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A review article on phytochemical properties of *Tamraparna* and its traditional uses

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Abstract
In recent times, focus on plant research has increased all over the world and a large body of evidence has collected to show immense potential of medicinal plants used in various traditional systems. Over the last few years, researchers have aimed at identifying and validating plant derived substances for the treatment of various diseases. Similarly it has been already proved that various parts of plants such as Leafs, fruits, seeds etc. provide health and nutrition promoting compounds in human diet. Tobacco is an agricultural product processed from the leaves of plants in the genus *Nicotiana*. In Indian agriculture, tobacco has a prominent place. Tobacco could be developed as an important food crop in combination with its traditional use for smoking and chewing. Tobacco plants are also used in plant bioengineering, and some of the more than 70 species are grown as ornamentals. This is a review paper which updates the current scenario of tobacco. The main aim of this paper is to search and explore the phytochemical properties, traditional and folklore uses of tobacco in various countries.

Keywords: *Nicotiana tabacum, Tamraparna*, Phytochemical, traditional uses

1. Introduction
There are lots of plants in the world, some are identified and some are unidentified. Now a day's lots of work are being done on plants. Among them some works are on medicinal uses of plants. There are so many herbal medicines either individually or in combination which are being used in various medical treatise for the cure of different ailments. Holistic approach of Ayurveda in regard to preventive, promotive and curative measures with due consideration of health and disease is well established. The Materia Medica of India provides a great deal of information on the Ayurved, folklore practices and traditional aspects of therapeutically important natural products. The knowledge of medicinal plants is scientifically documented and organized in classical texts and various *Nighantus*. However codified information regarding the plants of folklore origin and few exotic plants introduced by interlopers are not referred in Ayurveda. One among such plants includes 'Tobacco.' The tobacco plant, *Nicotiana tabacum*, has probably been responsible for more deaths than any other herb. Present, irrational tobacco use is causing over 3 million deaths a year worldwide, and if current trends continue the annual mortality will exceed 10 million by around 2030 [1, 2]. The history of the medicinal use of tobacco before the Civil War has apparently not been documented. Review of publications on the subject shows that this plant was long used as orthodox medicine by the members of the medical profession. For tribes throughout North America, the use of traditional tobacco plants for spiritual, ceremonial and medicinal purposes goes back thousands of years [3].
Extensive work has been done on the constituents of various types of tobacco. Stedman, in his excellent review of tobacco and tobacco smoke constituents [4, 5], lists a large number of compounds which have been isolated from it. Major chemical constituents identified are nicotine, nornicotine, anabasine, myosmine, anatabine, nitrate, sorbitol [6].

2. Aim and objective
A systematic review was conducted with an objective to search and explore the phytochemical properties and traditional uses of the plant *Nicotiana tabacum*.

3. Taxonomy:
Family: *Solanaceae*.
Latin name: *Nicotiana tabacum*
Synonyms: tobacco, Tamak., Siah(Marma)
Common name: Tobacco.

Taxonomic notes: An erect glandular pubescent herb. Leaves large, oblong lanceolate, acuminate, the lower semiamplexicaul and decurrent. Flower rosy or reddish, pedicelled, 4-5 cm long, in many-flowered, usually panicled racemes. Capsule 1.5-1.8 cm long, a little longer than the calyx.

4. Ecology

Nicotiana tabacum is a perennial herbaceous plant. It is found only in cultivation, it grows to heights between 1 to 2 metres. *Nicotiana tabacum* is a native of tropical and subtropical America but it is now commercially cultivated worldwide. Other varieties are cultivated as ornamental plants or grow as a weed. *Nicotiana tabacum* Linné is a robust annual little branched herb up to 2.5 m (8.2 ft) high with large green leaves and long trumpet shaped white-pinkish flowers. All parts are sticky, covered with short viscid-glandular hairs, which exude a yellow secretion containing nicotine.

5. Phytochemical properties

Tobacco leaf contains several pyridine alkaloids, the principal one being a liquid alkaloid, nicotine. Other alkaloids present include nicotine, nicotimine, anabaineanatalline and nornicotine. It also contains a high percentage of organic acids. Leaves also contain glucosides, tahacinin, tahacilin and *iso*quercitrin,1-quinic, chlorogenic, caffeic and oxalic acids. They also contain terpenic and carcinogenic substances [7]. Anatabine and (+) nornicotine have been isolated from roots. Quercetin-3,3´-dimethyl ether and quercetin-3-Me ether have been isolated from flowers. Three new gibberellins-nicotiana α, β and γ along with gibberellins A and A3 have been isolated from shoot apices and flower buds. Seed contains cycloartanol, cycloartenol 24 daturadiol and solavetivone. Cholesterol, cholest-7-enol, 24-methylenecholesterol, campesterol, stigmasterol, sitosterol, 28-isofucosterol, lanosterol, 31-norlanosterol, lanost-8-enol, obtusifoliol, 31-norcycloartenol, cycloeucalenol, granisterol, citrostadienol, β-amyrin, lupeol, cycloartanol and 24-methylenecycloartanol have also been reported in seed oil.

