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"A COMPREHENSIVE REVIEW OF PSORALE CORYLIFOLIA TRADITIIONAL USES, BIOACTIVE COMPOUNDS AND MODERN PHARMACOLOGY."

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ABSTRACT:

Since ancient times, Psoralea corylifolia L. (Leguminosae) has served as a commonly known traditional drug plant to treat a range of diseases. It is widely present and is crucial in Chinese as well as Ayurvedic medical therapy. These plant species have been extensively researched in vitro and in vivo for diverse biological and phytochemical studies, according to the literature search by science. Providing an exhaustive and up-to-date report on its ethnopharmacological and side effects is the intent of the review. Alopecia, inflammation, leukoderma, leprosy, psoriasis, and eczema are among the locally treated conditions. It also possesses anticancer, antibacterial, cytotoxic, pigmentor, cardiotonic, vasodilator, and antihelminthic activity.The coumarin, flavonoid, and meroterpene families consist of the majority of the approximately 100 bioactive substances isolated to date from seeds and fruits.The present review article collates recent information on ethnobotanical, ethnopharmacological, phytochemical, and clinical applications, of P. corylifolia. Prior to the use of the plant as a treatment agent, conventional clinical trials have to be carried out, and this article shall be helpful to provide data to conduct further studies.

KEYWORDS: ethnobotanical, ethnopharmacology, phytochemical and clinical uses.

INTRODUCTION:

Worldwide, traditional medical systems make extensive use of the annual erect herb P*soralea corylifolia.* The genus Psoraleos comes from a Greek term meaning "affected by itching" or "leprosy." It is also known in India by a number of synonyms, such as *Babchi*, *Bakuchi*, *Vakuchi*, *Bawachi*, and others, which are included in the database of classical Ayurvedic literature [1-4]. Other biological names for "*P. corylifolia*" include Cullen corylifolium, Cullen corylifolia, Psoralea patersoniae, and Trifolium unifolium [5]. The plant P. corylifolia is found throughout the world's tropical and subtropical climates, particularly in China [6,7]. This plant grows in warm climates and ranges in height from 25 to 170 cm. The ideal soil for P. corylifolia plant growth is sandy soil.

It has nutritional and therapeutic benefits. *Charaka* and *Vriddha vagbhatta* describe *Bakuchi* in Shaka Varga. It is utilized in compound formulations as well as as a single medication [8]. *Bakuchi* is used in a number of Ayurvedic remedies, including Pandu (anemia), Shotha (oedema), Keshya and Tvachya (hair and skin treatments), Krimi (as a germicidal), Kustha (skin problems), and Shwasa and Kasa (bronchial asthhama and cough) [9_11]. The fact that every portion of this plant has a purpose is its most remarkable feature. Leukoderma, skin rashes,infections, and other skin conditions are all treated with the plant's roots, stems, leaves, seeds, and any flowers it may have. The psoralens in furanocoumarins encourage pigmentation. It will provide information about its therapeutic activity and and encourage pigmentation. It will provide information about its therapeutic activity and pharmacological characteristics [12,13].

Figure 1: BAKUCHI fruit

Figure02: Bakuchiol

Plant Description

Vernacular name:

- **Sanskrit**: Avalguja, Somaraji
- **Assamese**: Habucha
- **Bengal**: Bakuchi, Somraji, Hakucha Veeja
- **English**: Babchi seeds, Psoralea seeds.
- **Bavachi**: Babchi, Bavachi, Bakuchi, Bauchige, Bhavantibeeja,
- **Gujrati**: Bavachi
- **Hindi**: Babchi, Bavachi, Bakuchi,
- **Kannada**: Bauchige, Bhavantibeeja, Bhavanchigid, Baukuchi
- **Kashmiri**: Babchi
- **Malayalam**: Karkokil
- **Marathi**: Bawchi Ayurpharm[14]

Synonyms:

Suparnika (having attractive leaves), Krsnaphala, Kalamesi (black fruits), Putiphala (having an unpleasant odor), Shashilekha, Somaraji (seeds have white steak inside) [15], Avalguja, Kusthaghni, Malayu [16], and Svitraghni (used in skin diseases, especially vitiligo) are some of the synonyms of Bakuchi compiled from Nigantus [17]

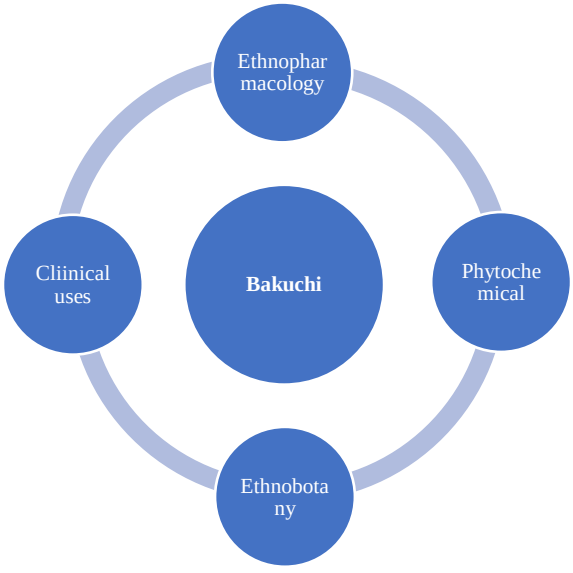


Figure03: Schematic representation of herbal drug standardization

LIST OF CHEMICAL CONTITUENTS WITH ITS CLINICAL USES [18-32]

Table 1: List of Chemical Contituents with its Clinical Uses.

