URGINEA NAGARJUNAE HEMADRI ET SWAHARI A NEW SPECIES OF LILIACEAE FROM INDIA

(A NEW PLANT DISCOVERY)

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Received 21 August 1982. Accepted 30 September 1982.

ABSTRACT: A new species of *Urginea* Steinhill, located in Andhra Pradesh and Tamilnadu (India), namely *Urginea nagarjunae* Hemadri et Swahari which produces the thickest scape coupled with the largest and closely arranged flowers and nonreflexed tepals among all the Indian species so far recorded under *Urginea* Steinhill, is described with illustrations. Chromosomal study revealed that the new taxon is not a polyploid; its 2n = 20.

During the Medico–Ethno–Botanical explorations undertaken for the last ten years in Andhra Pradesh, the authors have gathered bulbs of 'Indian drug squill' (Urginea spp. of Indian floras) found along the coastal districts and planted them in the experimental plots of the Regional Research Centre, Vijayawada, for critical study. Of these bulbs, the ones collected from Nellore district looked quite different on flowering. On further critical study and comparison it is found that the plant in question has been misidentified uptil now as Urginea indica (Roxb.) Kunth [now synonymous with Drimia indica (Roxb.) Jessop] thinking it to be a robust form. But as is evident from the general description and phenological data provided here, one would find that the present taxon has nothing to do with Drimia indica (Roxb.) Jessop because, while the latter species shows remote flower arrangement with revolute nature of its tepals when fully opened (a striking character of the genus Drimia Jacq. ex Willd.) The former never shows the 'Curling back' of its tepals. More over, its flowers are very closely arranged. The taxon with closely arranged flowers and non reflexed tepals differs from all the species of Urginea described so far and so the present authors wish to name this plant new to science as Urginea nagarjunae Hemadri et Swahari.

Urginea nagarjunae Hemadri et Swahari sp. nov.

In characteribus bulbis magnis, folisque latis, Drimia indicae (Roxb.) Jessop [Urginea indicae (Roxb.) Kunth] affinis, sed statim distinguenda scapis robustis, $\pm$ 1 cm diam, floribus majoribus, crebre dispositis, perianthii segmentis non reflexis, ca. 2×0.6 cm., gynoecio $\pm$ 1.6 cm longo.

Holotypus lectis ad Centrim Regionalem, Investigationum, Hortum experimentalam, Vijayawada, Regio Krishna, Andhra Provincia, a Hemadri 3001 A, die 5.5.1980, et positus in herbario CAL. Isotypi Hemadri 3001 B–C positi in herbario AYUSH, VIJAYAWADA, D in BSI; E in K; F in BLAT; G in MH Paratypi lecti ad Bhata prope locum collem munitum, Udayagiri, Nellore, Andhra Provincia, a Hemadri 2925 A, die 25.9.1977 positus in CAL et B in AYUSH, VIJAYAWADA; C in K; D in BSI; E in BLAT.

Urginea nagarjunae Hemadri et Swahari sp. nov.

Allied to Drimia indica (Roxb.) Jessop [Urginea indica (Roxb.) Kunth] in having large bulb and broad leaves but can readily be distinguished due to its stouter scape ± 1 cm diam, larger and closely arranged flowers with non reflexed perianth segments 2×0.6 cm and bigger gynoecium ± 1.6 cm long.

Holotype: Regional Research Centre Experimental Garden, Vijayawada, Krishna District, Andhra Pradesh (alt. ± 100 m), Hemadri 3001A, dated 5.5.1980. [The bulb was brought from Bhata Village near Udayagiri Hill Fort, Nellore District, Andhra Pradesh and raised in the Experimental Garden, Vijayawada, for phenological observations].

The holotype is being deposited in CAL.

Isotypes: Hemadri 3001 B–G. B & C are being deposited in AYUSH, VIJAYAWADA (the herbarium of RRC, Vijayawada); D in BSI; E in K; F in BLAT; G in MH.

Paratypes: Bhata village near Udayagiri Hill Fort, Nellore District, Andhra Pradesh (Alt. ± 100), Hemadri 2925 A–E, dated 25.9.1977. Hemadri 2925 A is being deposited in CAL; B in AYUSH, VIJAYAWADA; C in K; D in BSI & E in BLAT.

