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***Arisaema arunachalensis* A.Nangkar, A.P. Das & H.Tag, *sp. nov.* (Araceae) from the Arunachal Region of the Indian Himalaya**

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Abstract

A new species of *Arisaema* Mart. (Araceae : Arisaemateae), *Arisaema arunachalensis* A.Nangkar, A.P. Das & H.Tag, has been recognized from Arunachal Pradesh in Northeast India that represent the easternmost part of the Eastern Himalaya. The new species is named after this easternmost Indian state. It is close to *A. echinatum* (Wall.) Schott but can be distinguished easily from shape and colour of its spathe and structure of the tip of spadix. Detailed description and a range of photographs has been provided.

Key words: *Arisaema arunachalensis*, New species, Endemic, Arunachal Pradesh, India

INTRODUCTION

The genus *Arisaema* Mart. (Araceae: Arisaemateae (Murata 1984) is represented by about 180 species, which is commonly distributed in N.E Africa, Asia, Eastern North America and Mexico and the maximum concentration is found in China with 78 species (Mayo *et al.* 1997; Li *et al.* 1988, 2010). A good number of 44 species with nine infraspecific taxa are found in India (Karthikeyan *et al.* 1989). The enumeration of the genus *Arisaema* in the Indian subcontinent was initiated by Hooker (1893) with the record of 38 species of which 22 are found in the Himalayan region. Chatterjee (1955) recorded 44 species from India and Myanmar (Burma), of which 18 species were recognized as native to the Himalaya region. While Hara (1971) and Pradhan (1997) recorded 17 and 27 species, respectively, from the Himalayan region, Chowdhery *et al.* (2009) reported 16 species from the Arunachal Pradesh part of the Eastern Himalaya in India. The state of Arunachal Pradesh is located over a part of the Eastern Himalayan chain of mountain endowed with rich tropical to temperate broadleaved and moist forest types which are quite favourable for the luxuriant growth of several *Arisaema* species. However, majority of Arunachal Himalayan regions are still remain under-explored or unexplored due to difficult unreachable mountain terrains. While exploring the aroid flora of the state, the authors collected one species of *Arisaema* from the East Siang District in the year 2013. The perusal of literature and critical study of the specimens revealed that it is a new species of *Arisaema* that is closely related to a rare *A. echinatum* (Wall.) Scott.

This exquisite species is now named as *Arisaema arunachalensis* after this easternmost state of India. Both, the foliage and the colourful spathe of the species are highly ornamental and deserve a position in gardens of tropical to sub-tropical regions. Taxonomic treatment of this new species with coloured illustrations are provided.