Botanical classificatioN / Taxonomical Classification:

S.NO	CHEMICAL CONSTITUENTS	PART OF THE PLANT	CLINICAL USES
1	Angelicin	Seed	Antibacterial
2	Bakuchiol	Seed	Antibacterial and Antifungal
3	Bavachinone A and B	Seed	Antibacterial
4	Bakuchicin	Seed	Topoisomerase inhibitor
5	Corylifolin :	Seed	Antioxidant
6	Psoralen	Seed	Antipsoriatic
7	Isopsoralen	Seed	Antiprotozoal
8	Hydroxy bakuchiol	Seed	Lymphangiogenesis
9	Coryaurone A	Fruit	Antibacterial
10	Corylifols	Seed	Antibacterial

Table 02: Taxonomical classification

Kingdom	*Plantae*
Subkingdom	*Tracheobionta. (Vascular plant)*
Superdivision	Spermatophyta (Seed plant)
Division	Magnoliophyta (Flowering plant)
Class	Dicotyledon
Order	Fabales
Family	Fabaceae (Leguminosae)
Subfamily	Faboideae (Papilionideae)
Genus	Psoralea
Species	Psoralea corylifolia linn

MORPHOLOGICAL CHARACTERS: [33-40]

- **Height**: Reaching a height of 60 to 120 cm.
- **Stems**: White hair-covered and grooved.
- **Leaves**: Simple, widely elliptical leaves with black spots and white hairs.
- **Flowers**: thick racemes of blue or purple
- **Pods**: 3.5–4.5 mm long, ovoid to oblong, and resemble black chocolate.
- **Seed**: The seeds are flattened, oblong, dark brown, and smell strongly of something.

PHYTOCHEMICAL TEST:

Table 03: Phytochemical Test

S.NO	PHYTOCHEMICAL ANALYSIS	TEST NAME	REAGENT NAME	OBSERVATION
1	Alkaloids	Mayer Test	Mayer Reagent	Cream colour precipitation.
2	Flavonoids	Shinoda Test	Mg +HCL	Pink\red colour appeared.
3.	Terpenoids	Salkowski Test	Chloroform+ H2so4	3Reddish brown colour appeared.
4	Tannins	Ferric chloride Test	FeCl3 solution	Blue_ black greenish colour appeared.
5	Saponins	Foam Test	Distilled Water	Stable froth formation.
6	Glycosides	Keller_ Kiliani Test	CH3COOH+FeCl3+H2SO4	Brown ring formation

PHARMACOLOGICAL USES:

1.Respiratory disorders:

Bakuchi seeds have cytotoxic, cardiac, diaphoretic, deobstruent, diuretic, stimulant, astringent, aphrodisiac, and antibacterial qualities. Additionally, these seeds help with respiratory problems such as bronchitis, cough, asthma, nephritis, dyspnea, and other respiratory ailments. Psoralea corylifolia coumarins have been shown to have antiasthma properties. Bakuchi seeds and kwath, which contains six herbs, have an instant impact on treating asthma, particularly during the convalescent phase to avoid emphysema. Through mast cell stability and histamine release inhibition, Psoralea corylifolia exhibits strong antiasthma action. [41,42]

2.Reproductive Diseases:

Additionally, Bakuchi oil is utilized to support reproductive health. In order to treat impotence, incontinence, coldness, premature ejaculation, and lack of sexual interest, its essential oil is combined with powdered fruits and seeds. Both men and women with reproductive issues can benefit from the aphrodisiac qualities of bakuchi oil. [43]

3.Indigestion:

By controlling the enzyme, bakuchi aids in food digestion. The quick and simple digestion process depends on the enzymes. According to Ayurveda, Bakuchi's Ushna (hot) potency aids in better digestion. Ama is the result of an unbalanced pitta. As a result, the poison stays in the body and causes indigestion, which damages deep tissue. Bakuchi helps to manage this condition due to its Deepan(appetizer) and Pachan(digestion) properties. [43]

4.Cancer:

