



## Field Identification and First Reporting of *Oxystelma esculentum* (L.f.) Sm.: A Rare Wetland Climber from North-Western, Uttar Pradesh, India

Amit Kumar<sup>1</sup>, Inam Mohammed<sup>1</sup> Rohini Singh<sup>2</sup> and Sheesh Pal Singh<sup>3</sup>

<sup>1</sup>Department of Botany, Satguru Institute of Education and Technology, Nakur, Saharanpur

<sup>2</sup>Department of Botany, Govt. PG College, Ambala cantt.

<sup>3</sup>Department of Botany, Janta Vedic College Baraut

### Abstract

*Oxystelma esculentum* (L. f.) Smith, a member of Apocynaceae family. This plant has been recorded from Egypt, Sri Lanka, Iraq, Myanmar, Yemen. Sinai to W.Malaysia. N.Australia. And district Palakkad in Kerala state in India. It is reported for the first time in Shamli district which situated on western pole of Uttar Pradesh. A brief description and digitat image of the species show for the comparative analysis with medicinal values.

**Keywords:** *Oxystelma esculentum* (L. f.) Sm., Apocynaceae, first time reported species, Western Uttar Pradesh.

### Introduction

*Oxystelma esculentum* is belonging to Apocynaceae family. This is a family of flowering plants that included trees, shrubs, herbs, stem succulents, commonly known as Dog banes family because some taxa were used a Dog poison family. Recently, phylogeny studies like APG III and APG IV had included Asclepiadaceae in the family Apocynaceae which now have selected in new phylogenetic systematics included five subfamilies: Apocynoideae, Rauvolfioideae, Asclepiadoideae, Periplocoideae, and Secamonoideae (APGIII, 2009; APGIV, 2016; Madani, *et al.*, 2017). It including about 400 genera and about 4,555 species of trees, shrubs, woody-rives and herbs members of the family are distributed primarily in tropical and subtropical areas of the world. Nearly all members of this family are Poisonous and many species are used medicinally due to the presense of cardiac glycosides and various alkaloids (Nazar, Nazar. *et al.*, 2015).

### Material and Methods

The study was conducted in western part of Uttar Pradesh including Saharanpur, Muzaffar nagar and Shamli districts which come under Saharanpur Forest Division. It lies in the Upper Gangetic Plain. District Shamli is located at 29.45370 N and 77.32 E. It has an average of 248 meters (813) feet. It is around 92 km from Delhi 38 km from Panipat, 66 km from Meerut, 40 km from

Karnal (Haryana) and Saharanpur (Uttar Pradesh). Western Uttar Pradesh represents a wide variation in the topographical, geo-morphological, edaphic and climatic features, and thus supports a wide range of forest types. The vegetation of terai region, Uttar Pradesh was categorized into eight groups in accordance to the classification of Champion and Seth, (1968).

It lies to east of the Yamuna River which marks the borders of two Indian states Haryana and Uttar Pradesh. The district lies in the fertile "Doab" region between the Ganga and Yamuna. Shamli is located along with Delhi - Saharanpur (National highway -709) Meerut - Karnal (National highway - 709A) and Panipat - Khatima (State highway - 12), highway the district lies in the fertile doab region and hence the major occupation is agriculture. The district was carved out from the Muzaffarnagar district on 28 September 2011 as Parbudh Nagar and renamed Shamli in July 2012. At present, for this plant, site situated in Kodhsama village (29°38'2" N & 77°9'52" E), in tehsil Oon in district Shamli.

This district has five blocks viz. Thanabhawan, Khandhla, Shamli, Oon, and Kairana.

### Description

The family Apocynaceae family is ordinary known as "milkweed family" of angiosperms. *Oxystelma esculentum* commonly known as Dudhilala - Dudi

ki bel in Malayalam language rulappala, and Telugu Dudipala, and others - Rosy milk weed vine (Sarisdharam, et al., 2019).

### Systematics

*Oxystelma esculentum* (L.f.) Sm. is currently a member of the Apocynaceae, formerly belonged to family Asclepiadaceae also known as milkweed family. According to APGIII (2009) and the updated APGIV (2016), the family Asclepiadaceae has been merged in the Apocynaceae, under the subfamily Asclepiadoideae.

Kingdom: Plantae Clade: Tracheophytes Clade: Angiosperms

Clade: Eudicots

Clade: Asterids

Order: Gentianales

Family: Apocynaceae Sub Family: Asclepiadoideae

Genus: *Oxystelma*

Species: *Oxystelma esculentum* Binomial name: *Oxystelma esculentum* (L. f.) Sm.

