



## Traditional herbal uses and pharmacological properties of *Solanum erianthum* D. Don plant among Kokni tribal from Satana tehsil of Nashik District of Maharashtra

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### Abstract

The present study documents the traditional herbal uses and pharmacological properties of *Solanum erianthum* D. Don among the Kokni tribal community of Bhilwad village from Satana tehsil of Nashik district, Maharashtra. The study revealed that different parts of the plant including leaves, roots, fruits and bark are widely used by the Kokni tribe for the treatment of fever, cough, asthma, skin infections, wounds, body pain, inflammation, digestive disorders and respiratory ailments. Pharmacological evaluation from available scientific literature indicates that *Solanum erianthum* D. Don possesses significant antioxidant, antimicrobial, anti-inflammatory, analgesic, hepatoprotective, and cytotoxic activities. These medicinal properties are mainly attributed to the presence of bioactive phytochemicals such as alkaloids, flavonoids, tannins, saponins, phenolic compounds, and steroidal glycosides. The study highlights the importance of preserving indigenous ethnomedicinal knowledge and emphasizes the therapeutic potential of *Solanum erianthum* D. Don for future herbal drug development. Proper scientific validation and conservation strategies are essential to promote sustainable utilization of this valuable medicinal plant.

**Keywords:** *Solanum erianthum*, Kokni, herbal, pharmacology, medicinal plants, Satana, Nasik

### Introduction

India is one of the richest countries in the world in terms of biodiversity and traditional medicinal knowledge. Since ancient times, medicinal plants have played a significant role in healthcare systems such as Ayurveda, Siddha, Unani, and folk medicine. Tribal communities, particularly those living in forest and hilly regions, possess extensive knowledge regarding the medicinal uses of local plant species. This traditional ethnomedicinal knowledge has been transmitted orally from one generation to another and continues to serve as an important source of primary healthcare in rural and tribal areas. Among various medicinal plant families, the family Solanaceae occupies a prominent position due to its diverse therapeutic applications. The genus *Solanum* comprises nearly 2000 species distributed throughout tropical and subtropical regions of the world. Several species of this genus are well known for their medicinal, nutritional, and pharmacological importance. *Solanum erianthum* D. Don, commonly known as potato tree or tobacco tree, is an important medicinal shrub belonging to the family Solanaceae. The plant is widely distributed in tropical parts of India including Maharashtra, Kerala, Karnataka, Tamil Nadu, and North eastern states.

*Solanum erianthum* D. Don is a perennial shrub or small tree characterized by densely hairy leaves, purple flowers, and globose berries. Different parts of the plant such as leaves, roots, bark, flowers, and fruits are traditionally used for the treatment of fever, cough, asthma, wounds, inflammation, rheumatism, skin diseases, digestive disorders, and respiratory ailments. Tribal healers and rural communities use preparations of the plant in the form of decoctions, pastes, extracts, and infusions for curing various human diseases.

The Kokni tribal community inhabiting Bhilwad village of Satana tehsil in Nashik district of state Maharashtra possesses rich ethnobotanical knowledge related to medicinal plants available in and around their surrounding forest ecosystems. The Kokni tribes largely depend upon herbal medicines for

the treatment of common diseases due to easy availability, low cost, and cultural acceptance. However, rapid modernization, deforestation, migration, and changing lifestyles are causing gradual erosion of traditional medicinal knowledge among younger generations. Therefore, documentation and scientific validation of indigenous knowledge are essential for biodiversity conservation and sustainable utilization of medicinal plants. Pharmacological studies on *Solanum erianthum* D. Don have demonstrated the significant biological activities including antioxidant, antimicrobial, anti-inflammatory, analgesic, hepatoprotective, and cytotoxic effects. The medicinal properties of plant are mainly attributed to the presence of important phytochemical constituents such as alkaloids, flavonoids, tannins, saponins, phenolic compounds, terpenoids, and steroidal glycosides. The scientific investigations supporting traditional uses of the plant highlight its potential for the development of novel herbal formulations and pharmaceutical products.

The present study aims to document the traditional herbal uses of *Solanum erianthum* D. Don among the Kokni tribal community of Bhilwad village in Satana tehsil of Nashik district, Maharashtra and to review its pharmacological properties based on available scientific literature. The present study on *Solanum erianthum* D. Don emphasize the importance of conserving indigenous ethnomedicinal knowledge and promoting further research on the therapeutic potential of this valuable medicinal plant.

