日本産ツツジ属植物雑報(二十一): 数種における中央脈の隆起

Masahide KURITA*: Some Notes on the *Rhododendron* Plants from Japan XXI. Protrusion of Midrib in Some Species

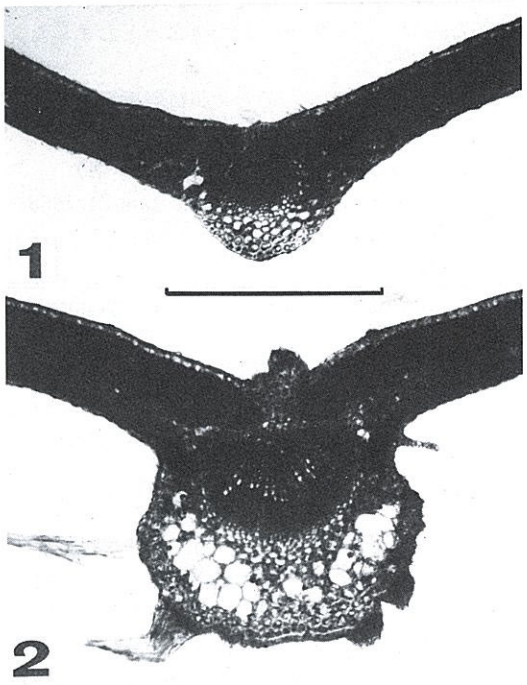
栗田正秀*：日本産ツツジ属植物雑報(二十一)　数種における中央脈の隆起

It is well known that a protrusion occurs along a vascular bundle or a vein of leaf, usually on the lower surface of leaf. The protursion appears to vary in thickness even among closely related species. A study by the present author was made on the thickness of the protrusion and of the leaf in several species of *Rhododendron*.

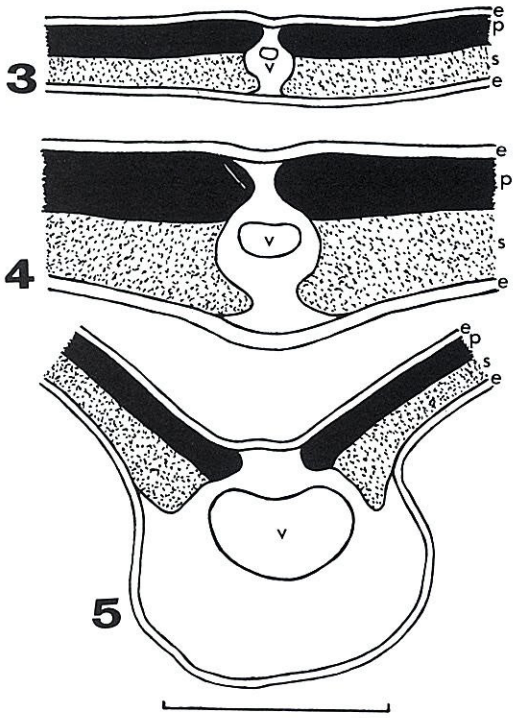
Materials and Methods

The plants studied are as follws: *Rhododendron serpyllifolium* (A. GRAY) MIQUEL, *Rh. indicum* (L.) SWEET, *Rh. obtusum* (LIND.) PLAN. var. *kaempferi* (PLAN.) WILSON, *Rh. macrosepalum* MAXIM. and *Rh. oomurasaki* MAKINO. All of the above species belong to the section *Tsutsusi* (ADANSON) SWEET in the subgenus *Anthodendron* (KITAMURA and MURATA 1974). The first species was cultivated for several years at the vicinity of Yokkaichi city after being collected from Totsukawa-mura, Nara-ken. The second and the last species were cultivated in gardens in Yokkaichi city and its vicinity, and the third and the fourth species were wild in Yokkaichi city.