6. Traditional uses

In *Ayurveda* texts Tobacco is referred as *Tambaku, Ksharapatra, Krimighna, Dhumrapatrik* [9], *Vajrabhringi* [10], *Bahubeeja*, *Bahuphala*, *Sukshmabeeja*, *Deerghaka* [11]. The *Ayurvedic* pharmacology indicates that it is *Ushna* (hot), *Tikshna* (Sharp), *Sara* (stimulates peristaltic movements) and increases *Pitta* (Digestive fire / Bilejuice/ enzymatic metabolisms). It is a drug of choice in *Bastivishodhana* (Urinary track disorders and diseases related with urinary bladder). It is bitter and pungent in taste. In proper dosing it can be used in *Kapha* (cough), *Shwasha* (Asthma), *Kandu* (itching), *Krimi* (anthelmintics). It is very good as analgesic and utilized in *Dantaruja* (dental pain), *Shukraruja* (pain related with genital organ) and *Drishtiruja* (pain related with eye). It can control dandruff and hair infections. It can dwindle the poison of scorpion bite and related swelling [11]. The clever administration of the drug effective in *Madakrit* (narcotic), *Bhramaka* (Induces vertigo), *Drishtimandyakara* (diminishes the vision) and *Vamaka* (Emetic). Tobacco has been used as an antispasmodic, a diuretic, an emetic, an expectorant, a sedative, and a sialagogue, and in homeopathy. Tobacco has a long history of use by medical herbalists as a relaxant, though since it is a highly addictive drug it is seldom employed internally or externally at present. The leaves act as antispasmodics, discutients, diuretics, emetics, expectorants, irritants, sedatives and sialagogues. Wet tobacco leaves are applied externally in the treatment of rheumatic swelling, skin diseases and stings, as the active ingredients can be absorbed through the skin. They are also a certain cure for painful piles. A homeopathic remedy made from the dried leaves is used in the treatment of nausea and travel sickness. Some other activities reported for *Nicotiana tabacum* are: analgesic activity, anesthetic activity, angiogenesis inhibition, antibacterial activity, anticonvulsant activities, antiestrogenic effect, antifungal activity, antiglaucomic activity, antioxidant activity, antistress effect antiviral activity, aromatase inhibition, arrhythmogenic effect, carcinogenic activity, Nicotine for treatment of Alzheimer disease, Parkinson disease, depression and anxiety, schizophrenia, attention deficit hyper activity disorder (ADHD), pain and obesity.

China

The traditional (Lop Nor region) use of *Apocynum venetum* with tobacco as an agent to detoxify nicotine [12].

Egypt

Dried leaves and flowers are smoked to relieve asthma and influenza. Leaves are used as a poultice with oil in rheumatic pain [13].

India

Juice of *Securinega leucopyrus* is mixed with the dried leaf of tobacco and applied externally for parasites [14]. Fresh leaf is mixed with corncob or *Amorphophallus paeoniflorum* to treat asthma [15]. Powdered tobacco, or masheri, is rubbed on the teeth for this purpose and tobacco toothpaste is marketed commercially [16]. The leaves of the tobacco plant have been used in traditional Indian medicine as a sedative, antispasmodic, and vermifuge. They are also considered antiseptic, emetic and narcotic. A decoction of leaves is applied locally for muscle relaxation associated with joint dislocation. It is also used to relieve pain and swelling associated with rheumatic conditions. Tobacco is also utilized traditionally to treat strangulated hernia, orchitis, and skin diseases. The tribal inhabitants of Surguna district of Madhya Pradesh state apply warmed leaves on testis to treat hydrocele. Even the oil extracted from the leaves is used in the treatment of arthralgia, gout and lumbago [17].

Kenya

Water extracts are applied opthalmically for corneal opacities and conjunctivitis [18].

Malaysia

Infusion of the dried leaf is taken orally as a sedative [19].

Nepal

Leaf juice is applied externally to treat scabies [20].

7. Conclusion

The plant *Nicotiana tabacum* is well known toxic drug to very limited use has been done by the present medical field. So it is needful to explore the traditional and good uses of the plant. And therefore phytochemical properties also needed to be known. This paper is just try to explore the traditional uses of plant.

8. Collection of data

For the collection of data various Ayurvedic journals, books and the electronic database search was conducted.

9. Acknowledgement

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