

## ***Lycianthes lysimachioides* (Wall.) Bitter (Solanaceae): A New Addition to the Flora of Manipur, Northeast India**

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**ABSTRACT:** The present paper deals with the taxon *Lycianthes lysimachioides* (Wall.) Bitter, reported here for the first time from Manipur State, Northeast India. The work on genus *Lycianthes* (Dunal) Hassl. in Manipur is poor and no literature record on taxonomic studies on this taxon is available. This is the first morpho-taxonomic work carried out on this taxon in Manipur state, Northeast India. The detailed morphological description and the photographs are provided along with their geographical distribution of Indian species of *Lycianthes*.

**Keywords:** *Lycianthes lysimachioides*, Solanaceae, Morpho-taxonomic, New Addition, Manipur.

### **INTRODUCTION**

Manipur “the land of Jewel” is located in the North Eastern part of India which share Indo-Burma hotspot region of the world. Geographically, it lies in between 23°50′ to 25°42′ N latitude and 92°59′ to 94°46′ E longitude having an area of ca. 22,327 sq. km. The state is bounded in the East by Myanmar (Burma), North by Nagaland, on the West by Mizoram and Assam and on the South by Myanmar and part of Mizoram. The state is mostly hilly and mountainous although it has a large central valley having an area ca. 1,545 sq. km surrounded by hills. The varied topographical and climatic conditions are responsible for the luxuriant growth of vegetation of the state. The state is rich in flora and fauna which is signifies by its state animal “Sangai” Brown Antlered Deer and State flower *Lilium mackliniae* Sealy (commonly called as Shirui Lily). The state of Manipur possess a unique floating park in the world, popularly known as Keibul Lamjao National Park, an integral part of Loktak Lake, and it is a home to Sangai (*Rucervus eldii eldii*), an endemic state animal.

The genus *Lycianthes* (Dunal) Hassl. of Solanaceae consist of about 150–200 species (Zhang *et al.*, 1994; Hunziker, 2001; Dean *et al.*, 2020) is third largest genus of Solanaceae after *Solanum* L. and *Cestrum* L. The taxon is mostly distributed in Central and South America (Barboza and Hunziker 1992; Rojas and D’Arcy, 1997). Genus *Lycianthes* can be distinguished by its axillary inflorescence, poricidal anthers, calyx without distinct lobes but rather with atruncate rim with or without appendages protruding from near or below the calyx rim (D’Arcy, 1980). *Lycianthes* can be confused with other genera with similar unlobed

calyces like *Capsicum* L, *Brachistus* Miers, *Cautresia* Hunz. and *Witheringia* L’Hér. (D’Arcy, 1980; Dean *et al.*, 2020), especially when flowers are lacking.

In India, the genus *Lycianthes* is represented by 7 species (Deb, 1980; Reemakumari, 2004), 8 species including a cultivated species (*L. rantonnetii* Carriere ex. Luscher) are mentioned in the BSI website: <https://efloraIndia.gov.in> (BSI, 2023). No proper revisionary work on the genus *Lycianthes* has been done India but only few and fragmentary works are available (Clarke, 1883; Pandey and Sinha, 2012; Murugan *et al.*, 2016). During the field visit to Pudunamoi-Mao, Senapati District, Manipur, the author came across an interesting species of nightshade family. The specimens were collected and on further investigation and consultation with herbarium and available literature (Deb, 1980; Clarke, 1883; Singh *et al.*, 2000; Reemakumari, 2004; Pandey and Sinha, 2012; Murugan *et al.*, 2016; Kalidas and Panda, 2019) and photograph images from <https://powo.science.kew.org> (POWO, 2023), the collected species has been identified as *Lycianthes lysimachioides* (Wall.) Bitter, hitherto unknown in Manipur state, Northeast India.

### **MATERIALS AND METHODS**

The collection, pressing and preparation of herbarium specimens were done as per the conventional herbarium techniques (Jain and Rao 1976) and the herbarium specimen was deposited at Taxonomy Herbarium, Department of Botany, D.M. College of Science, Dhanamanjuri University, Imphal. The live plants photos were taken from Sony Alpha 58 and Sony Cyber-Shot DSC-WX200 digital camera. All the morphological descriptions, measurements were based on the living plant specimen.

**Taxonomic Treatment.** *Lycianthes lysimachioides* (Wall.) Bitter, Abh. Naturwiss. Vereine Bremen 4: 491. 1920 (Plate 1 and 2).

**Homotypic Synonyms**

*Lycianthes biflora* subsp. *lysimachioides* (Wall.) Deb in Bot. J. Linn. Soc. 76: 293 (1978); *Solanum lysimachioides* Wall. in Fl. Ind. 2: 257 (1824); *Solanum macrodon* var. *lysimachioides* (Wall.) C.B. Clarke in J.D. Hooker, Fl. Brit. India 4: 232 (1883).