Further, the following specimens at MH deposited under Urginea indica are found to belong to the present new species:

Chinar, Anaimalai hills (alt. 1400), Tamilnadu, C. E. C. Fischer 3783 dated 2.2.1915.

B.S.I. Garden, Coimbatore, Tamilnadu (alt. 467 m), S. R. Srinivasan 39259, dated 19.3.1974.

Scapigerous herb. Bulb perennial, tunicated, compressedly subglobose in outline, conical 7–9 × 7.5–9 cm; outer scales dirty white, scarious, inner fleshy, nauseous and bitter in taste. Leaves appear after flowering i.e., during the months of April–July and retain till December–January, 8–17 in number, subbi–farious, more or less whorled at base, ensiform, 25–45 × 3.5–5.5 cm, green, glaucous in both sides, oblong–lanceolate, narrowed at base, apex acute, prominently and distantly parallel–nerved.

Scape solitary (occasionally two) appearing during (February–March–May–June), 27–56 cm long including raceme, 1–1.3 cm thick at base, erect, cylindrical, glabrous, brittle, greenish–brown to vinaceous purple in colour. Inflorescence a raceme of 15–28 cm long, 20–75 flowered, invariably ending in a cone–like purplish tip formed by the acuminate bracts and minute, abortive flower buds. Flowers 2–2.2. cm long, closely arranged one per bract. Bracts evanescent, broadly ovate, acute–acuminate, 1–nerved, auriculate, extending at the base into a spur, the lower bracts greenish at first, later turning to brownish or vinaceous purple, ± 1.5 cm long including the spur, the spurs of the lowest ones often 1 cm long, flat, ribbon–like and adpressed to the scape at first, entire or irregularly bifid and narrowed at base, parallelly 4–(5) nerved; the middle bracts smaller with shorter free spurs, transforming into spurless ovate–acuminate ones in the upper portion of the raceme. Pedicel 3×0.15–0.2 cm, greenish–brown or vinaceous purple at base, greenish upwards, erect–horizontal in bud and drooping down at length. Perianth 6 in two whorls, connate at base, perianth segments non–reflexed when fully opened, 1.9–2.1.× 0.5–0.6 cm, subequal, oblong–lanceolate, apex obtuse or some what acute with a few microscopic papillose outgrowths, white with greenish shade along the two very closely arranged mid–ribs. Androecium of 6 stamens opposite, arising from the base of perianth segments; filaments 1.4–1.6×0.1–0.2 cm, white, fleshy, dorsally compressed, flat on drying, narrowed at the apex and broadest at base; anthers versatile, yellow 0.25×0.1–0.15 cm at maturity, upto 0.4 cm long in bud. Gynoecium superior, tricarpellary, syncarpous. Ovary 0.8–1×0.4–0.45 cm, green, ovoid–ellipsoid ovate–elongate, on drying, somewhat triquetrous, sessile. Style linear–elongate, white, 0.1 cm thicks as long as the ovary when fresh but distinctly longer when dried. Stigma white, triangular–trilobed. Ovules numerous in each locule. Capusle about 2×1.1.

cm, ellipsoid, trilocular, glabrous. Seeds many, black, flat with a notch at basal end or one each at both ends, almost orbicular–oblong, 1–1.2×0.8–1 cm in diam including somewhat brownish papery, transparent wing.

Local name: Adavi ulligadda

The bulb is said to be poisonous to fowls.

The bulbs of Urginea nagarjunae Hemadri et Swahari were collected in vegetative condition in the month of September, 1977, along a dried sandy bed of a stream near Bhata village, Nellore district where they were found growing luxuriently.

In the Experimental Garden of Regional Research Centre, Vijayawada the bulbs produced flowering scapes during the period from March - May (-June) since 1978 regularly though ceased fruit-setting in the new environment. Chromosomal study revealed that the plant in question is not a polyploid; its 2n = 20.

