

Two new species of the genus *Arisaema* Mart. (Araceae) described for Flora of Vietnam

Nguyen Van Du *

*Institute of Ecology and Biological Resources, Vietnamese Academy of Science and Technology
18 Hoang Quoc Viet, Hanoi, Vietnam*

Received 10 August 2006

Abstract. *Arisaema omkoiense* Gusman and *A. ramulosum* Anderw. have been described as new record for Flora of Vietnam. Among them, *Arisaema omkoiense* was found in Chiang Mai (Thailand) recently by Gusman, now recorded in Centre Vietnam (Quang Tri and Kontum prov.). The other one, *A. ramulosum* Anderw. an endemic of Indonesia for longtime, has been found in Northern Vietnam (Cao Bang and Bac Can prov.).

1. Introduction

The genus *Arisaema* C. Mart. (Araceae Juss.) includes about 170 species [1]. They are distributed mainly in Asia and few species there are in East-Northern Africa and Northern America [2]. Before, this genus was recorded with 5 species belonging to 2 sections in Vietnam [3-6]. Recent studies [7-9] have recorded 16 species of this genus known in Vietnam. All of them belong to 4 sections (following Murata's concept [5]) or 5 sections (following Gusman's concept [10]). Base on the Murata's system [5], among Vietnamese species, 12 species belong to the section *Fimbriata*, 2 species belong to the section *Decipientia*, 1 species belong to the section *Franchetiana* and 1 species belong to the section *Sinarisaema*.

In this paper, the author describes two species *A. omkoiense* Gusman and *A.*

ramulosum Aldrerw. found Vietnam recently. Both of them belong to the section *Fimbriata* (following Murata' concept). The first time, both species are described from materials collected in Vietnam. The first species, *A. omkoiense* Gusman, was described by Gusman from the type specimens collected from Chiangmai (Doi Inthanon) of Thailand [1]. Following Gusman, this species are distributed widely from South-West of China to Thailand and Vietnam. Base on the comparison between the materials collected in Huong Hoa (Quang Tri prov.) and in Ngoc Linh mountain (Kontum prov.) and the original description, type specimen as well as discussion directly between the author and Prof. Gusman in his house in Bruxsell, the species *A. omkoiense* has been recorded for Flora of Vietnam.

In the expeditions in Thang Hen (Cao Bang prov.) and Babe lake (Bac Can prov.) that were carried out the author and Mary Sizemore (Florida, USA) and John Tan Hoew (Singapore), a species of *Arisaema* genus was

* Tel.: 84-4-8360169

E-mail: Vandu@iebr.vast.ac.vn

collected. Through morphological analyses, we recognized that the characters of this species completely fit to the species *A. ramulosum* Alderw. This investigation surprised us because *A. ramulosum* was an endemic species of Indonesia for long time but now it has been found in Northern Vietnam where is separated from Indonesia not only by distance but also by sea. However the identification was confirmed when type specimens of *A. ramulosum* checked by the author in Borgo herbarium (BO) in November, 2005 and many discussions between the author and super-specialist of this genus in world.

2. Description of new species

1. *Arisaema omkoiense* Gusman 2001. Syst. Geogr. Pl. 71: 3; id. 2003. *Arisaema*. Mon. Bot. Mat. Lov. 83.

Rhizomatous herbaceous plant, c. 60 cm tall. Rhizome short, 1.5-3 cm long, c. 1 cm in diam. Cataphylls embrace petiole and peduncle separately, 1 around petiole, 2 around peduncle, inside one longer than outside, c. 13 cm long. Leaf 1-2; petiole 56 cm long; leaf blade trifoliate; leaf lobes with stipitates, 1.5 cm long at lateral lobes and 3 cm long at central lobe, ovate to nearly elliptic shape, 22-24 cm long, 14-15 cm wide, base rounded at lateral lobes and obtuse at central lobes, apex acuminate; lateral veins 9-10 pairs, conspicuous, collective vein distant 3-7 mm from margin. Peduncle 13.5-20 cm long, more stouter than at female inflorescence; spathe 7-9 cm long, pale green, white at base; tube portion funnel shape, 4-5 cm long, c. 2 cm wide at mouth, mouth margin lightly recurved; spathe lamina shorter than tube portion, triangular form, 3-

4 cm long, acuminate 2-4 mm long; male spadix 4.5 cm long, fertile portion cylindrical, 1.7 cm long, flowers in loose arrangement, appendix lightly conical, from base to apex covered densely by slender filiform steriles; male flowers consisted by 2-3 stamens, stamens with a short stipitate, 0.5 mm long, anthers subglobose, dehiscent by pore at apex, filament depressed, base attenuate, upper narrow triangular, apex elongated into an acumination; bisexual spadix 6 cm long; female portion cylindrical to lightly conical, 1.8 cm long, ovaries loose in arrangement, ovaries subglobose to spindle shape, truncate at apex, stigma dot form, penicillate, not rarely serrated disciform (in material VH 070), style short conical; male portion c. 8 mm long, few female in loose arrangement, 2 stamens group in 2, filament 1.5 mm long, connected together at 0.5 mm, upper portion divided, c. 0.3 mm long, apex elongate in subulate form, c. 0.3 mm long; appendix rather stout, lightly conical, 2 mm wide at base, densely covered with filiform steriles from base to apex.

