

# A Note on Comparative Pharmacognosy of *Vanda Roxburghii* and *Acampe Papillosa* (Fam. Orchidaceae)

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## SUMMARY

Vegetative parts of *V. roxburghii* which enters into composition of indigenous medicinal preparation for various diseases though morphologically similar to that of *A. papillosa* can be distinguished from the latter by various anatomical characters and appearance of powdered form in long wave ultraviolet light. Marked differences are noted in epidermal characters of leaf, arrangement of vascular elements in aerial root and organisation of cells in leaf whole mount.

## INTRODUCTION :

“Under the name ‘rasna’ the roots of *V. roxburghii* and *A. papillosa* are both indiscriminately used by native physicians. They are very similar in the morphology of their roots and leaves, though they differ much in their flower”-Dutt (1877) Roots and leaves of both the plants are used effectively in rheumatic affections and allied disorders and other diseases (Watt, 1889 a,b). Detailed pharmacognostic studies, chemical constituents and pharmacological action of *V. roxburghii* are available in the works of Prasad *et al* (1968), Gupta *et al* (1946) and Chopra (1958) respectively. Recently *A. papillosa* was shown to have some pharmacological activity by Banerjee (1978). However, detailed pharmacognostic works on *A. papillosa* are lacking in the literature. In view of gross similarity observed by the author in anatomy of both the plants, the present works deal only with the distinguishing pharmacognostic features.

## Morphology :

*V. roxburghii* : stem 1-2 ft., climbing, leaves 6-8 in., narrow complicate, peduncle 6-8 in., 6-10 fid, sepals

and petals yellowish green or bluish except from clathrate brown nerves, margins white, spur conical.

*A. papillosa* : stem 2-3 ft, as thick as a goose squill, leaves obliquely notched, narrow complicate, flowers 2/3 of an inch in diam., spur conical pubescent within, petals yellow marked with red lines.

## Distribution :

*V. roxburghii* : Bengal, Bihar and westwards to Gujrat and the Concan and southwards to Travancore, Tenasserim and Ceylon.

*A. papillosa* : Bengal and the lower Himalayas from Sikkim eastward, Assam, the Gangetic delta, the Circars and Tenasserim. (Hooker, 1890)

## Synonyms :

*V. roxburghii* : *Cymbidium tesseloides*, Roxb : *Epidendrum tesselatum*, Roxb: *Aerides tesselatum* Wight.

*A. papillosa* : *Saccolabium papillosum*, Lindl.

## Vernaculars :

*V. roxburghii* : Beng.-rasna, bai ; Hindi-rasna, nai, vanda, perasara ; Telegu-mardaru, chittedaru ; Sans.-nakuli, vandaka, gandhanakuli.

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*A. papillosa* : Beng.-rasna, Hindi-rasna, Mar.-kanbher, Sans.- rasna, gandhanakuli. (watt. 1889 a,b).

Leaf epidermis—Epidermal peel of both the plants was examined under microscope and the distinguishing characters were noted. Epidermal cells of adaxial and abaxial surface in *A. papillosa* are larger in size in comparison to that of *V. roxburghii*, irregular shaped, elongated, sharply 4-5 angled, some of the cell walls wavy. In *V. roxburghii*, epidermal cells are smaller in size, oval, tabular or slightly elongated, 5-6 angled. Upper epidermis of *A. papillosa* does not bear stomata whereas that of *V. roxburghii* does (fig. 1&2). However, lower epidermis of *A. papillosa* bears larger, elliptical, paracytic stomata with 4-5 subsidiary cells which are mostly elongated. Stomata on both the epidermis in *V. roxburghii* is smaller, almost round, paracytic with 5-6 subsidiary cells (fig. 3&4).

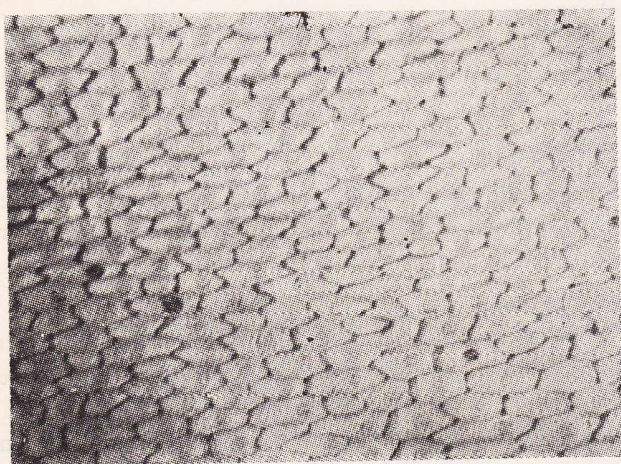


Fig. 1. Upper epidermis of leaf of *A. papillosa* (surface view) x 200.

