



Jungermannia (Solenostoma) Apressifolia var. Minor (Amak.) Vana – Endemic to Eastern Himalayas

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Jungermannia (Solenostoma) Apressifolia var. Minor (Amak.) Vana is an endemic species to eastern Himalayas, (Singh, P, 1991) species belongs to the section *Desmorhiza* of subgenus *Solenostoma*.

The plants are very small 4-5 mm long, alive green to greenish brown Rhizoids decurrent along the stem forming a distinct fascicle, leaves ovate, transversely inserted, hardly decurrent, cells thin walled, trigones small, acute to slightly bulgy dioecious male inflorescence terminal, bracts in 5-6 pairs, perianth clavate 4- plicate.

Jungermannia (Solenostoma) Apressifolia var. Minor (Amak.) Vana.

Jungermannia (Solenostoma) Apressifolia var. Minor (Amak.) Vana., Journ. Hatt. Bot. Lab. 36 : 58 (1972).

Jungermannia (Solenostoma) clavellata var. Minor (Amak.) Vana. Jour. Hatt. Bot. Lab. 26: 25 (1963), Hattori; in hara fl. East Himalayas: 510 (1966).

Jungermannia (Solenostoma) decolyana var. Minor (Amak.) Amak., Jour. Hatt. Bot. Lab. 29: 255(1966).

(Plate – 1, figs.-1-23; Plate – 2, Figs. 1-4)

Plant in short tufts, 4-5 mm long, 0.9 – 1.1 mm wide, olive green to greenish brown. Stem erect usually simple, 0.2-0.3 mm in diameter, 12- 13 cells across the diameter, cortical in two layers, thick wall 15-25 x 10-20 µm, medullary cells thin walled, 15-40 x 20-40 µm. sub-floral innovation often present. Rhizoids numerous, decurrent along the stem forming a distinct fascicle, pale brown. Leaves succubous, distant to imbricate, transversely inserted, hardly decurrent, ovate, entire, 0.7-1.1 mm long, 0.5 – 0.9 mm wide, cells 13.6-27.2 x 10.2-20.4 µm along the leaf margin, 10.22-34.0 x 13.6-27.2 µm in the middle and 20.4-54.4 x 13.6-23.8 µm at the base, walls thin, trigones small, acute to slightly bulgy, cuticle smooth.

Dioecious. Male inflorescence terminal, bracts in 5-6 pairs, ventricose, 0.62-0.7 mm long and 0.5-0.6 mm wide. Antheridia single per bract, antheridial stalk short, biseriate. Perianth clavate, 1-1.8 mm long, 0.5 – 1mm wide, 4 plicate, 2/3 exserted, mouth crenulate, beak prominent, perigynium undeveloped. Apical cell of the perianth 18.6 -20.4 x 10.2-20.4 µm, cells in the middle 27.2-47.6 x 13.6-17.0 µm, basal cells 27.2-47.6 x 13.6-20.4 µm. Female bracts 1 pair, similar to cauline leaves, 0.6-0.7mm long, 0.8-1.0 mm wide. Sporophyte with foot, seta and capsule, Capsule on maturity dehiscence into four valves, capsule wall by stratose, outer layers cells much broader than long and with nodular thickening on radial and end walls, cells of the inner layer much longer than broad with semi-annular thickenings bands. Spores 15.3-17.0 µm in diameter, pale brown. Elaters bispirate, brown, 125-136 µm long, 13.6 -15.3 µm with tapering ends.

SEM of spores: The sporoderm architecture on digital face (plate -2, figs. -2,3) comprises of very minute granules, more commonly towards the central portion. Sculpturing is less conspicuous near the middle. On the proximal face (plate- - 2, figs-1) triradiate marks is distinctly visible and minute granules are present in patches. The sculpturing is inconspicuous near the triradiate rays.

Habitat : Terrestrial

Type Locality: Darjeeling (Sandakphu-Tonglu) alt. 2600-3550 m.

Distribution in India: Endemic to Eastern Himalayas: W. Bengal – Darjeeling(Jongri,Phalut, Sandakphu, Tiger hill, Tonglu).

Range : India, Eastern Himalayas (Endemic).

Characterstic of the species:

- 1- Plants 4-5 mm long, olive green to greenish brown.
- 2- Rhizoids decurrent along the stem forming a distinct facicle.
- 3- Leaves ovate, transversely inserted, hardly decurrent, cells thin walled, trigones small, acute to slightly bulging .
- 4- Dioecious. Male inflorescence terminal, bracts in 5-6 pairs.
- 5- Perianth clavate, 4-plicate, pergygium undeveloped.