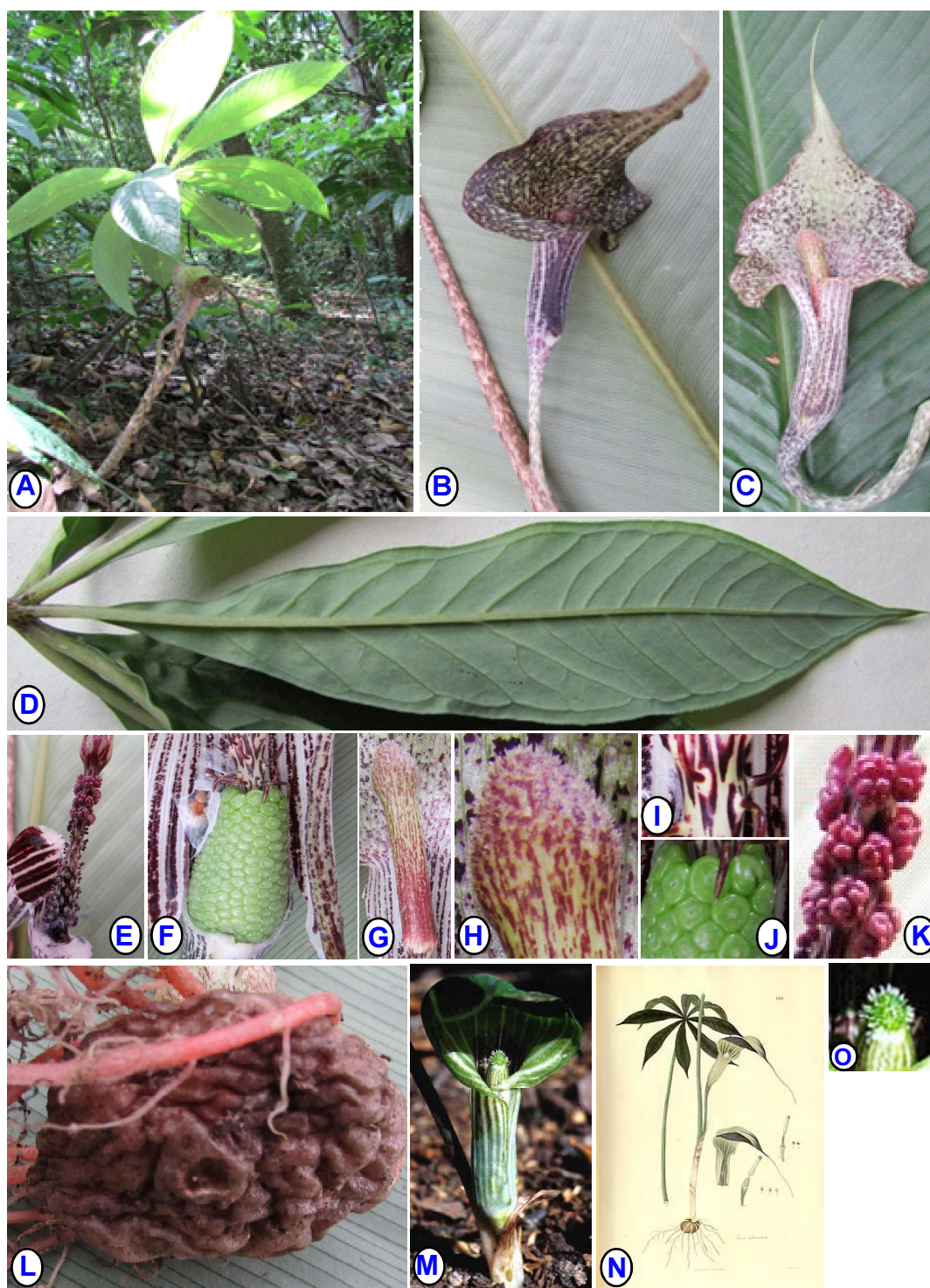


PLATE - I. *Arisaema arunachalensis* [A - M]: A. Flowering plant in the habitat; B & C. Inflorescence; D. Leaflet; E. Male spadix; F. Female spadix; G. Appendix of spadix; H. Tip of spadix; I. Tentacles; J. Female flowers; K. Male flowers; L. Tuber. *Arisaema echinatum* [M - O]: M. Inflorescence; N. Icon; O. Tip of spadix [Sources: M & O from <http://www.aroid.org/genera/arisaema/echinatum/> and N from [https://commons.wikimedia.org/wiki/File:Arisaema_echinatum_\(as_Arum_echinatum\).Plantae_Asiaticae_Rariores_vol,2-](https://commons.wikimedia.org/wiki/File:Arisaema_echinatum_(as_Arum_echinatum).Plantae_Asiaticae_Rariores_vol,2-)

Taxonomic treatment

Arisaema arunachalensis A.Nangkar, A.P. Das & H.Tag, *sp. nov.*

This new species is quite close to *A. echinatum* (Wall.) Schott [in Schott & Endlicher, Melet. Bot. 17. 1832] but can be easily recognized from its dull-white petiole, peduncle and spathe; petiole and peduncle speckled with purple blotches; spathe-tube with purple longitudinal lines and limb densely streaked with irregular purple blotches; spathe-tube both sides with purple longitudinal lines; spathe-limb sagittate-ovate, long caudate-acuminate, forming slender tail, densely purple blotched, sometimes blotches coalescing; tip of appendix swollen, ovate, ciliated; female flowers green without any purple streaks. The major differences between these two species has been provided in Table 1.