Bakuchi oil is utilized to treat lung cancer as well as other types of cancer. A unique bioactive chemical with anti-cancer effects is found in Psoralea species. Bakuchinol's properties that cause neoplastic cell transformation by blocking epidermal growth factor (EGF). Additionally, Bakuchinol decreased the viability and prevented the A431 human epithelial carcinoma cells from growing on their own. Research indicates that compounds including psoralen, corylfolinin, and bevachinin inhibit the growth of osteosarcoma and lung cancer cells. Psoralidin increases the activity of an apoptosis-related tumor necrosis factor, which causes cancer cells to undergo apoptosis while sparing healthy tissue. When tested on the human lung adenocarcinoma A549 cell line, bakuchinol exhibits anticancer activity that is more successful in preventing cell proliferation. [44,45]

5. Worm infestation:

Bakuchi is said to possess a Krimighnaas property according to Ayurveda. It indicates that the herb does not allow the worm to live inside the host. Bakuchi has antibacterial and anti-inflammatory qualities that cause it to kill worms and cure worm infections. [46]

6. Jaundice:

Bakuchi may contribute to jaundice, although there isn't enough scientific data to back this theory. Nonetheless, because of its antioxidant properties, which combat free radicals and shield hepatic cells from harm, it may be able to prevent liver damage. Bakuchi's Rasayana (rejuvenation) and Deepan (appetizer) qualities help it treat this ailment. It boosts appetite, promotes digestion, and preserves general health. [46]

7.Urinary System:

Bakuchi is also used to treat urine-related disorders, such as incontinence. It also strengthens the sphincter walls of the urinary tract. [46]

8. Hair

As per Ayurveda Bakuchi removes dandruff and increases hair growth when applied externally because of its Keshya properties. It also improves quality and luster of hair. It is also beneficial for grey hairs. [46]

9. Pain

It pacifies vatadosha and relieves spasmodic pains and chronic pains. Photosensitivity – Psoralea corylifoliahas ability to effect on tyrosinase and also improve the activity of tyrosinase by increasing the volume of melanine. Psoralen is a photosensitivity compound and it is superior to isopsoralen. It plays crucial role in managing vitiligo. [47]

10. Diabetics

Psoralea corylifolia have higher antidiabetic activity. Seed extract of Psoralea corylifoliais administered orally in streptozotocin-nicotinamide induced diabetic rat, which shows increase in glycogen level content in liver and insulin level in plasma along with decrease cholesterol and blood glucoses in plasma. [47]

11. Osteoporosis

In several studies Psoralea corylifoliaextract showed notable inhibitory effect on osteoblastic proliferation in cultured cell line and boosting the bone formation and specifically Bavachin helps in inhibiting the bone resorption and to promote the proliferation of osteoblasts. [48]

12.Skin Disorder:

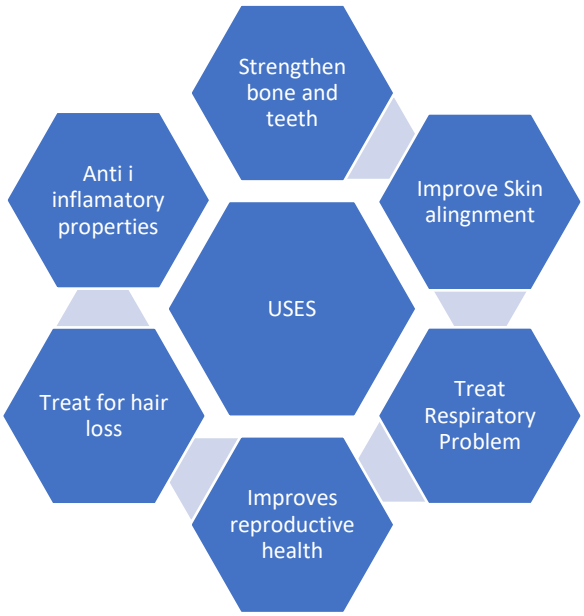
Bakuchi hasraktshodhaka property which means blood purifier. All skin problems which arerelated to the flow and circulation of blood, Bakuchihas capacity to purify blood and cure the all skin inflammation, wounds and other problems. [49-52]

13. Other:

Bakuchi also treat Alzheimer's diseases, they also have Pesticidal activity, Antiaging activity, Antidiabetic activity and antiulcer activity. It is effective against helicobacter pylori so can treat diseases caused by any infection. [53]

CLINICAL USES:

Figure 04: Clinical Uses



Conculsion

As per the above summary, P. corylifolia is a very important plant from ethnobotanical, pharmacological, phytochemical and clinical applications. The latest edition of the scientific literature regarding P. corylifolia, including, the recent study
was discussed above. Some of the numerous various chemical compounds present in P. corylifolia include flavonoids, coumarins, and meroterpenes, which are the most common. P. corylifolia L. (Fabacese) is a beneficial plant for application in pharmaceutical, health, and body care products. because it is an enriched source of biologically active substances. Therefore this review is useful for improved knowledge.

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