

Structure of seed in *Hoheria glabrata* Sprague et Summ. (Malvaceae)

M.P.S. Chauhan* & R.P. Singh**

*Department of Botany, Y.D. (P.G.) College, Lakhimpur-Kheri, U.P., India

** Department of Botany, Lucknow University, Lucknow-226007, India

Chauhan, M.P.S. & Singh, R.P. 1994. Structure of seed in *Hoheria glabrata* Sprague et Summ. (Malvaceae). *Geophytology* 24 (1):107-108.

Morphology and anatomy of seeds of *Hoheria glabrata* have been studied. Seeds are cuneiform, light brown in colour and have glabrous surface. Seed coat is thin and comprises testa and tegmen. The outer epidermal cells of tegmen are sclerotic and usually more tangentially elongated for major part of seed except near micropylar end where they show some radial elongation. The inner epidermal cells of tegmen form the fringe layer. Endosperm is copious at the chalazal end. Embryo is curved and the two cotyledons are folded.

Key-words – Seed, Morphology, *Hoheria glabrata*, Malvaceae.

INTRODUCTION

HOHERIA GLABRATA Sprague et Summ. is placed in the sub-tribe Sidinae, tribe Malveae of the family Malvaceae (Schumann, 1895). A perusal of literature shows that no work is available on seed structure of this economically important taxon (see Corner, 1976). However, the present communication provides details on this aspect.

MATERIAL AND METHOD

Seeds of *Hoheria glabrata* were obtained from the Arboretum of Washington University, Seattle, U.S.A. They were softened by soaking them in a mixture of glycerine and distilled water(1:1) for some days. Usual methods of dehydration in tertiary butyl alcohol series and infiltration and embedding in paraffin wax were followed. Sections cut between 15 to 20 μm thickness were stained in safranin-fast green combination.

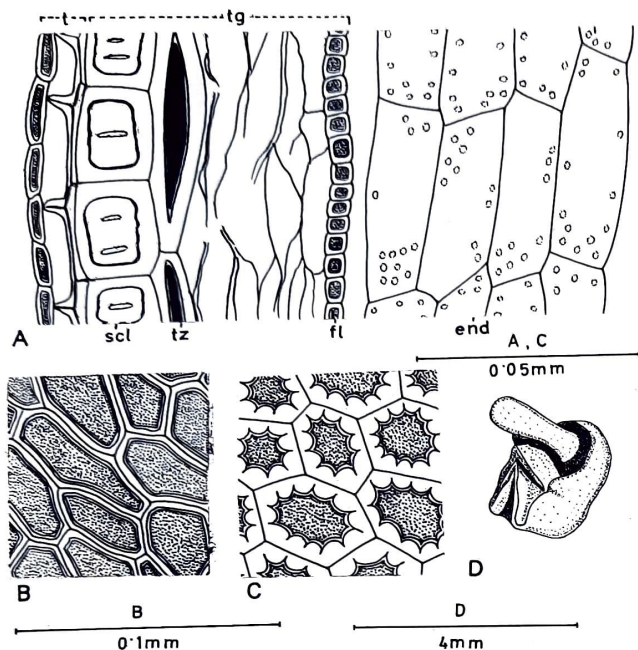
OBSERVATIONS

The fruits of *H. glabrata* are indehiscent and crested with a conspicuous or inconspicuous wing. Seeds are cuneiform, light brown and glabrous. They are, on an average, 3.5 mm long and 2.5 mm broad. The seed coat, though thin, shows distinct testa and tegmen; the former, formed by outer integument, is 2-cell-layer thick

representing outer and inner epidermis (Text-fig. 1 A). Cells of the outer epidermis are thick-walled and appear polygonal in surface view (Text-fig. 1 B); they are filled with tanniferous substances. Cells of the inner epidermis are thickened along the inner tangential and radial walls (Text-fig. 1 A).

The tegmen is derived from the inner integument. Cells of its outer epidermis are sclerotic (Text-fig. 1 A) and measure 13 μm in radial direction for major part of seed whereas in tangential direction they measure between 28 to 44 μm . They are cuboid in shape in Longi-sections of the seed. Towards micropylar end, these cells are radially elongated measuring up to 45 μm in length and 8 μm in width thereby giving palisade-like appearance. Light line is not seen in cells of this sclerotic layer. In cross-section these cells are polygonal in outline and show pits on their walls (Text-fig. 1 C). The sclerotic layer is followed by a zone of tanniferous cells. Cells of the inner epidermis which form the fringe layer appear squarish in section, but in surface view they are polygonal and show simple pits on their walls. The lumen of these cells is filled with tanniferous substances.

In a mature seed the nucellus is exhausted and only a hyaline structure remains. The endosperm is massive at the chalazal end where about 8 to 10 cell layers persist, whereas on the antiraphe side the number gets reduced to 4.



Text-figure. 1 A-D. *Hoheria glabrata* : A, Cross-section of part of seed showing seed coat and endosperm. B, surface view of outer epidermis of testa. C, surface view of sclerotic cells. D, Embryo. (Abbreviations: end-endosperm; fl-fringe layer; scl-sclerotic cells; t-testa; tg-tegmen; tz-tanniferous zone)

The embryo is curved (Text-fig. 1 D). The hypocotyl-root axis is bent and forms an angle with cotyledons which are completely folded along the embryonal axis forming a small bulge at the chalazal end. Cotyledons show well-developed hypodermal palisade layer on the ventral side.

DISCUSSION

The general pattern of the characteristic layers of seed coat in *Hoheria glabrata* is nearly similar to that

usually observed in the investigated taxa of Malvaceae (Reeves, 1936; Singh, 1964; Corner, 1976), except cells of the outer epidermis of inner integument (tegmen) which offer an important difference. Sclerotic cells of this layer in the major area of seed show cuboid outline in Longi-sections, but at micropylar end these cells show some radial elongation and appear palisade-like. Palisade-like macrosclereids are characteristic throughout the seeds in all the earlier studies of malvaceous taxa, except in *Malva viscus drummondii* where these are reported to be cuboid in shape (Reeves, 1936). In this respect *Malva viscus drummondii* resembles the presently studied *Hoheria glabrata*. Reasons for insignificant radial elongation for major area of seed in *Hoheria glabrata* can be attributed to the indehiscent nature of the fruit wall which provides added mechanical strength and protection to the embryo. In *Malva viscus drummondii* the fruit, though berry, has sclerified wall thus providing protection to seeds with the result that instead of palisade-like macrosclereid the cells are cuboid.

The two taxa also do not show light line in the sclerotic cells of tegmen. The reason may be assigned to their being more cuboid in shape.

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