and has *Shwitra-kushtha nashaka Prabhava*. It is well documented that *P. corylifolia* is effective in the management of Vitiligo by virtue of both external and internal use.^[9,10,11]

Several Furanocoumarins, iso-flavonoids, chalcones, flavones have been isolated from the seeds of *P. corylifolia*. Bakuchiol and Psoralen being the major constituents and are reported to possess a number of biological properties.^[12] The seeds of this plant contain a variety of coumarins including psoralen.^[13] They have been specially recommended for the treatment of leucoderma, psoriasis, leprosy and inflammatory diseases of skin^[14] and are prescribed both for local application in the form of a paste or ointment.^[15] Some of these compounds exhibit antioxidant^[16], antiplatelet^[17], estrogenic^[18], immunomodulatory, and antitumor properties.^[19] Antibacterial effects of several constituents on *Staphylococcus aureus* and *S. epidermidis* have been reported. A previous report showed that bakuchiol, the main constituent, was also effective on methicillin-resistant *S. aureus*.^[20,21]

The furanocoumarins, which contain psoralens, promote pigmentation.^[22] The powder is used by Vaidyas internally for leprosy and leukoderma and externally in the form of paste and ointment. Oil has a powerful effect on the skin *Streptococci*. It helps fight vitiligo, a disorder in which patches of skin lose their pigmentation. It is used in the inflammatory diseases, mucocutaneous disorders, dermatitis, and edematous conditions of the skin. It also alleviates boils and skin eruptions. The plant

has blood purifying properties. It is used to treat itching red papules, itching eruptions, extensive eczema with thickened dermis, ringworm, rough and discolored dermatosis, dermatosis with fissures, and scabies. It has shown to improve the color of skin, hair, and nails. Seeds are given in scorpion-sting and snake bite. Seeds are useful in bilious disorders. Seed and extract powder are used as diuretic, anthelmintic, laxative, and for healing wounds. Seeds are used as stomachic, stimulant, aphrodisiac, and diaphoretic. It is used in the treatment of various kinds of disorders, such as asthma, cough, nephritis, and others. It is a good hair tonic and hence used in alopecia areata and hair loss.^[23] Psoralen accelerates the photo-oxidation of DOPA under sunlight as well as photo flood lamp.^[24] The oleoresinous extract of seeds given to nonsyphiliticleukoderma patients has been found to be effective. Topical application prepared from *P. corylifolia* gave positive results in epilating folliculitis. The coumarinic extracts from seeds showed photosensitizing activity.

The drug appears to have a purely local action with a specific effect on the arterioles of the subcapillary plexuses, which are dilated so that the plasma is increased in this area. The skin becomes red and the melanoblasts (pigment-forming cells) are stimulated. In leukoderma, melanoblasts do not function properly and their stimulation by the drug leads them to form and exudate pigments, which gradually diffuse into the white leukodermic patches.^[25] Also, the phytochemically

induced covalent binding of the drug to pyrimidine bases is responsible for its therapeutic effect. The photoconjunction involves thymine dimer adducts on the opposite strands of DNA. Psoralen has been found to intercalate into DNA, where they form mono- and di-adducts in the presence of long wavelength UV light and thus are used for the treatment of hypo-pigmented lesions of the skin, such as leukoderma.^[26]

CASE REPORT

A male patient of 68 years of age presented to Kayachikitsa outpatient department with complaints of acrofacial vitiligo over chin and nostrils since 2 years. As a part of treatment^[27] he was advised to apply *P. corylifolia* seed powder to the area as paste with cow's urine for two-three days until small eruptions appear. Due to over enthusiasm, he continued to apply for six days. On seventh day he reported to clinic with swelling over face, orbits and burning sensation. On examination, dermal angioedema and skin thickening was observed (Image 1). All vitals were stable. He was advised *pittahara*, *shothahara* line of treatment with *Kamadugharasa* 500mg TDS, *KaisoraGuggulu* 1g TDS, *Avipathikara Choorna* 10g HS along with external application of *Shuddha GairikaChoorna* with milk. His skin turned normal in 3 days (Image 2). Mild repigmentation was noted on the affected skin of chin and nostrils.



Image 1. Dermatitis



Image 2. After treatment

DISCUSSION

When psoralen and its derivatives are used for sun-tanning, residual edema of the part, and cutaneous damage may occur. In some cases, acute dermatitis with blistering, edema, and possibly renal complications have been reported in earlier studies.^[28] Photosensitivity is a common adverse event^[29] in the clinical use of *Bakuchi*. Furanocoumarins may cause hypersensitive reactions and irrational use precipitates dermatitis. This is evidence

that *Bakuchi*s a *teekshna* drug which may induce *Pitta prakopa* and *Shotha* when used irresponsibly. Hence precautions are to be adopted prior to therapy involving *P. corylifolia* when used externally in Vitiligo. These conditions may be successfully managed by *Pittahara* line of treatments which are opposite to the nature of *P. corylifolia*.

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