

Jin MURATA* and Hiroko MURATA: Petiole, a Possible Tool of Vegetative Reproduction in *Arisaema umbrinum* (*Araceae*)

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Summary: As a characteristic of *Arisaema* sect. *Anomala* Gusman & L.Gasuman, grouped buds at the axil of the petiole of normal leaves have been noticed, based on observation of *A. omkoiense* Gusman and *A. filiforme* Blume. Recently, this type of axillary buds on the basal part of old petioles removed from the mother plant of *A. umbrinum* Ridl. another species of sect. *Anomala*, has been found to produce a shoot, after six months' cultivation with soil. The basal parts of the old petioles may be effective for vegetative reproduction as ramets.

In the genus *Arisaema* Mart., vegetative reproduction is generally performed by the development of axillary buds on the underground stems. In the tuberous species, the axillary buds grow to become tuberlets and shed off from the mother tuber. In the rhizomate species, the axillary buds extend as branches of the mother rhizome, which may separate from the mother rhizome to become independent individuals some years later (Murata 1984). Vegetative reproduction by way of adventitious buds on the top part of peduncle has been known only in *A. scortechinii* Hook.f. (Mayo et al. 1997, Gusman and Gusman 2007).

In the glass house of the Botanical Gardens, Koishikawa, The University of Tokyo, many plants of *Arisaema* have been cultivated in pots and one of them is *A. umbrinum* Ridl. (Fig. 1A). On 22 May 2021, we found a withering leaf removed from the mother plant of *A. umbrinum* probably by the disturbance of watering (Fig. 1C, indicated as pet1) and noticed that there were several buds inside the petiole sheath (Fig.

1E). By closer observation of the pot we could find additional two petioles, one (pet2) was also removed from the mother plant and the other one (pet3 in Fig. 1B) was almost removed. It was characteristic of the latter two petioles that the upper part appeared to be naturally dead and only the basal part remained with buds inside the sheath (Fig. D). As they showed characteristic of ramets, we planted them in a pot with soil. On 10 October 2021, we observed the pot to find a young shoot was growing from pet3 (Fig. 1F). Pet2 had died and lost but pet1 was still alive. From this observation it is clear that the basal part of the petiole of *A. umbrinum* can be a ramet that may be carried by water or soil movement.

Although the function is similar to the adventitious buds on the peduncle of *A. scortechinii*, the buds inside the sheath of the petiole are considered to be axillary buds. Murata (1988) discussed the morphology of an evergreen group, *Arisaema* sect. *Anomala* Gusman & L.Gusman group (referred to as sect. *Fimbriata* (Engl.) J.Murata at that time). In this, he explained that in normal (foliage) leaf occurs a group of axillary buds (a main bud and its accessory buds) and that the sheath leaves (cataphylls) have a solitary axillary bud. The buds at the base of the petioles of the present specimen of *A. umbrinum* are considered to correspond to the grouped axillary buds reported for *A. omkoiense* Gusman and *A. filiforme* Blume in Murata (1988: fig. 6, reproduced in Murata et al. 2018: fig. 20). As no (axillary) buds are

found around the leaf scar of the normal leaves in *A. umbrinum* (Fig. 1B), the axillary buds are interpreted as adnate to the base of the normal leaf. It is of interest to investigate whether the grouped buds at the axil of the normal leaves in the species in sect. *Anomala* have similar function or not.

References

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邑田 仁, 邑田裕子: *Arisaema umbrinum* (サトイモ科) の葉柄上腋芽による栄養繁殖

小石川植物園で鉢栽培している *Arisaema umbrinum* Ridl. について, 2021年3月22日に, 古くなって離脱した普通葉の葉柄基部葉鞘内に数個の芽を発見し, 芽のある部分を土壤に埋めたところ, 2021年10月10日になって, その芽のうちの1個が成長しているのを確認した. 3個埋めた葉柄のうち1個は枯死したが, 残りの1個はまだ生存しており, そこからも発芽が見られる可能性がある. 古くなった葉柄の上部は自然に枯れ, 基部だけが死な

ずに残って脱落することから, ラメットとして栄養繁殖に関与している可能性がある. 構造的には Murata(1988, 日本のテンナンショウ図鑑 (邑田ほか 2018) に再掲載) がフデポテンナンショウ節の特徴として *A. omkoiense* Gusman や *A. filiforme* Blume について報告した, 普通葉基部の腋芽群に対応するものと考えられる. 広くラメットとして機能しているかどうかは興味深い課題である.

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