Synonyms: *Oxystelma wallichii* Wight, *Periploca esculenta* L. f., *Sarcostemma esculentum* (L. f.) R.W. Holm

### Morphologically

Perennial twining herb, with milky juice, grows up to 6 meters in height, stem much branched slender, glabrous. Leaves opposite, pale green, glabrous, deciduous, leaf blade linear or linear lanceolate 3.8-8.8 cm x 3-9 mm, apex acute or acuminate, leaf base rounded or cordate, petiole 0.5-1.3 cm long, Inflorescence longer than leaves, generally six flowered, sub-umbellate or racemiform cyme, peduncles slender up to 10cm in length, flower buds 8-9 mm. Drooping, 2.5cm. In dia., Pedicels 1.2-2.0 cm long, flowers actinomorphic, bisexual, hypogynous, and pentamerous. Calyx 5-lobed, connate Calyx lobes 2-3.5 mm long, glabrous, sepals five, polysepalous, aestivation, imbricate, Corolla white or pink stripes within 2.5 cm across, limbs 1.5 - 2 cm, lobes triangular, densely pubescent, 1.0 - 1.5 cm, hairy near margin, five gamopetalous, aestivation valvate. Stamens 5, epipetalous, covered with white or slightly brownish 1.0 - 1.2 cm, thick protective layer, Corona two seriate, staminal, outer copular, inner five-lobed, acuminate, free, filaments connate, anthers bilobed, Corona-scales with incurved subulate tips, pollinia pendulous, polinial bags oblong, 1.3

mm, cucicle 0.2 mm., Carpels two, bilocular, syncarpous, ovary superior, glabrous, stigma convex, greenish short style, Fruit follicles, Follicles 3.8-7 cm long, glabrous. Lanceolate in outline. Apex sub acute. Seed dicotyledonous, ovate. Flat or comma shaped. 3.5 mm long, broadly ovate, coma c. 1.8 cm long. Small and many, seed coat slightly hairy help in wind dispersal.

### Flowering

The plant usually starts to flower from the end of June to the beginning of December. The flowers are produced in clusters at the end of the branches, and each cluster can have up to six flowers.

### Fruiting:

The fruiting season usually starts in September and can last until December. The fruits are follicles and contain numerous small, flat, brown seeds.

### Seed Dispersal:

The seeds are dispersed by wind, animals, or water. They are flat, light-weight, and have a wing-like structure that allows them to be carried away easily by the wind.

### Growth Habit:

*Oxystelma esculentum* is a perennial plant that usually grows as a climbing vine. It can grow up to six meters in length and has a thin stem with many branches.

### Occurance

The species grows in marshy areas on the margins of open water bodies such as ponds, lakes and swamps. The plant species is spread worldwide but mainly found in coastal countries. It has been reported from Egypt, Sudan, Ethiopia, Tanzania, Yemen, S. China, Malaysia, and N-Austria and also widely distributed in tropical and subtropical Asia in India the plant has been recorded from 'Palakkad' District in Kerala and some Areas of Tamil Nadu. But its presence has been recorded for the first time in Shamli region of western Uttar Pradesh.

### Medicinal Properties

The fruit is eaten and decoctions after boiling of all parts of this plant are used against different diseases like as Cancer, Menoxenia, and Traumatic injury.



a) Follicle

b) Plant habit

c) Leaf

d) Inflorescence

e) Flower details

### References

- Nazar, N., Dravid, J. G., James, J. C., Tariq, M. and Mark, W.C. "The taxonomy. And systematic of APocynaceae: ehrtr er dysnf in 2012." *Botanical Journal of the Linnean Society* 171.3 (2013): 482-490.
- Madani, I. K. R. A. M., Ali, L. I., & Nur, E. E. "Evidences from morphological investigations supporting APGIII and APGIV classification of the family Apocynaceae Juss., nom. cons." *European Academic Journal of Biological Diversity* 11.4 (2017): 187-193
- Lansdown, R.V." *Oxystelma esculentum*." *The IUCN Red List of Threatened Species* 2011:e.T199694A9118767, 2011. 9694A9118767.en.
- Saha, P., Islam, A., Mazumder, U. K., & Gupta, M. "Antimicrobial and lipid peroxidation inhibition activity of *Oxystelma esculentum* (Asclepiadaceae)." *Advances in Traditional Medicine* 10.3 (2010): 208-213.
- Pandya, D. J., & Anand, I. S. . "A Complete Review on *Oxystelma esculentum* R. Br." *Pharmacognosy Journal* 3.19 (2011): 87-90.
- Pandya, D. J., & Anand, I. S. "Anti-ulcer potential of *Oxystelma esculentum*." *International Journal of Green Pharmacy (IJGP)* 5.1 (2011).
- Pandya, D. J., & Anand, I. S. "Evaluation of laxative activity of *Oxystelma esculentum*." *Pharmacognosy Journal* 3.24 (2011): 81-83.
- Pandya, D. J., & Anand, I. S. "Isolation and high-performance thin layer chromatographic estimation of Lupeol from *Oxystelma esculentum*." *Pharmaceutical methods* 2.2 (2011): 99-105.
- Rashmi, T., Khare, A., & Khare, M. P. "A pregnane triglycoside from *Oxystelma esculentum*." *Phytochemistry* 29.12 (1990): 3967-3970.
- Oxystelma esculentum* in Flora of China @ efloras.org.
- Oxystelma esculentum* in Flora of Pakistan @ efloras.org.
- India. Biodiversity portal. *Journal of Threatened Taxa*. 11.7 (2019)

**Source of support:** Nil;

**Conflict of interest:** The authors declare no conflict of interests.

### Cite this article as:

Kumar, A., Mohammed, I., Singh, R. and Siingh, S.P. " Field Identification and First Reporting of *Oxystelma esculentum* (L.f.) Sm.: A Rare Wetland Climber from North-Western, Uttar Pradesh, India." *Annals of Plant Sciences*.12.03 (2023): pp. 5748-5750.