**Heterotypic Synonyms**

*Lycianthes lysimachioides* var. *caulorhiza* (Dunal) Bitter in Gatt. Lycianthes: 493 (1919); *Lycianthes lysimachioides* var. *cordifolia* C.Y. Wu in Acta Phytotax. Sin. 16(2): 79 (1978); *Lycianthes lysimachioides* var. *formosana* Bitter in Repert. Spec. Nov. Regni Veg. 18: 320 (1922); *Lycianthes lysimachioides* var. *purpuriflora* C.Y. Wu & S.C. Huang in Acta Phytotax. Sin. 16(2): 79 (1978); *Lycianthes lysimachioides* var. *rotundifolia* C.Y. Wu in Acta Phytotax. Sin. 16(2): 80 (1978); *Lycianthes lysimachioides* var. *sinensis* Bitter in Gatt. Lycianthes: 493 (1919); *Numaecampa kerrii* Gagnep. in Bull. Soc. Bot. France 95: 33 (1948); *Solanum caulorhizum* Dunal in A.P. de Candolle, Prodr. 13(1): 181 (1852); *Solanum debilissimum* Merr. in Philipp. J. Sci. 23: 265 (1923).

Plant perennial herbs, upto 2 m, prostrate, trailing or climbing, rooting at nodes. Leaves paired, major and minor leaves; petiole 0.9–2 cm, pubescent, major leaf blade ovate, elliptical to ovate-lanceolate, 11–14 × 5–6.5 cm, surface pubescent, ciliate, base cuneate, rounded, apex acuminate; minor leaf blade ovate, 6–8.5 × 4–5.5 cm. Inflorescence 1–3 flowered in fascicles, peduncle absent; pedicel short, ca 0.8 cm long. Calyx persistent, cup-shaped, campanulate, 10-veined. Corolla white, 2 cm in diameter, lanceolate, 10 × 0.3–0.4 cm, basal portion with green to yellowish-green spots, apex sharply acute to acute, deflexed, extrose. Filament short, ca. 1 mm, glabrous, anthers syngonecious, 3 × 1 mm. Ovary glabrous, style slender, ca. 8 mm. Fruit berry, red when mature, globose, ca. 1 cm in diameter.

Fl.: April–May

Fruiting: May–June

Distribution: INDIA: (Arunachal Pradesh, Meghalaya, Mizoram, Nagaland, Manipur [present report]); China, Hainan, Jawa, Laos, Nepal, Sumatera, Taiwan, Vietnam.

Specimen examined: India. Manipur, Pudunamei-Mao, 1700–1800 m, 25° 31.7740 N and 94° 9.3690 E, KE100025.

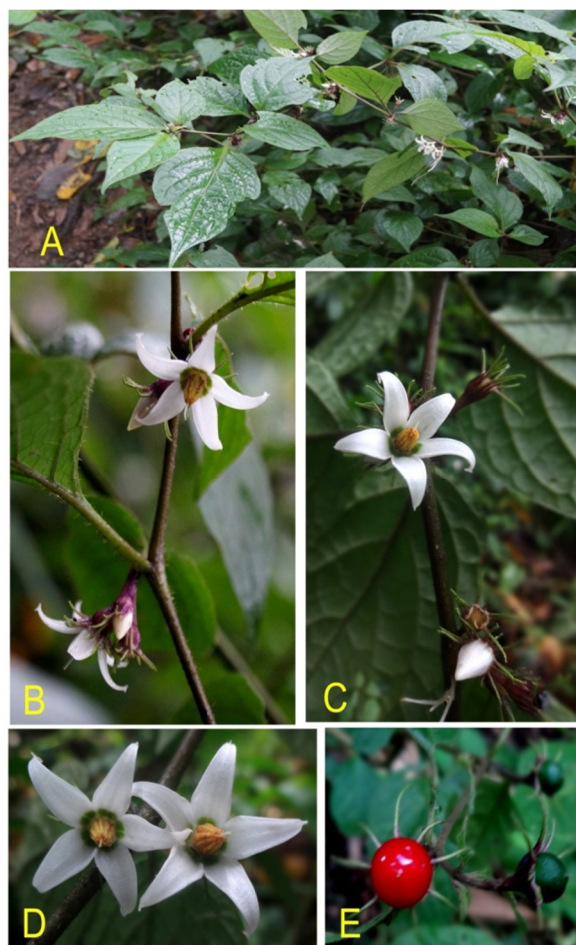
Ecology: It is growing on the deciduous forest at an altitudinal range between 1700–1820 m.

**DISCUSSION**

The work on genus *Lycianthes* (Dunal) Hassl. in India is scanty and only fragmentary literature are available.