Aerial root—In transverse section of aerial root, nature and arrangement of cells upto stelar region are similar in both the plants. Vessels in *A. papillosa* are adjacent to toe periphery of the stele but in 2-3 rows extending into the pith of *V. roxburghii*. A peripheral wide zone of strongly lignified tissue is observed in stele of *V. roxburghii* whereas that of *A. papillosa* shows much less lignification (fig. 5&6).

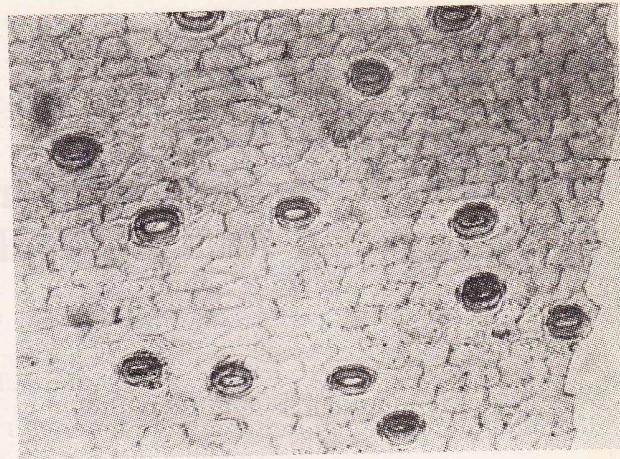


Fig. 2. Upper epidermis of leaf of *V. roxburghii* (surface view) x 200

Leaf whole-mount—Portions of leaves cleared in chloral hydrate solution shows similar venation pattern in both the plants. However, number of parallel veins are slightly more in *V. roxburghii*. In surface view, cells in *V. roxburghii* shows arrangement in a number of distinct longitudinal rows. This characteristic arrangement of cells is however, not found in *A. papillosa*. Transverse cuticular striations is also a distinguishing feature in *V. roxburghii* (fig. 7).

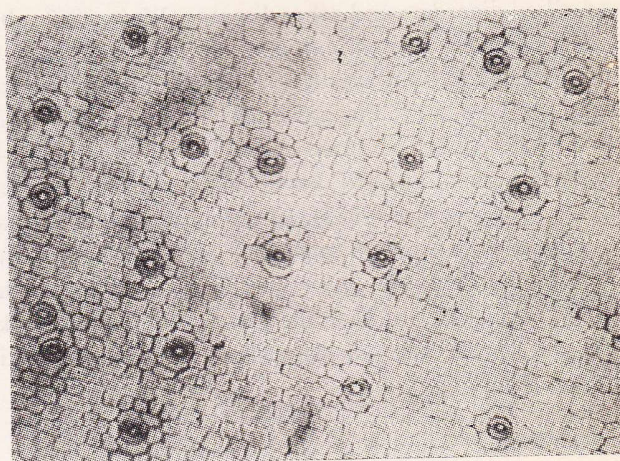


Fig. 3. Lower epidermis of leaf of *A. papillosa*. (surface view) x 200

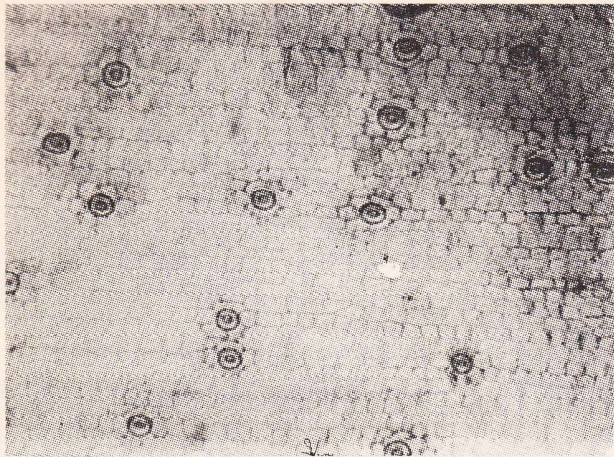


Fig. 4. Lower epidermis of leaf of *V. roxburghii* (surfaceview) x 200

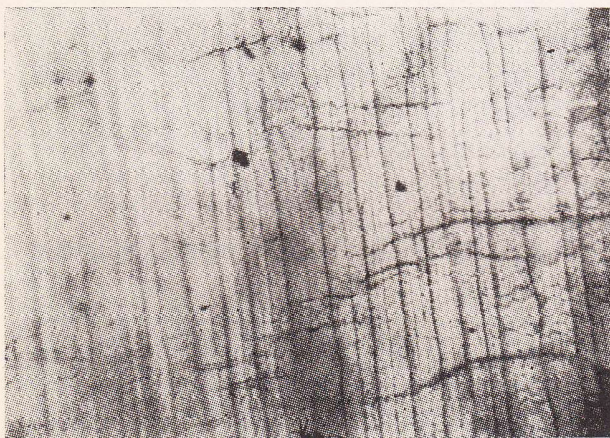


Fig. 7. Leaf whole mount of *V. roxburghii*, (surfaceview) x 25.