Typus: Thailand, Chiangmai prov., near Omkoi, Gusman GG00013 (holo BR (original type pictures!); iso. BKF).

Habitat: Primary and secondary board-leaved evergreen sub-mountain forest on very steep rocky shale southern slopes of Sa Mui mountain; 1200-1300 m alt.

Distribution: Vietnam (Quang Tri, Kontum), Thailand (Chiangmai).

Materials exemplified: Quang Tri prov., Huong Hoa distr., Huong Phung municipality, P.K. Loc et al. HLF 5863 (HN). Kon Tum prov., Ngoc Linh mountain, Averyanov & others VH 070 (HN, P, LE, MO).

Discussion: In the original publication of *A. omkoiense*, Gusman compared this species

to other trifoliate species as *A. garrettii*, *A. pingianense*, *A. petelotii*, and *A. balansae* and gave the different characters between species. However, the author find that *A. omkoiense* is closest to *A. petelotii* by having spadix not or hardly exerted from spathe tube, along spadix appendix covered by filiform sterile flowers. *A. omkoiense* is different from *A. petelotii* by not having pseudostem, stamens with a short stipitate, connectives subulate, cross over anthers.

2. *Arisaema ramulosum* Alderw. 1922. Bull. Jard. Bot. Buitenzorg 3(4): 166; Gusman, 2003. *Arisaema*. Mon. Bot. Mat. Lov. 181.

Herbaceous tuberous monoecious plant, 9-30 cm tall, usually small in male plants. Tuber subglobose, 0.5-4 cm in diam., light brown out side, white in side. Leaf solitary; petiole 9-30 cm long, pale to dark sometime dirt green, lower portion created into pseudostem 5-15 cm, free portion 4-15 cm long; leaf blade trifoliate, lobes dark green on surface and paler at under surface, glossy; lateral lobes subsessile, lanceolate ovate, 7.5 - 12 cm long, 4.5 - 6.2 cm wide, oblique, base obtus to round, apex acuminate 1-1.5 cm long, tip arista; central lobe with a stipitate, ovate lanceolate, 7-14 cm long, 4-8 cm wide, base cuneate, obtus to round, apex acuminate with short arista at tip. Peduncle equal, shorter or little longer than free portion of petiole, 7-12 cm long, pale green or brown with white rouges; spathe long 5-8 cm long, tube cylindrical, 2-4 cm long, c. 1 cm wide, white to pale green or little purplish, mottled and with longitudinal, dark purple stripes, inside white; mouth margin green and hardly recurved; spathe lamina triangular, 3-4 cm long, outside dull, pale green, glossy, with dark stripes and flushed purple near margins, with dark green cross band at base, apex acuminate; male spadix 2.5 cm long

with a short stipitate, stipe c. 2 mm long, fertile portion conical, 1.2 cm long, rather dense flowers, appendix subulate form, c. 2 cm long, dark green with brown strips, covered with several purple, filiform sterile flowers at base and apex; male flower grouped in 2 stamens, sessile, anthers dehiscence by lateral slit; female spadix 4 cm long, fertile portion slightly conical 8 mm long, 5 mm wide at base, appendix the same in male spadix, a little thicker, c. 3 cm long, 1.5 mm thick at base; ovaries bottle shape, size 1.5 x 1 mm, stigma spot form, style absent.

Typus: Indonesia, Java J.J. Smith 775 (BO!).

Habitat: The plants grow in the gaps of rocks, under shade Broad leaf evergreen primary forest on limestone mountain.

Distribution: Indonesia (Java) and Northern Vietnam.

Materials exemplified: Cao Bang prov., Tra Linh distr., Quoc Toan community, Thang Hen lake, Averyanov et al. VH 4873, 4874 (HN, LE), Nguyen Van Du 404 (HN).

Discussion: In the section *Fimbriata*, 3 species have spathe having dark cross band at base of spathe lime as *A. ramulosum*, *A. penicillatum* and *A. laminatum*. *A. ramulosum* distinguished from *A. penicillatum* by its spathe tube whitish, equal or shorter than lamina portion, without white area between tube and lamina. *A. ramulosum* also distinguished from *A. laminatum* by its appendix stout subulate, with few sterile flowers loosely arranged at base and apex.

References

- [1] G. Gusman, *Arisaema omkoiense* (Araceae), a new species described from North Thailand, *Syst. Geogr. Pl.*, Belgium 71 (2001) 3.