### Materials and Methods

The present ethnobotanical study was conducted in Bhilwad village located in Satana tehsil of Nashik district, Maharashtra, India during June 2023 to January 2026. Satana tehsil lies in the northern part of Maharashtra and is characterized by hilly terrain, semi-forest vegetation, and tribal settlements. The region experiences a tropical climate with moderate to heavy rainfall during the monsoon season. The area is rich in floral diversity and supports several medicinal plant species traditionally used by tribal

communities. Bhilwad village is predominantly inhabited by Kokni tribal community who are dependent largely on forest resources and traditional herbal practices for healthcare and livelihood. The surrounding vegetation consists of deciduous forests, shrubs, herbs, climbers and medicinal plants commonly utilized in folk medicine.

*Solanum erianthum* D. Don belonging to the family Solanaceae was selected for the present study based on its frequent use in Kokni tribal healthcare practices and its reported medicinal importance in ethnomedicinal literature. The plant was reported as a new record during the year 2019 by the author from Satana tehsil of Nasik district (A new distributional record *Solanum erianthum* D. Don from family Solanaceae to the flora of Nasik District (Maharashtra), India. Sachin D. Kuvar & R. D. Shinde, 2019 [9] Annals of Plant Sciences 8 (6) pp.3563-3566). So more field surveys were conducted during different seasons between June 2023 to January 2026 in Bhilwad village and nearby forest areas. Ethnomedicinal information regarding the use of *Solanum erianthum* D. Don was collected through personal interviews, structured questionnaires, group discussions with the tribals, direct interaction with tribal healers (Bhagats), elderly villagers and knowledgeable plant informants. The interviews were conducted in the local language to ensure better communication and accurate documentation of indigenous knowledge.

Information regarding the plant was recorded by following parameters such as local name of the plant, plant parts used, mode of preparation of plant drug, method of administration, dosage, diseases treated duration of treatment, availability of plant species. Data was collected from approximately 10-15 informants including tribal healers, elderly men and women and local medicinal practitioners belonging to the Kokni tribal community. Fresh plant specimens of *Solanum erianthum* D. Don were collected from forest and roadside habitats in and around Bhilwad village during the flowering and fruiting seasons. The collected specimens were carefully processed, dried, and preserved following standard herbarium techniques. Identification of the plant was carried out using regional floras, botanical literature, and taxonomic keys. Confirmation of the species was done with the help of experts from the Blatter Herbarium, St. Xavier's College (Autonomous), Mahapalika Marg, Mumbai, Maharashtra. Information regarding phytochemical constituents and pharmacological properties of *Solanum erianthum* D. Don

was collected from published research articles, scientific journals, ethnobotanical literature, pharmacognosy textbooks and online scientific databases. The collected ethnomedicinal information was systematically documented and data was analyzed descriptively to determine the frequency of plant part usage, common diseases treated, methods of herbal preparation and traditional therapeutic applications of the plant. The pharmacological findings from scientific literature were compared with traditional uses reported by the Kokni tribal community to evaluate the scientific relevance of indigenous medicinal knowledge.

### Observations

*Solanum erianthum* D. Don, Prodr. Fl. Nep. 96, 1825; Roe in Taxon 17: 176, 1968; C.B.Cl. in Hook. f. Fl. Brit. India 4: 230, 1883; Cooke, Fl. Pres. Bombay 2: 333, 1958 (Repr.). Deb in J. Econ Tax. Bot. 1: 46, 1980; Bole & Almeida, J. Bombay Nat. Hist. Soc. 81: 379, 1984; Vartak, JBNHS 54, 965, 1957; V.N. Naik, Fl. Marathwada 615, 1998; Almeida, Fl. Maharashtra 3B: 374, 2001; Singh *et al.*, Fl. Maharashtra State 2: 504, 2001 [15].