**Examination of powdered drug :**

Microscopic-Stems, roots and leaves of both the plants shows elongated, oval, tabular, elliptical parenchyma of various sizes, abundant short and long tracheids and epidermal peel of leaves. Tracheids and few vessels in *V. roxburghii* bears complete scalariform wall thickenings across the breadth whereas in *A. papillosa* thickenings are incomplete and found along the sides lengthwise.

Colour in Ultraviolet light-Examination was done following the method of Chase and Pratt (1949). The wave length of ultraviolet light was approx. 3600 Å°.

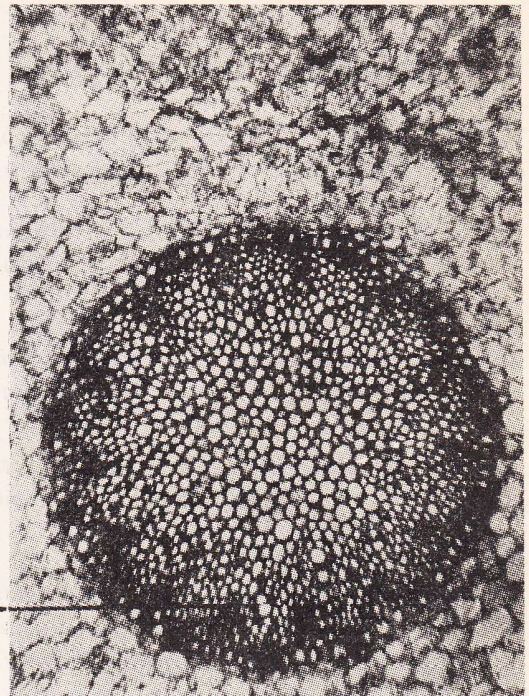


Fig. 5. Stellar region of aerial root of *A. pap.* (T.S.) x 100 V.S.-vessels.

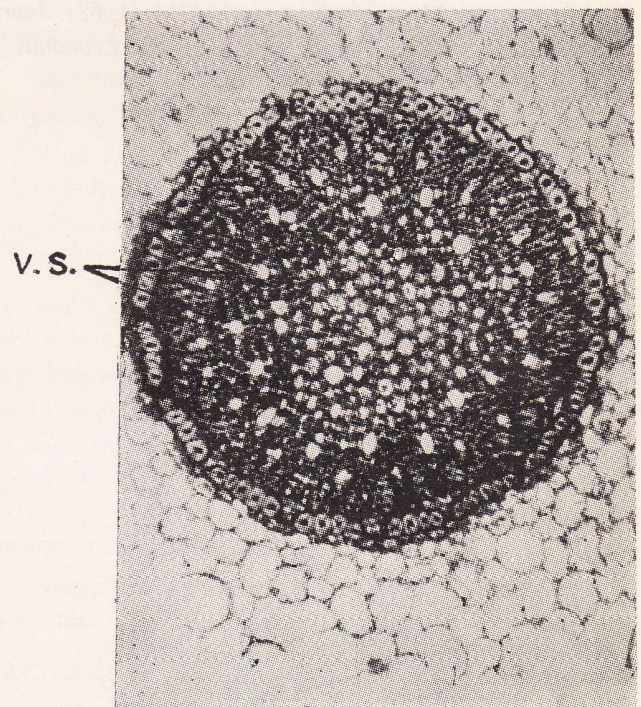


Fig. 6. Stellar region of aerial root of *V. roxb.* (T.S.) x 100 V.S.-vessels.

Colour in U.V. light

		Stem	Root	Leaf
Powder	<i>V. roxburghii</i>	Bluish white	Snuff	Light orange
Control	<i>A. papillosa</i>	Deep brown	Brown	Deep brown
Powder treated with Methanolic NaoH (IN)	<i>V. roxburghii</i>	Green	Greenish yellow	Yellow
	<i>A. papillosa</i>	Deep brown	Deep Brown	Yellow
Powder treated with methanolic Nao Hand mounted in nitrocellulose in amyacetate	<i>V. roxburghii</i>	Yellowish green	Light green	Bright yellow
	<i>A. papillosa</i>	Snuff	Deep brown	Snuff

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