In all of the species, the fully developed spring leaves were employed for observation. Further-



Figs. 1 and 2. Microphotographs of cross section through the middle of midrib. 1, *Rhododendron obtusum* var. *kaempferi*. 2, *Rh. oomurasaki*. Bar: 0.5 mm



Figs. 3-5. Cross section through the middle of midrib. 3, *Rhododendron serpyllifolium*. 4, *Rh. indicum*. 5, *Rh. macrosepalum*. e, Epidermis. p, Palisade parenchyma. s, Spongy parenchyma. v, Midvein. Hairs omitted in all figures. Bar: 0.4 mm

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more, the summer leaves were also employed in *Rh. obtusum* var. *kaempferi* and *Rh. macrosepalum*.

According to ESAU (1977), the term "rib" shows only the protrusion along a large vein. The term "midrib" in the present paper includes both the midvein and the tissue which envelopes the midvein and processes no or few chlorophyll grains. Therefore, the present midrib does not denote only the protrusion along the midvein. The cross section through the middle part of a midrib is bilaterally symmetrical in shape as shown in Figs. 3-5. In the present paper, the thickness of a midrib is represented by the mean length of the axis of the bilateral symmetry, and the mean thickness of leaf blade is measured in a cross section through the blade area which lies midway between the middle point of midrib and that of leaf margin.

The degree of protrusion of a midrib on the lower surface of leaf is calculated by the following formula:

$$\frac{\text{mean thickness of midrib} - \text{mean thickness of leaf blade}}{\text{mean thickness of leaf blade}} \times 100.$$

Observation

1. Spring leaves

As shown in Table 1, the leaf blade of *Rh. indicum* is much larger in thickness than that of any other species. There is a decided difference in the thickness of leaf blades between *Rh. serpyllifolium* and *Rh. macrosepalum*, and between *Rh. macrosepalum* and *Rh. oomurasaki*. No other difference in the thickness of leaf blade was found between any two species except for the above mentioned pairs.

Rh. indicum is similar in midrib thickness to *Rh. obtusum* var. *kaempferi* (Table 1). Except for this similarity, a clear difference in midrib thickness is found between any two species. The midrib of *Rh. serpyllifolium* (Fig. 3) is much thinner than that of any other species and the midrib of *Rh. oomurasaki* (Fig. 2) is much thicker.

Rh. serpyllifolium shows a very low degree of protursion of its midrib (Table 1). *Rh. indicum* (Fig. 4) and *Rh. obtusum* var. *kaempferi* (Fig. 1) have about three and 11 times as high thickness as *Rh. serpyllifolium*, respectively. *Rh. macrosepalum* (Fig. 5) and *Rh. oomurasaki* (Fig. 2) show protrusion degrees which are similar to each other and are about 17 times as thick as *Rh. serpyllifolium*.

2. Summer leaves

As shown in Table 1, the summer leaves of *Rh. obtusum* var. *kaempferi* are much larger in the leaf blade thickness than the spring leaves, although no difference in midrib thickness is observed between both leaves. The degree of protrusion is much lower in the summer leaves than in the spring leaves. In *Rh. macrosepalum*, on the other hand, the leaf blade shows a negligible similarity in thickness between the spring and the summer leaves, and there is a tendency to be thinner in the former leaf than in the latter. The midribs exhibit a striking similarity in thickness between both leaves. The degree of protrusion in both leaves are shown in Table 1.

Discussion

Rh. serpyllifolium has the smallest leaf and the

Table 1.

Species	Thickness of leaf blade M±m	Thickness of midrib M±m	Protrusion rate
Rhododendron serpyllifolium	142.08±2.81*	165.28± 3.91*	16.32
Rh. indicum	250.00±5.00	368.05± 7.77	47.22
Rh. obtusum var. *kaempferi*	123.61±4.38 (256.94±7.34)	344.44±10.76 (344.44± 9.00)	178.65 (34.05)
Rh. macrosepalum	113.89±3.33 (134.72±4.38)	441.67±11.26 (377.78±13.46)	287.80 (180.41)
Rh. oomurasaki	150.00±6.94	563.88±18.09	275.92