Following specimens have been examined :

LWU 1563/70, Bryophytes from eastern Himalayas, *Jungermannia* (*Solenostoma*) *apressifolia* var. *Minor*(Amak.) Vana, Loc. : Darjeeling , alt. approx. 2000-2500m, Habitat: on soil in association with *Jungermannia* (*Solenostoma*) *schauliana* steph., *Frullania nepalensis*, *frullania grandistipula* and *Pthychanthus* Sp. Leg. R. Udar & Party, Date:2.1.1970, Det. : S.C. Srivastava & P. Singh.

LWU 1897/70, Bryophytes from eastern Himalayas, *Jungermannia* (*Solenostoma*) *apressifolia* var. *Minor*(Amak.) Vana, Loc. : Darjeeling(Tiger hill) alt. ca 2590m, Habitat : on soil in association with *Jungermannia*(*Solenostoma*) *schauliana* steph., leg.: R. Udar & Party, Date : 2.1.1970, Det. : S.C. Srivastava & P. Singh.

Following specimen from Foreign herbarium has been examined:

NICH TYPE *Jungermannia*(*Solenostroma*)*apressifolia* var. *Minor*(Amak.) Vana (= *Jungermannia clavellata* var. *minor* Amak.), Loc. Darjeeling, Sandakphu (3550m) - Kala pokhri (3000 m), Caribans (2600m), Tonglu:(3000m), Date: June 7,1960, leg.: H.H., H.K., Y.M., DET.: M.T. and T.T., No. 2011007, plants in association with *Scapania angusta*, *Scapania ornithopodioides* and *Lophocolea trollii* (Herz.) Schust.

Jungermannia (*Solenostoma*) *apressifolia* var. *minor* (Amak.) Vana is relatively smaller (4-5 mm long) than the *J. apressifolia* Mitt. (1-3 cm long). It differs from the latter in having ovate leaves which are hardily decurrent, small acute to very slightly bulging trigones in the leaf cells, terminal male inflorescence with 6-7 pairs of bracts and clavate perianth, While *J. apressifolia* possesses orbicular- reniform leaves, decurrent on both the sides, acute-more bulging trigones, terminal or intercalary male inflorescence with 6-12(16) pairs of bracts and clavate to pyriform perianth.

Jungermannia *Apressifolia* var. *minor* is poorly distributed in comparison to *J. apressifolia* as it occurs only in India and that too in Eastern Himalayas.

PLATE-1

Jungermannia (Solenostoma) appressifolia var. minor (Amak.) Vana

(Figs. 1-23)