A shrub or small unarmed tree 2 – 6 m. high, covered almost all over with a dense yellowish or grey tomentum of scruffy stellate hairs. Leaves 10-20 by 5-15 cm., elliptic-lanceolate, acuminate, entire, velvety-pubescent above, densely woolly beneath, base acute or subrhomboid (rarely rounded); main nerves about 8 pairs; petioles 2 – 4 cm. long. Flowers numerous, in woolly dichotomous corymbose cymes which are at first apparently terminal, afterwards becoming lateral, peduncles stout, 2.5 -10 cm. long, pedicels 3 – 9 mm long, stout. Calyx 6 mm long cup shaped, densely stellately woolly, teeth at flowering time 2.5 mm long, broadly deltoid, acute, enlarged in fruit but not over topping the berry. Corolla white, nearly 1 cm long, deeply divided, lobes 8 mm long, elliptic-lanceolate, acute, stellately hairy outside. Filaments flat, glabrous, anthers 3 mm long, oblong, obtuse. Ovary hairy, style glabrous. Berry 8 mm in diameter, globose, yellow, covered with small stellate hairs. Seeds 2.5 mm in diameter, slightly rugose.

**Local name:** Ran wange

**Flowering & Fruiting:** Throughout the year.

**Distribution:** Satana Tehsil: Villages - Jaitapur, Devthan.

**GPS coordinates:** 20°47.468'N and 74°3.608'E

**Exsiccata:** SDK – 703, 704 (BLAT)



Fig 1: Plant Habit



Fig 2: Flower



**Fig 3:** Fruiting stage



**Fig 4:** Single leaf

### **Morphology of *Solanum erianthum* D. Don Plant**

During the present ethnobotanical survey conducted in and around Bhilwad village of Satana tehsil, Nasik district, Maharashtra, it was observed that the Kokni tribal community possesses considerable traditional knowledge regarding the medicinal uses of *Solanum erianthum* D. Don. The plant was found growing naturally in forest margins, roadside areas, wastelands, and moist habitats surrounding the tribal settlements. Tribal healers and elderly villagers were highly familiar with the plant and frequently used it for the treatment of common ailments. The study revealed that different plant parts such as leaves, roots, fruits, bark, and flowers are utilized for medicinal purposes.

Among these, leaves were the most commonly used plant part followed by roots and fruits. Fresh leaf paste was widely applied externally on wounds, boils, skin infections, and inflammatory swellings. Fresh leaves are heated, crushed to make paste and paste is applied on forehead to cure headache. The seeds are burnt to ash and given for 7 days to cure sterility in males. Decoctions prepared from leaves and roots were administered orally to cure fever, cough, asthma, bronchitis, stomach disorders, and body pain. Fruits were rubbed on hand and legs as an insect repellent while working in the field. It was also observed that tribal healers generally prepared herbal medicines using simple traditional methods such as paste preparation, decoction infusion, juice extraction and powder formulation. Most remedies were prepared using fresh plant materials collected from nearby forest areas. The medicinal preparations were administered either orally or externally depending upon the nature of the disease. The Kokni tribal informants reported that *Solanum erianthum* D. Don is especially effective in treating respiratory disorders such as cough, cold, asthma, and throat infections. The plant was also used for rheumatism, digestive problems, fever, skin diseases, and wound healing. Elderly tribal healers stated that the plant possesses cooling and pain-relieving properties.

Pharmacological observations based on available scientific literature on *Solanum erianthum* D. Don plant contains several bioactive compounds including alkaloids, flavonoids, tannins, phenolic compounds, steroidal glycosides and saponins. These phytochemicals are responsible for important biological activities such as

antioxidant, antimicrobial, anti-inflammatory, and analgesic effects. Experimental studies have shown that methanolic extracts of the plant exhibit strong antimicrobial and analgesic activities. The study further observed that traditional medicinal knowledge among the younger generation is gradually declining due to modernization, urbanization, and reduced dependence on herbal medicine. Elderly tribal practitioners remain the primary custodians of ethnomedicinal knowledge in the study area. The observations strongly support the medicinal significance of *Solanum erianthum* D. Don in tribal healthcare practices and indicate the need for conservation of traditional knowledge as well as scientific validation of indigenous herbal remedies. Scientific studies on the genus *Solanum* also confirm the presence of diverse pharmacological activities which includes anti-inflammatory, antimicrobial, hepatoprotective, antioxidant, and cytotoxic properties.

### **Result and Discussion**

The pharmacological activities reported for *Solanum erianthum* D. Don strongly support its extensive traditional use in Indian medicine. Antioxidant, antimicrobial, analgesic, and anti-inflammatory properties are mainly linked to flavonoids, steroidal alkaloids, tannins, and phenolic compounds. Despite promising pharmacological evidence, detailed clinical investigations and toxicity studies are still limited. Standardization of extraction procedures, isolation of active principles, and pharmacokinetic studies are essential for future pharmaceutical applications. India's traditional medicinal knowledge provides valuable information regarding therapeutic uses of *Solanum erianthum* D. Don. Scientific validation of these traditional claims may contribute to the development of novel plant-based drugs.