* Unit: μ. Figures in parentheses: Summer leaves

selenderest midvein among the five species studied, while *Rh. indicum* has the second smallest leaf and the second slenderest midvein. It is generally assumed that, in a lower taxonomic rank like a section, a species having a large leaf with netted veins has a thicker midvein than that of a species having a small leaf with the similar vein. Furthermore, it is reliable that the thicker the midvein becomes, the thicker the midrib becomes. Therefore, among the species in section *Tsutsusi*, the thickness of midrib is sure to vary with the thickness of midvein as well as with the fundamental size of leaf. On the other hand, the thickness of the leaf blade may not vary to any considerable degree among the species, in relationship to leaf size, midvein thickness and other leaf parameters. The blade thickness is thought to be independent of the other characters in each species. Therefore, it can be said that the degree of protrusion of the midrib varies under the combined influence of the thickness of midrib and the thickness of leaf blade.

It is noteworthy that section *Tsutsusi* includes a species which shows a very high degree of protrusion and another species which shows a very low degree. This variation in the degree of protrusion may be desirable to adopt as a taxonomic character for dividing section *Tsutsusi* into subsection.

References

ESAU, K. 1977. Anatomy of Seed Plants. 2nd ed. 550 pp. John Wiley and Sons: New York.

KITAMURA, S. and MURATA, G. 1974. Coloured Illustrations of Woody Plants of Japan I. 401 pp. Hoikusha: Osaka.

摘　要

ツツジ属，ヤマツツジ亜属のヤマツツジ節に属する5種（ウンゼンツツジ，サツキ，ヤマツツジ，モチツツジおよびオオムラサキ）で中央脈の太さ，葉身の厚さおよび葉裏中央脈の隆起度が調査された。

中央脈の太さは，その中央部の横断面で測定され，葉身の厚さは，中央脈中央と葉縁中央との中間部で葉身を横断して測定した。中央脈の隆起度は次の式からえられた：

$$\frac{\text{中央脈の太さ}-\text{葉身の厚さ}}{\text{葉身の厚さ}} \times 100.$$

1．春葉　サツキの葉身はいずれの種のそれよりたいへん厚い。ウンゼンツツジとモチツツジとの間，モチツツジとオオムラサキとの間には葉身の厚さにわずかの差異がみられた。上述以外には，いずれの2種間にも葉身の厚さでの差異はみられなかった。中央脈の太さについては，サツキとヤマツツジとの間には相違はないが，これ以外ではいずれの2種間にも明らかに差異がみとめられた。ウンゼンツツジの中央脈は他種に比べとくに細い。中央脈の隆起度はウンゼンツツジ，サツキでは低く，モチツツジ，オオムラサキでは高く，モチツツジでは最も低いウンゼンツツジの約17倍である。

2．夏葉　夏葉の葉身は春葉のそれより厚くなるようであり，夏葉の中央脈の太さは春葉のそれと同じか，または細くなるようである。

分類上，下級の階級である節のなかに中央脈隆起度がたいへん異なった種がふくまれていることに注目し，この中央脈隆起度を節をさらに細分する分類上の標徴として用いられないであろうか。

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○ **タチナハカノコソウ（新称）琉球に産す**（初島住彦）Sumihiko HATUSIMA: *Boerhavia erecta* L. Occurs in the Ryukyus

汎熱帯性雑草で大平洋諸島にも分布するが豪州には知られていない。マレーシアではシンガポール，スマトラ南部（パレンバン），ジャワ，小スンダ列島（フローレス島）に知られ，これ以北には知られていなかったが鹿児島県の鹿屋農高の教諭をしている池田豪憲君は石垣島明日で日本ではじめて採集した。一見ナハカノコソウに似ているが，茎は太くて直立し，葉は大きさ3～5 cm×3 cm位で大きく，下面は粉白色を呈し，果実は倒捍棒状楔形で先端は切形（ナハカノコソウでは捍棒状で先端は鈍頭）であるので区別できる。

Boerhavia erecta L., Sp. PL (1753) 3; J. F. STEMMERIK, Fl. Malesiana Ser. 1, Vol. 63 (1964) 454, Fig. 1, h

Hab. Ryukyus: Isl. Ishigaki, G. IKEDA 3693, Jun. 14, 1977.

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