Table 1. Differences of *Arisaema arunachalensis* sp. nov. from the closely related species *A. echinatum*

Character	<i>A. echinatum</i> [FOC; Sasikala <i>et al.</i> 2001]	<i>A. arunachalensis</i> sp. nov.
Altitudinal distribution	2600 – 3100 m [cold temperate]	500 – 700 m [tropical]
Corm surface	Irregular	Brain-like folded
Petiole & peduncle colour	Light green with purple blotches	Dull-white, speckled with purple blotches
Number of leaflets	6 – 11	5 – 9
Spathe-tube	Green with white longitudinal lines on both surfaces	Dull-white with purple longitudinal lines on, both sides
Spathe-limb	Ovate, long-caudate; green, not marked by spots or stripes	Sagittate-ovate, long caudate-acuminate, forming slender tail, densely purple blotched, sometimes blotches coalescing
Tip of appendix	Obtuse and echinate	Swollen, ovate (like tip of drum-stick), ciliated

Dioecious herbs with tuber; male plants 20 – 32 cm high and females 39 – 70 cm high, total plant height ca. 20 – 70 cm. Tuber depressed globose with brain-like wrinkles, 1 – 2.2 cm long, 2.5 – 4.3 cm wide; 7 – 12 roots grow from the top of tuber (near base of pseudostem); stolons absent. Petiole 10 – 18.5 cm long, terete, white, generally pinkish towards the base, beautifully mottled pseudostem and petiole with purple patches and spots; cataphylls 2, one short and other long. Inflorescence arise just above the cataphylls and 12 – 18 cm above from the tuber. Leaflets 5 – 9, radiate-palmate, 2 – 3 are slightly smaller than others, broadly obovate-lanceolate, entire, long-acuminate (2 cm long), base gradually attenuate; smaller in males (14 – 16 cm x 3 – 3.7 cm) than females (28.5 – 34 cm x 6.7 – 9.5 cm), whitish bellow, marginal veins extending from base to tip. Peduncle much shorter than petiole, arise from pseudostem, 20 – 27 cm above the tuber, 5 – 7 cm long, curve downward at fruiting. Spathe dull-white on both surfaces; spathe tube 20.3 – 23.2 cm long, ca. 6.7 – 8.2 cm wide, slightly constricted at the mouth, dull-white with purple longitudinal lines on both surfaces; limb sagittate-ovate, caudate-acuminate forming a slender tail (5 cm), densely purple-blotched, sometimes blotches coalescing. Spadix smaller in male plants, mottled with purple blotches, 9.5 – 11.2 cm long, sterile zone with 14 – 17 dark-purple tentacles; appendix tip swollen, ovate (looks like the tip of drum-stick), with large dark purple and white patches. Female flowers many, close-set, green, stigma short, continuous, whitish. Male spadix with many pistillodes towards the base, sterile male flowers

at the middle and fertile male flowers above; male flowers sessile, anthers dark purple, 4-lobed, lobes reniform. Mature fruits not seen.

Phenology: Flowering & fruiting - April to October. *Time of appearance* – Tuber & Seed germination observed in first and second week of March in tropical region.

TYPES: INDIA, Arunachal Pradesh, East Siang District, Pasighat, 560 m, May 08, 2015, latitude 28°08'34.0" N and longitude 95°15'56.8" E, *A. Nangkar & Hui Tag 026* (HOLOTYPE: ASSAM); *A. Nangkar & Hui Tag 028* (PARATYPE: HAU); **[PLATE – I].**

Etymology: The species epithet has been taken from the name of the Indian state of Arunachal Pradesh.

Ecology: On the floor of dense forests with thick humus at an altitude of 500 – 700 m with tropical to sub-tropical climate and high annual precipitation.

Distribution: So far known only from one locality in the East Siang district of Arunachal Pradesh; endemic.

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