

Anatomical characterization of impatiens walleriana assignment

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Anatomical Characterization of *Impatiens walleriana* Hook. f. *Impatiens* is a cosmopolitan genus with 1 000 described species, of which only 500 should be recognized, depending on the system of classification (Clevenger, 1971). The ambiguity of the number of species in the genus can be attributed to systematic studies of the genus either combining or dividing species, which clouds the true identity of the cultivated species. The genus is found primarily in the Old World Tropics, with species throughout much of tropical Africa,

India, southern China and Japan, a few in south-east Asia and the occasional species in the temperate regions in northern Asia, Europe and North America (Grey-Wilson, 1980; Chinnappa and Gill, 1974). Most of the plants are semi-succulent herbs, however, a few are small shrubs. Their chief attraction though, is the great diversity of the showy and often brightly colored flowers. It is characterized by the complex anatomy, however, makes poor herbarium specimens, which have caused endless taxonomic confusions.

For this study, *Impatiens walleriana* was used. For many years the most prominent commercial species was *Impatiens walleriana* and this species still occupies many gardens. This delightful plant is available in a full range of sizes, from the 20-25 cm Super-ElfinR to the 30-35 cm Blitz series (Hamrick, 1989). Most colors, including white, pink, salmon, coral, red, orange, violet, mauve and even bicolours can be found except yellow and true blue.

Moreover, it has to thrive in shady situations and its tolerance of air pollution has contributed to its popularity. One of the objectives of this study is to characterize the anatomical features of *Impatiens walleriana* stem. The

anatomical structure of the species analyzed has large thin-walled parenchyma cells observed in the pith and the large cortex of the stem (as shown in the Figure) to which one of the common characteristics of fragile plants. The species has a uniseriate epidermis and distinct xylem surrounded by the phloem for an efficient conduction in the plant body.

Its vascular bundles can be found between the pith and the cortex, also, an endodermis exists between the cortex and phloem. On the other hand, crystals can be found in Impatiens, these are excess inorganic substances often consisting of calcium salts such as calcium oxalate which are often deposited in the vacuole of the cell in a crystalline form. The type of crystals found in Impatiens is raphides. Raphides are needle-like crystals that occur in bundles, particularly in the phloem region.

According to some researches, the anatomical structure of the species analyzed should have showed that all vessels have perforations and intervessel pits which are mainly scalariform, however, the researchers had only used free-hand sectioning, thus, were not able to have a constructive observation of the perforations. Anatomically, it can be seen mechanisms that can assist in the establishment and survival of the species in relation to different conditions in the environment, as the presence of the cuticle, the cell wall of epidermal cells, large parenchyma cells in the cortex and pith, and the vascular bundles as such.