In fact, this is not the first collection of the new taxon. Fischer collected it from Chinar, Anaimalai hills of Tamilnadu State more than six decades ago, on 2nd February 1915 and erroneously placed it under Urginea indica (Roxb.) Kunth. Dr. Deb & Mrs. Syamali who examined the above material available at MH (3783) while revising the genus Urginea Steinhill [Bull. Bot. Surv. Ind. 16 (1–4): 116–124. 1974] though treated it under U. indica, noted thus Fischer 3783, aollected from Anamalai hills, 466.6 m on 2.2.1915, shows gigantism, with robust scape, bigger flowers with filiform pedicels and long, linear style, longer than ovary. Critical study of the material and the phenological data so far gathered by the present authors however, reveal it to be quite distinct from U. Indica i. e., Drimia indica (Roxb.) Jessop, for the reasons already presented above.

Etimology: The taxon is being named after Nagarjuna, the Acharya of the medieval period who, it is believed, evolved 'Rasa Sashtra' (Therapeutics of Mercurial preparations) of Indian Medicine.

Phenological data :

Day to Day Observations of Holotype Specimen :

24.4.1980 (1600 hours): The leaves though dried up one month ago, are still intact. The scape which surfaced 4–5 days ago, has now attained a height of 11 cm including the cone-like densely packed receme which is 2.5 cm long and 1.5 cm across. The scape is brownish to vinaceous purple in colour and about 1 cm thick at base. The spurs of the lowest bracts are flat adpressed to the scape and are green in colour. The flower buds are numerous and are greenish-brown in colour.

25.4.1980 (1600 hours): Scape 14 cm high (including raceme), 1.2 cm thick at base and is brownish-purple to vinaceous purple in colour. Racemes 3 cm long and 1.5 cm across.

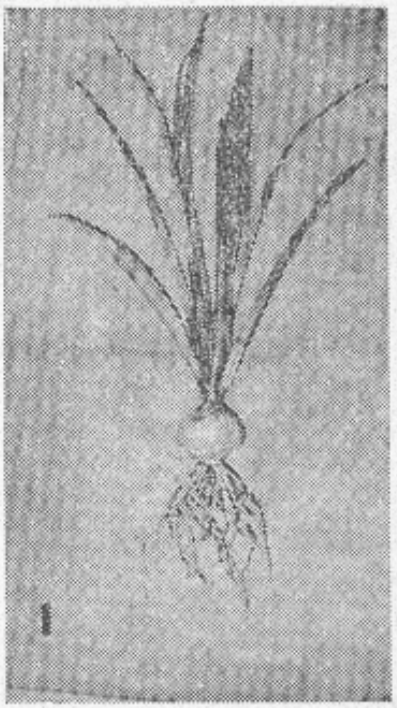
26.4.1980 (1600 hours): Scape including raceme 14.5 cm high 1.2 cm thick at base and 0.8 cm just below the raceme. Raceme 3.5 cm long and 2 cm across. Spurs of the lowest bracts 1.2×0.15 - 0.2 cm, greenish in colour.

27.4.1980 (1600 hours): Scape including raceme 20.5 cm high. Raceme 5 cm× 2.5 cm. Flower buds greenish-white, with brownish-purple mid ribs. The spurs of the lower bracts are detached and freed themselves from the scape.

28.4.1980 (1600 hours) : Scape including raceme 28 cm high and 1.3 cm across at base. Raceme 8×3.5 cm. Tip of the raceme conical vinaceous purple. Flower buds greenish-white with greenish-brown mid rib. Bracts vinaceous-purple.

29.4.1980 (1700 hours): Scape 36 cm high including Raceme of 12×5 cm. Tip of the raceme cone-like, vinaceous purple, 0.9 cm long.