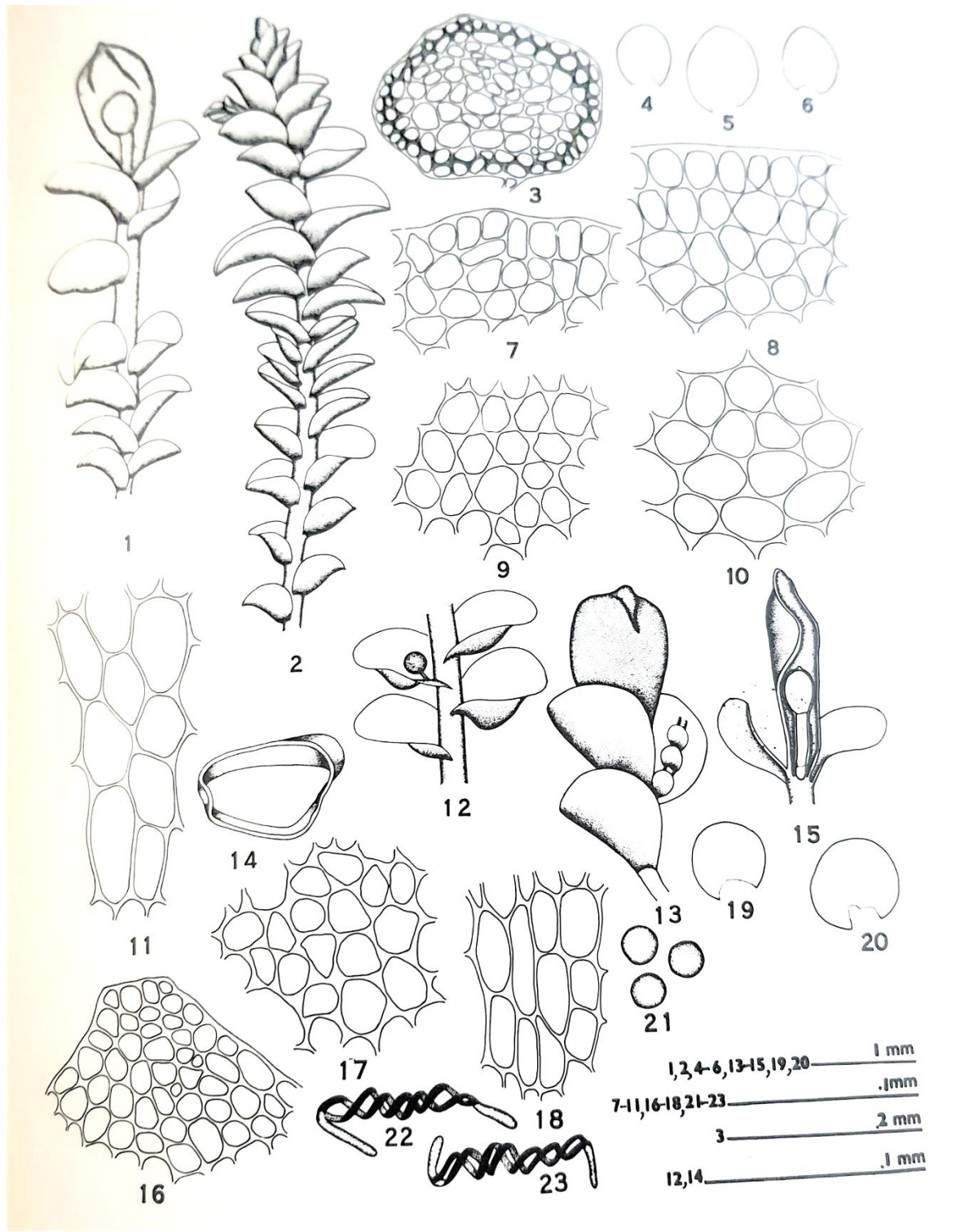


Fig. 1. Female plant (dorsal view).

Fig. 2. Male plant (dorsal view).

Fig. 3. Cross section of stem.

Figs. 4-6. Leaves.

Figs. 7, 8. Marginal cells of leaf.

Figs. 9, 10. Median cells of leaf.

Fig. 11. Basal cells of leaf.

Fig. 12. A portion of male plant.

Fig. 13. Perianth.

Fig. 14. T.S. perianth

Fig. 15. L.S. perianth.

Fig. 16. Apical cells of perianth.

Fig. 17. Median cells of perianth.

Fig. 18. Basal cells of perianth.

Figs. 19, 20. Male bracts.

Fig. 21. Spores.

Fig. 22, 23. Elaters.

Figures 1-3, 7, 9, 13, 21-23 drawn from type specimen 2011007.

Figures 4-6, 8, 10-12, 14-20 drawn from LWU 1563/70.