Eshuo

No taxonomic revision work on this taxon has been carried by any worker in India. In India, mostly the work is carried on genus *Solanum* in the family Solanaceae. Concrete revision work on the taxon *Lycianthes* is necessary to authenticate Indian species of *Lycianthes*. Out of the 8 species (including the cultivated species) of *Lycianthes* found in India, 2 species viz., *L. neesiana* (Wall. ex Nees) D'Arcy & Zhi Y. Zhiang and *L. laevis* (Dunal) Bitter, were reported to occur in Manipur. *L. laevis* has been documented in Wild Edible plants of ethnic communities of Manipur (Gangte *et al.*, 2013; Konsam *et al.*, 2016). Panday & Sinha (2012) had reported *L. laevis* as new generic record for Mizoram state and the state of Mizoram had recorded 5 species of *Lycianthes* (Sinha *et al.*, 2012). *L. laevis* has been reported from different state like Kerala, Tamil Nadu, Andhra Pradesh, Karnataka and Goa (Datar and Lakshminarasimhan, 2013; Rao *et al.*, 2019). List of Indian *Lycianthes* species and their distribution have been given in Table 1.



**Plate 1.** *Lycianthes lysimachioides* (Wall.) Bitter Fig. A. Plants showing habit and habitat; Figs. 2 & 3. Showing Flowers and buds; Fig. D. Closed-up view of flowers; Fig. E. Showing mature fruit (red one) and young fruits (green one).

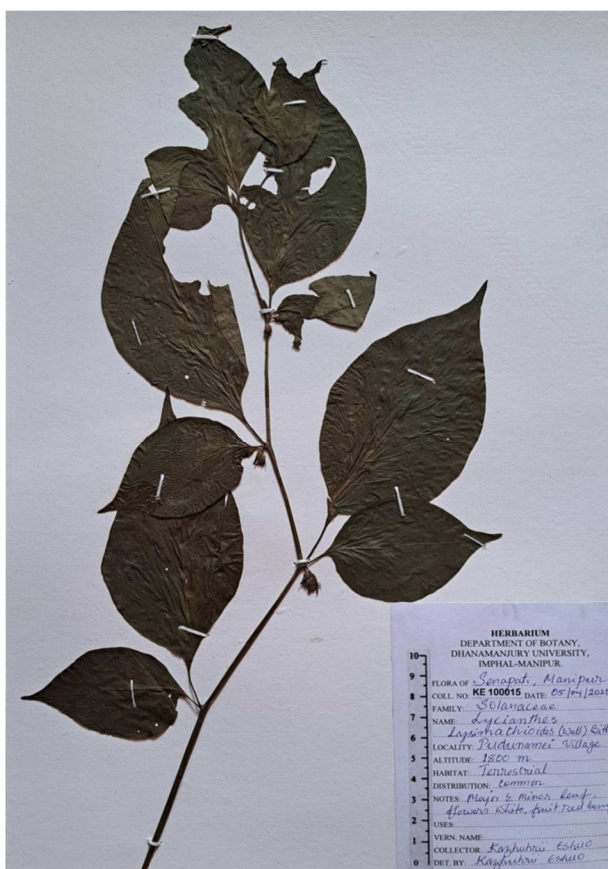


Plate 2. Herbarium of *Lycianthes lysimachioides* (Wall.) Bitter.

Table 1: List of Indian *Lycianthes* species and their distribution (9).

Sr. No.	Name of the species	Distribution in India
1.	<i>Lycianthes biflora</i> (Lour.) Bitter	Meghalaya, Mizoram
2.	<i>L. bigeminata</i> (Nees) Bitter	Andhra Pradesh, Karnataka, Kerala, Maharashtra, Meghalaya, Tamil Nadu
3.	<i>L. crassipetala</i> (Wall.) R.R. Mill	Arunachal Pradesh, Assam, Meghalaya, Mizoram
4.	<i>L. laevis</i> (Dunal) Bitter	Assam, Meghalaya, Mizoram, Manipur, Goa
5.	<i>L. macrodon</i> (Wall. ex Nees) Bitter	Arunachal Pradesh, Meghalaya, Mizoram, Sikkim, Tripura, Assam
6.	<i>L. neesiana</i> (Wall. ex Nees) D'Arcy & Zhi Y. Zhang	Arunachal Pradesh, Meghalaya, Mizoram, Assam, Manipur, Nagaland, Sikkim, Tripura, Uttarakhand
7.	<i>L. lysimachioides</i> (Wall.) Bitter	Arunachal Pradesh, Meghalaya, Mizoram, Nagaland, Manipur [present report]
8.	<i>L. rantonnettii</i> (Carriere ex Luscher) Bitter	Cultivated species

## CONCLUSIONS

The addition of a taxon *Lycianthes lysimachioides* (Wall.) Bitter to the flora of Manipur, Northeast India has enriched species diversity to genus *Lycianthes* of family Solanaceae. Previously, only 2 species of *Lycianthes* were reported from Manipur state flora. With the addition of this taxon, 3 species of *Lycianthes* viz., *L. neesiana*, *L. laevis* and *L. lysimachioides* are now been recorded to occur in the state flora of Manipur, Northeast India.

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**Conflict of interest.** None.

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