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**Tricotyledony in *Brachystelma shrirangii* Kambale, Gholave & Sardesai (Apocynaceae)**

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**Abstract:**

Dicotyledonous plants producing three cotyledons the case of naturally occurring dicotyledonous plants produces three cotyledons and it has been stated that tricotyledony or tricotyly. Moreover, the development of an unusual numeral amount of cotyledons has been referred to as pleiocotyly. Molecular revisions have been revealed that only a few mutated genes might produce tricotyledonous qualities in the model plant.

**Keywords:** Apocynaceae, *Brachystelma shrirangii*, Dicotyledon, Tricotyledony

**Introduction:**

*Brachystelma* R.Br. is a second most largest genus in the tribe Ceropegieae about 116 species scattered in the Old-World tropics (Mabberley, 2017). They are slender stemmed with a brilliant display of colours in their flowers, especially in their corolla and coronal structures. Bruyns *et al.* (2017) argued for the merger of genus *Brachystelma* with *Ceropegia* L. based on molecular phylogenetic studies. Preferred to retain it as a separate entity from that of *Ceropegia* as both the genera exhibit distinctive floral morphologies.

Have accounted for 33 species in *Brachystelma* in India, while a total of 38 taxa including six varieties were enumerated in a recent work. They are mainly distributed in Peninsular India in dry hill ranges. A few of them have been represented by their types. There are seven species from Karnataka *B. ciliatum* Arekal & T.M.Ramakrishna, *B. edulis* Collett & Hemsl., *B. elenaduense* Sathyan. *B. kolarensis* Arekal & T.M.Ramakrishna, *B. maculatum* Hook.f., *B. shrirangii* Kambale, Gholave & Sardesai and *B. volubile* Hook.f. All of them exhibit erect stems and are non-climbing habit.

The instance of naturally dicotyledonous plants producing three cotyledons has been stated as tricotyledony or tricotyly. More commonly, the development of an unusual numeral amount of cotyledons has been referred to as pleiocotyly. Molecular revisions have been revealed that only a few mutated genes might produce tricotyledonous qualities in the model plant, *Arabidopsis*. (Conway, L. J. & Poethig, R.S 1997)

Tricotyledonous seedlings occur periodically in nurseries of dicotyledonous plant species in over 15 families of plants. (Conner & Agrawal 2005). On the other hand, the rarity has not been testified in wild *Brachystelma* (Apocynaceae). The plant *Brachystelma shrirangii*. Kambale, Gholave & Sardesai Apocynaceae (Sardesai M. M. & Kambale, Sharad, R.S. Govekar & V.I, Kalhalkar 2017) is hermaphrodite, hysteroanthus and insect pollinated.

The tuber of *Brachystelma edulis* and *Brachystelma naoraji* are wild edible tuber species and main source of diet in India and have a noteworthy residence in the dietary

lifestyles of forest tribal communities. The medicinal value of *Brachystelma* was recorded as to be remedial for stomach ache, headache and cold in children in Satara district. (Deshmukh & Jadhav 2013). The tuberous perennial herb serves as a storehouse for researchers in the field of biotechnology, nutraceutical, pharmaceutical, cosmetic and environmental sciences. (Deshmukh & Jadhav 2014)

#### **Material & Methodology:**

During study in 2015-2020 to check seed viability and germination of a one year old *Brachystelma* seeds, we seen few seedlings with three cotyledon leaves. To check the frequency of tricotyledony in *Brachystelma*, Seeds from 3 different plants found in field gene store (lat.17. °56'12' N, long. 74°33.08982' E, altitude 720 m amsl.) At Raja Shripatrao Bhagwantrao Mahavidyalaya, Aundh were collected in 2016. Seedlings were raised in shallow tray and arrival of cotyledon figures were analyzed weekly.

#### **Results & Discussion:**

Plants were recorded in three categories: two cotyledons, three cotyledons, and superior than three cotyledons. Tricotyledonous seedlings transplanted and kept in shed net. The witnessed tricotyledon regularities among the 81 germinated seedlings from one plant ranged from 0% to 1.25% with an average of 1.23%. A rare single tetracotyledon seedling was observed. Less frequency of tricotyledony has been reported in *Helianthus annuus* L. (2.00%) (Hu, Miller & Vick, 2006) and *Raphanus raphanistrum* (0.53%) (Conner & Agrawal 2005). Not any of the cotyledon leaves observed any indication of exterior alteration and were organized proportionally in a spiral manner. Seedlings bearing three cotyledons also bear three true leaves at apical region.

Plants with three cotyledons potentially valued for prior formation of seedlings after planting because of the larger leaf area in the premature growing stages and may provide as a morphological characteristic for unique cultivars (Hu, Miller & Vick 2006). Inadequate number of seedlings are accessible at the Raja Shripatrao Bhagwantrao Mahavidyalaya, Aundh for five years.

Recipients of tubers have been marked to make suitable source germplasm if it is used in research, development of a new cultivar, germplasm, parental line or hybrid.

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**Figure 1.** a. habit b. Seedling with three cotyledons, c. Seedling with three true leaves