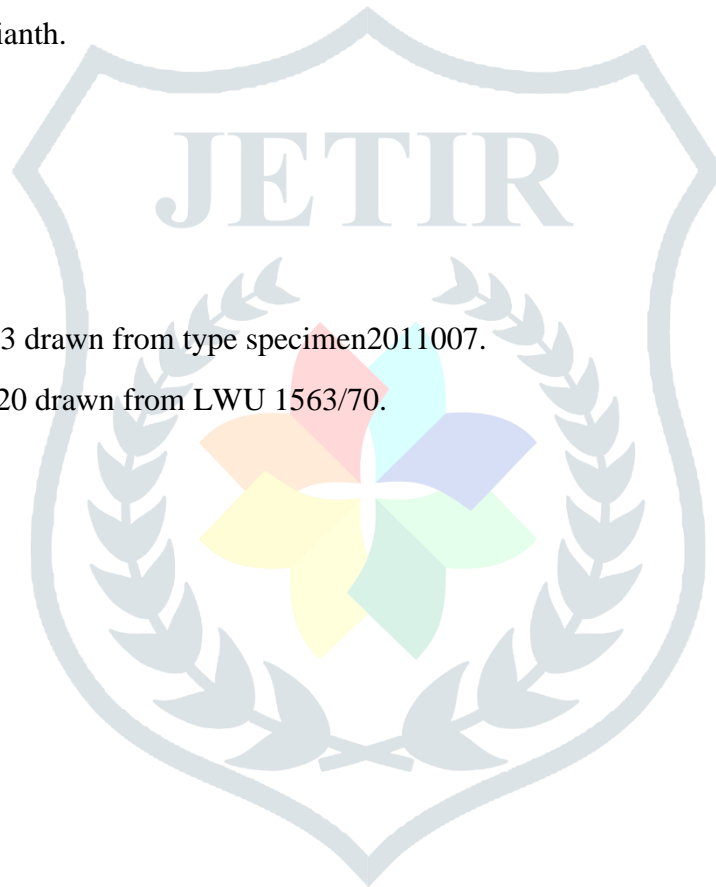


PLATE-2

**Jungermannia (Solenostoma) appressifolia var. minor (Amak.) Vana
(Figs. 1-4)**

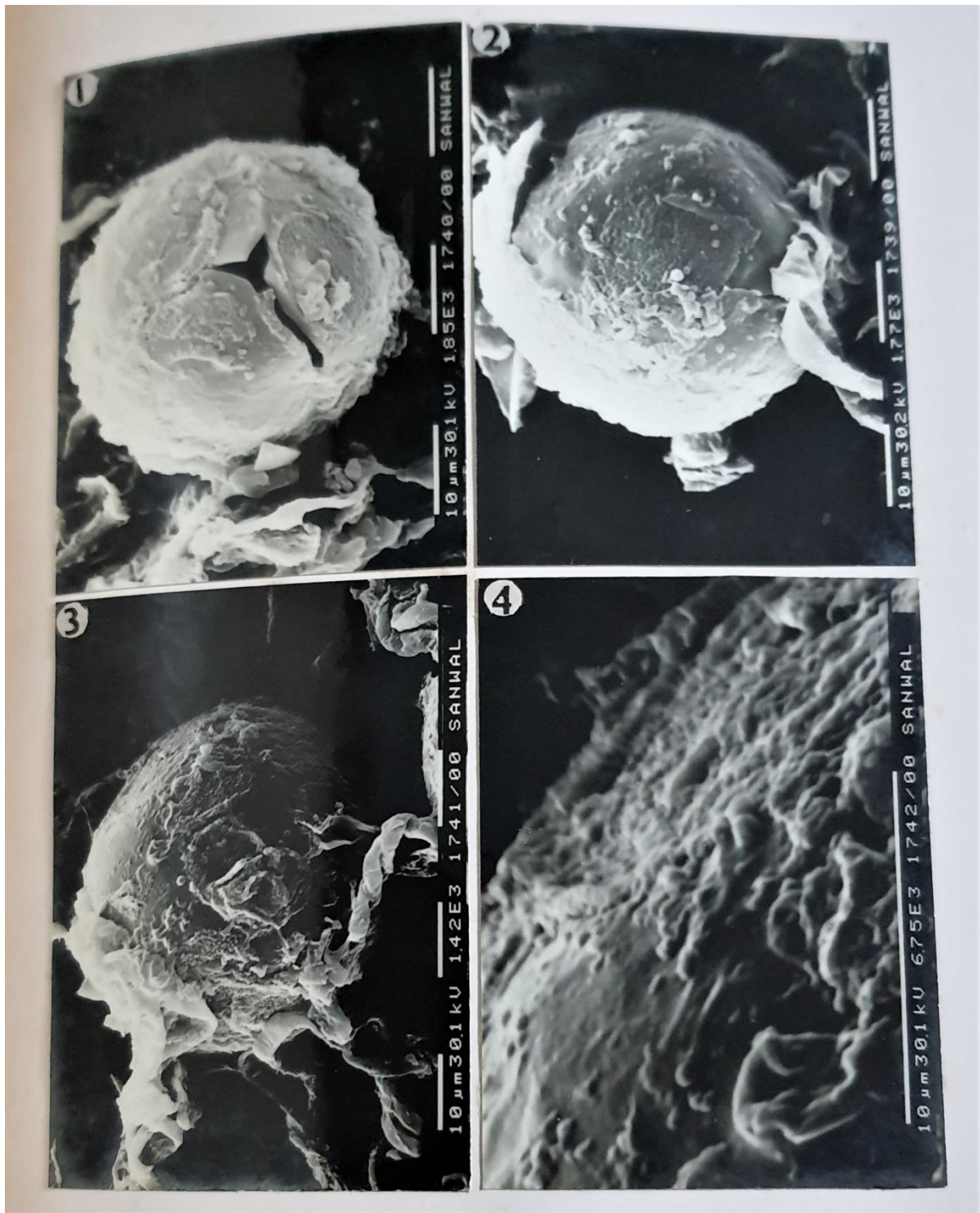


Fig. 1. Spore, proximal view.

Fig. 2, 3. Spores, distal view.

Fig. 4. Spore, distal view (a portion enlarged).

(SEM from Type specimen 2011007)

References:

Amak (1966): Journ. Hatt. Bot. Lab. 29: 255 (1966)

Singh, P. (1991) Studies in Indian Jungermannioideae with special reference to Jungermannia subg. Solenostoma Mitt Amak. Ph.D Thesis :(pgs. 74-80) ,Department of Botany, University of Lucknow, India.

Vana, J (1972) Journ. Hatt. Bot. Lab. 56: 58 (1972)

Vana, J (1963) Journ. Hatt. Bot. Lab. 26: 25 (1966)

Hattori (1966): Hara El, East. Himalayas: 570: 1966.