The present ethnobotanical investigation conducted among the Kokni tribal community of Bhilwad village, Satana tehsil, Nasik district, Maharashtra revealed that *Solanum erianthum* D. Don is an important medicinal plant traditionally used for the treatment of various human ailments. The study documented significant indigenous knowledge associated with the identification, collection, preparation, and therapeutic use of the plant. Field observations and interviews with tribal healers, elderly

villagers, and knowledgeable informants indicated that the plant is commonly available in forest margins, roadside areas, wastelands, and moist habitats of the study region. The Kokni tribes use different plant parts such as leaves, roots, fruits, bark, and flowers for medicinal purposes.

Among these, leaves were found to be the most frequently utilized plant part.

#### Ethnomedicinal Uses of *Solanum erianthum* D. Don by Kokni Tribal

Plant Part Used	Method of Preparation	Mode of Administration	Ailments Treated
Leaves	Paste	External application	Wounds, boils, skin infections, inflammation
Leaves	Decoction	Oral	Fever, cough, asthma
Roots	Decoction	Oral	Body pain, rheumatism, stomach disorders
Fruits	Juice/Paste	Oral and external	Toothache, respiratory disorders
Bark	Decoction	Oral	Ulcers and infections
Flowers	Infusion	Oral	Cold and fever

The results showed that leaf paste prepared from fresh leaves is widely applied externally on wounds, boils, cuts, and skin diseases. Decoctions prepared from leaves and roots are commonly administered orally for respiratory disorders such as cough, asthma, bronchitis, and throat infections. Root preparations are also used in the treatment of body pain, rheumatism, and digestive problems. The findings indicate that respiratory ailments and skin disorders are among the major health problems treated using *Solanum erianthum* D. Don in the Kokni tribal community. Traditional plant healers reported that the plant possesses pain-relieving, anti-inflammatory, and cooling properties. Leaves were found to be the most extensively used plant part due to their easy availability and effectiveness in treating skin infections, wounds, fever, and respiratory diseases.

#### Conclusion

*Solanum erianthum* D. Don is an important medicinal plant widely used in Indian traditional medicine. Pharmacological investigations reveal that the plant possesses antioxidant, antimicrobial, anti-inflammatory, analgesic, hepatoprotective, respiratory therapeutic, and cytotoxic activities. The presence of diverse phytochemicals including steroidal alkaloids, flavonoids, tannins, and phenolic compounds contributes significantly to its medicinal potential. Further research involving clinical trials, toxicity evaluation, and isolation of bioactive compounds is necessary to fully explore the therapeutic applications of this plant in modern medicine.

The present study demonstrates that *Solanum erianthum* plays an important role in the traditional healthcare system of the Kokni tribal community of Satana tehsil, Nasik district. The medicinal uses documented during the field survey are consistent with ethnobotanical reports from other tribal regions of India and tropical countries. The predominance of leaf usage observed in the study may be due to easy accessibility, rapid regeneration, and high concentration of bioactive compounds in leaves. Similar observations have been reported in several ethnobotanical studies where leaves constitute the major plant part used in herbal medicine.

The pharmacological activities reported in scientific literature strongly support the traditional therapeutic claims of the Kokni tribes. Antimicrobial activity corresponds with the use of the plant for skin infections and wounds, while anti-inflammatory and analgesic properties validate its use for rheumatism and body pain. Likewise, antioxidant activity may contribute to its overall therapeutic efficacy. The study also revealed that traditional ethnomedicinal

knowledge is mainly confined to elderly tribal healers and older members of the community.

Younger generations were found to possess comparatively limited knowledge regarding herbal medicine due to modernization, migration, urbanization and increasing dependence on modern healthcare systems. This indicates the urgent need for documentation and conservation of indigenous medicinal knowledge. Overall, the findings suggest that *Solanum erianthum* D. Don possesses significant medicinal potential and may serve as a valuable source for future herbal drug development. Further phytochemical isolation, toxicological evaluation and clinical studies are necessary to scientifically validate its safety and therapeutic efficacy.

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