- [2] S.J. Mayo et al., *The genera of Araceae*, Kew publ., London, Kew, 1997.
- [3] F. Gagnepain, *Araceae. Flore Générale de l'Indo-Chine*, 6 (1942) 1075.
- [4] C.R.W.K. Alderwerelt, New or Noteworthy Malayan Araceae 2. *Bull. Jard. Bot. Buitenzorg* ser. 3, 4(1) (1962) 163.
- [5] J. Murata, Journ, An Attempt at an Infrageneric Classification of the Genus *Arisaema* (Araceae). *Faculty Sci. Univers.*, Tokyo, sect.3, 13 (1984) 431.
- [6] Pham Hoang Ho, *Araceae. Illustrations for Flora of Vietnam*, vol. 3, book. 1 (1993) 416, Montréal (in Vietnamese).
- [7] Nguyen Van Du, Three new records of the genus *Arisaema* (Araceae) for Flora of Vietnam and their medicinal values, *Journal of Mat. Med.*, 7 (2002) 69.
- [8] Nguyen Van Du, One new species of the genus *Arisaema* C. Mart. (Araceae) for the Flora of Vietnam, *Journ. of Biol.* 26 (2004) 54.
- [9] Nguyen Van Du, P.C. Boyce, Two New Species of The Genus *Arisaema* (Araceae: Arisaemateae) from Northern Vietnam, *Folia Malaysiana* 6 (2005) 35.
- [10] G. Gusman, G. Liliane, *The genus Arisaema*. Publ. House. A.R. Gantner Verlag Mommanditgesellschaft, FL. 9491, Ruggell. Germany, 2003.

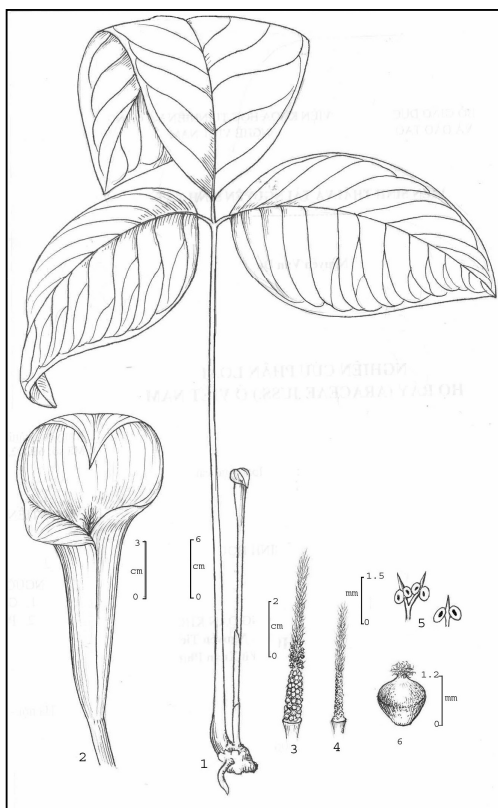


Plate: ***Arisaema omkoiense*** Gusman
 1. Habit; 2. Spathe; 3. Female spadix; 4. Male spadix;
 5. variation of male flowers; 6. Ovary.



Pictures: ***Arisaema ramulosum*** Alderw
 Habit and femal spadix.
 (Photo: Nguyen Van Du).

Mô tả 2 loài mới thuộc chi *Arisaema* Mart. (Araceae) cho hệ thực vật Việt Nam

Nguyễn Văn Dư

Viện Sinh thái và Tài nguyên Sinh vật, Viện Khoa học và Công nghệ Việt Nam

18 Hoàng Quốc Việt, Hà Nội, Việt Nam

Lần đầu tiên 2 loài mới thuộc chi *Arisaema* được mô tả cho hệ thực vật Việt Nam từ những mẫu vật mới thu được gần đây. Đó là *Arisaema omkoiense* Gusman và *A. ramulosum* Alderw. Cả 2 loài đều thuộc section *Fimbriata* (dựa theo hệ thống của Murata, 1984) với các đặc điểm phiến lá xẻ 3 thùy, phần phụ ít nhiều mảnh, không có cuống, ít nhiều có các hoa bất thụ dạng sợi.

Trong 2 loài, *Arisaema omkoiense* Gusman rất gần với *A. petilotii* vì bông nạc thường ít nhô ra khỏi ống mo, toàn phần phụ được bao phủ bởi các hoa bất thụ. Tuy nhiên nó khác với *A. petilotii* vì thường chỉ mang 1 lá, không có phần thân giả, nhị có phần trung đới kéo dài hình dùi, ngắn.

A. ramulosum trước đây chỉ được biết có ở Indônêxia (Java), nay lại tìm thấy ở Việt Nam. Đây là lần đầu tiên loài này được phát hiện có ở ngoài khu phân bố của nó. Loài này rất gần với các loài *A. ramulosum*, *A. penicillatum* and *A. laminatum* vì phiến mo đều có một dải màu xanh đậm ở gốc. Nhưng *A. ramulosum* phân biệt với *A. penicillatum* do có ống mo màu trắng, dài bằng hoặc ngắn hơn phiến mo, không có khoảng trắng giữa ống mo và phiến mo. *A. ramulosum* cũng phân biệt với *A. laminatum* do có phần phụ hình dùi mập và ít hoa bất thụ xếp ở gốc và đỉnh phần phụ (hình dùi mảnh, không có hoa bất thụ ở *A. laminatum*).