30.4.1980 (1730 hours): Scape including raceme 44 cm high, 1.3 thick at base. Raceme 17 cm long and 8 cm across with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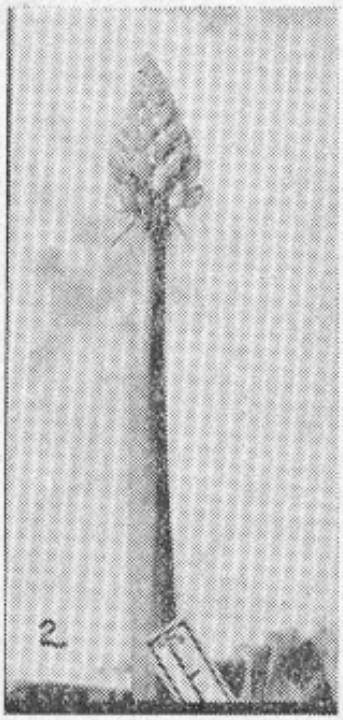
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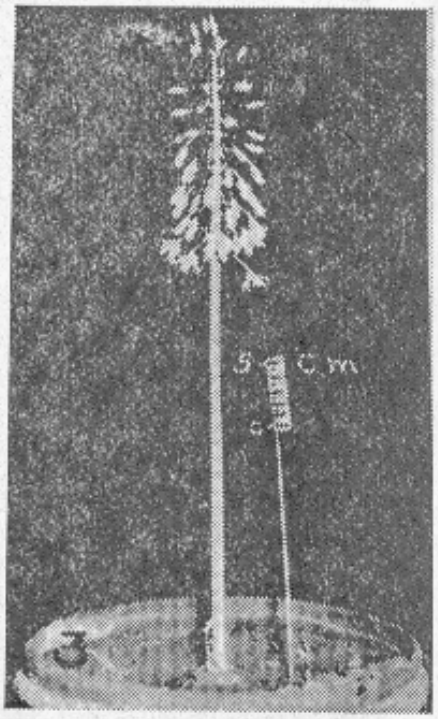
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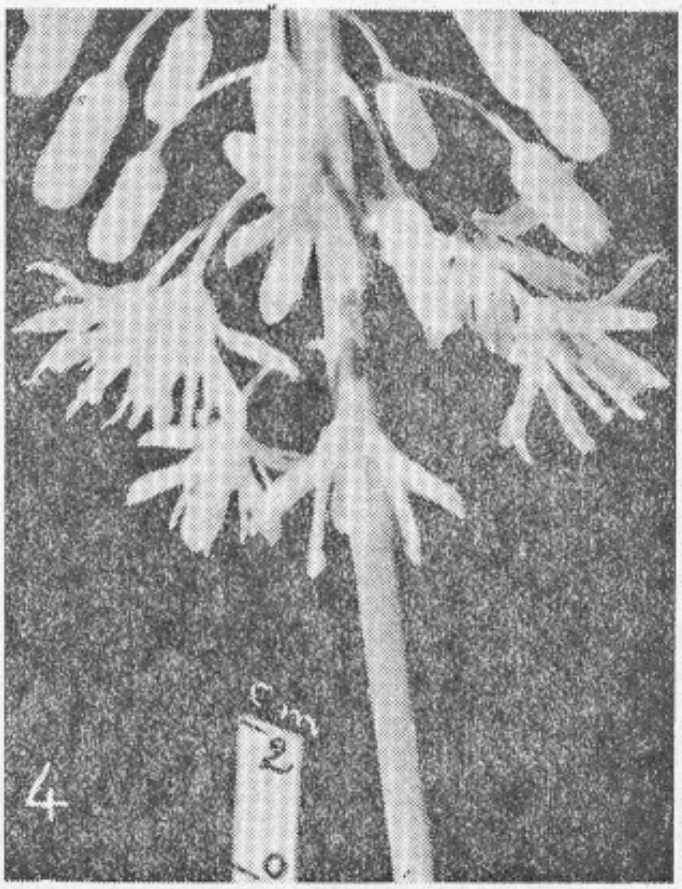
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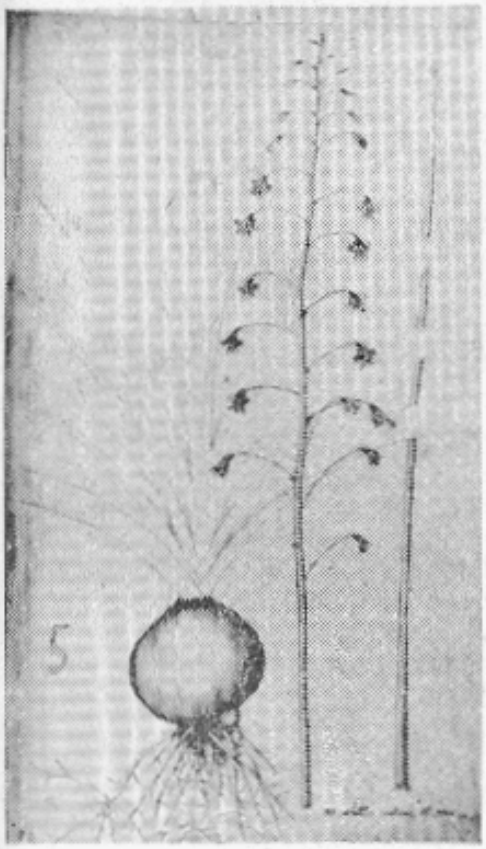

ILLUSTRATIONS

Urginea nagarjunae Hemadri et Swahari: Fig. 1–4.

Fig. 1: Bulb in vegetative condition.

Fig. 2: Young scape of Holotype.

Fig. 3: Fully grown scape of Isotype 'E' with flowers opened on first night.

Fig. 4: Close up of opened flowers (Isotype E).

Drimia indica (Roxb.) Jessop: Fig. 5.

Fig. 5: Original drawing of Roxburgh under Scilla indica Roxb. (The plate No. t. 1396).

the lower horizontally spread flower buds; lower half of the raceme greenish–brown and upper half greenish. Pedicels 2 cm long. Flower buds about 75 in number, 1.5 cm long, greenish white with brownish–purple tips. The lower bracts began to wither and fall.

1.5.1980 (1600 hours): Scape 47 cm high including 21 cm long raceme. Flower buds 1.8 cm long with their 2.5 cm long pericels horizontally spread.

2.5.1980 (1600 hours): Scape 54 cm high including 26 cm long raceme. Flower buds 2 – 2.2 × 0.5 cm, greenish–white, Pedicels 3 × 0.15–0.2 cm brownish purple in the lower half and greenish in the upper half.

4.5.1980 (1600 hours): Scape including raceme 56 cm high, Vinaceous purple in colour. Raceme 28 cm long and 10 cm across. It is greenish–purple in the lower half and greenish in the upper half. The lower flower buds are fully matured and horizontally spread and the upper ones are erect or ascending upwards.

The fully matured flower buds are 2.1–2.2 × 1.1 cm, white with a tinge of green along the mid ribs. The pedicel attained a length of 3 cm. A cone–like, abortive or undeveloped portion of the raceme is pushed off to one side of the axis. The abortive cone is 1 cm in length and Vinaceous purple in colour with densely packed, prominent, ovatelanceolate vinaceous purple bracts devoid of spurs.

5.5.1980: At 0030 hours i.e., zero hours of the 5th May, the flower buds started opening and by 0400 hours 48 flowers opened fully leaving behind the remaining 24 buds. The flowers are pure white exposing the androecium and the gynoecium. However, the perianth lobes

(tepals) did not recurve as in the case of Drimia indica, thus permitting large quantity of nector to lodge at the basal portion. At 1100 hours the flowers started closing and by 1200 hours they are almost closed. During the above process the flowers emitted a feeble unpleasant smell.

In the case of Isotype specimen, Hemadri 3001 E (K) out of 46 buds 7 opened during the first night and 21 during the next night. The scape is measured to be 50 cm long including 17 cm raceme.

Acknowledgements

The authors are indebted to the Director and Dr. K. Raghunathan, Deputy Director (Tech.), Central Council for Research in Ayurveda & Siddha, New Delhi for entrusting them with Medico–Ethno–Botanical Survey of Andhra Pradesh. They are grateful to Dr. R. S. Rao & Dr. A. S. Rao, former Joint Directors, Botanical Survey of India, Calcutta; Dr. N. C. Nair, Joint Director, Mr. G. V. Subba Rao and Dr. A. N. Henry, Regional Botanists, Coimbatore Circle; Dr R.Sundara Raghavan & Mr. M. Y. Ansari, B. S. I., Poona for kindly going through the herbarium and pickled material and for their keen interest in the preparation of this paper. Thanks are due to Dr. N. C. Majumdar CNH, Calcutta for kindly rendering Latin diagnosis and also to Mrs P. Sasikala, Andhra University, Waltair for communicating the results of Chromosomal study of the new taxon.

The senior author wishes to express his deep sense of gratitude to Mr. B. M. Wadhwa, Royal Botanic Gardens, Kew Richmond, Surrey, England, for his critical study of the Isotype material along with other paratypes available at Kew herbarium and for sending his valuable comments not only on the present taxon but also on other allied taxa.