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FLORAL ANOMALIES IN *CALOTROPIS PROCERA* (AITON) DRYAND – NATURE'S BIZARRE PLAY

PIUSH SRIVASTAVA, VINEETA TRIPATHI AND DIPAK KUMAR MISHRA[1]

Botany Division, CSIR-Central Drug Research Institute, B.S. 10/1, Sector 10, Jankipuram Extension, Sitapur Road, Lucknow-226031, India

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Calotropis procera (Aiton) Dryand belonging to the family Apocynaceae [formerly in Asclepiadaceae, now under subfamily Asclepiadoideae of Apocynaceae (Angiosperm Phylogeny Group, 2003; Bensusan, 2009) is a small evergreen shrub distributed throughout Africa, America, Asia and Australia. It is common almost throughout India. It is an important medicinal plant and widely used against various diseases like leprosy, ulcer, and piles (Kartikar and Basu, 1994). Flowers of this species are regular, bisexual, pentamerous and arranged in simple or rarely compound cymose corymbs at the ends of laterally placed or interpetiolar peduncles arising from alternate sides of the nodes. Each cluster is surrounded by several small, oblong, pointed and scaly caducous bracts. Flower buds are ovoid, calyx five lobed, lobes broadly ovate with small fleshy teeth like glands within the base. Corolla regular, gamopetalous, with a short tube and five broad ovate or lanceolate lobes. Stamens five, inserted at the base of the corolla. Filaments connate and form a staminal column, the apex of which is adnate to dilated stigma forming a pentangular gynostegium. Five coronal appendages are radiating from the staminal columns which are slightly shorter than the column. The appendages are fleshy, pale purplish or yellowish white and laterally compressed with a circinately recurved hollow spur at base and two short obtuse obliquely divergent cuticles towards the top just below the apex. Anthers short, 2-celled, coherent round the stigma, corpusculum located at the angles of gynostegium, which are visible like black glands (Fig.1, A1&A2). This type of floral structure of *C. procera* was also supported by some other literatures (Henry, 1971; Hooker, 1978; Kanjlal *et al*., 1939; Lal, 1997; Meena *et al*., 2010; Rahman and Wilcock, 1991; Shetty *et al*., 1991)

During the field visits to different places of Uttar Pradesh, India from January 2011 to December 2014, many abnormalities of its floral structure were observed. Each abnormality was detected in a single flower of the plant, while other flowers of the same plant or population were quite normal. Many literatures were consulted to find out any earlier report of such abnormalities, but in vein. All the herbarium specimens of *C. procera* deposited at the Herbarium of CSIR-Central Drug Research Institute and CSIR- National Botanical Research Institute were also scrutinized, but no such abnormalities were noticed. So, the present report on such anomalies in the floral structure of *C. procera* can be called first of its kind.

The different types of anomalies which were observed are as follows:

Anomaly-1: Calyx 4-lobed, corolla 6-lobed, gynostegium quadrangular, coronal appendages 6, of which 2 are distinct and remaining 4 are joined in pairs (Fig. 1, B1&B2).

Anomaly-2: Calyx 5-lobed, corolla 5-lobed, gynostegium triangular, coronal appendages 4, of which 2 are distinct and remaining 2 are laterally joined (Fig. 1, C1&C2).

[1]Corresponding author. Email: dk_mishra@cdri.res.in

Anomaly-3: Calyx 5-lobed, corolla 4-lobed, gynostegium pentangular, coronal appendages 5, of which 3 are distinct and 2/3 lower portion of remaining 2 are laterally joined (Fig. 1, D1&D2).

Anomaly-4: Calyx 5-lobed, corolla 6-lobed, gynostegium quadrangular, coronal appendages 4, distinct (Fig. 1, E1&E2).

Anomaly-5: Calyx 6-lobed, of which 2 smaller are overlapped by a broader one, corolla 4-lobed, gynostegium quadrangular, coronal appendages 4, distinct (Fig. 1, F1&F2).

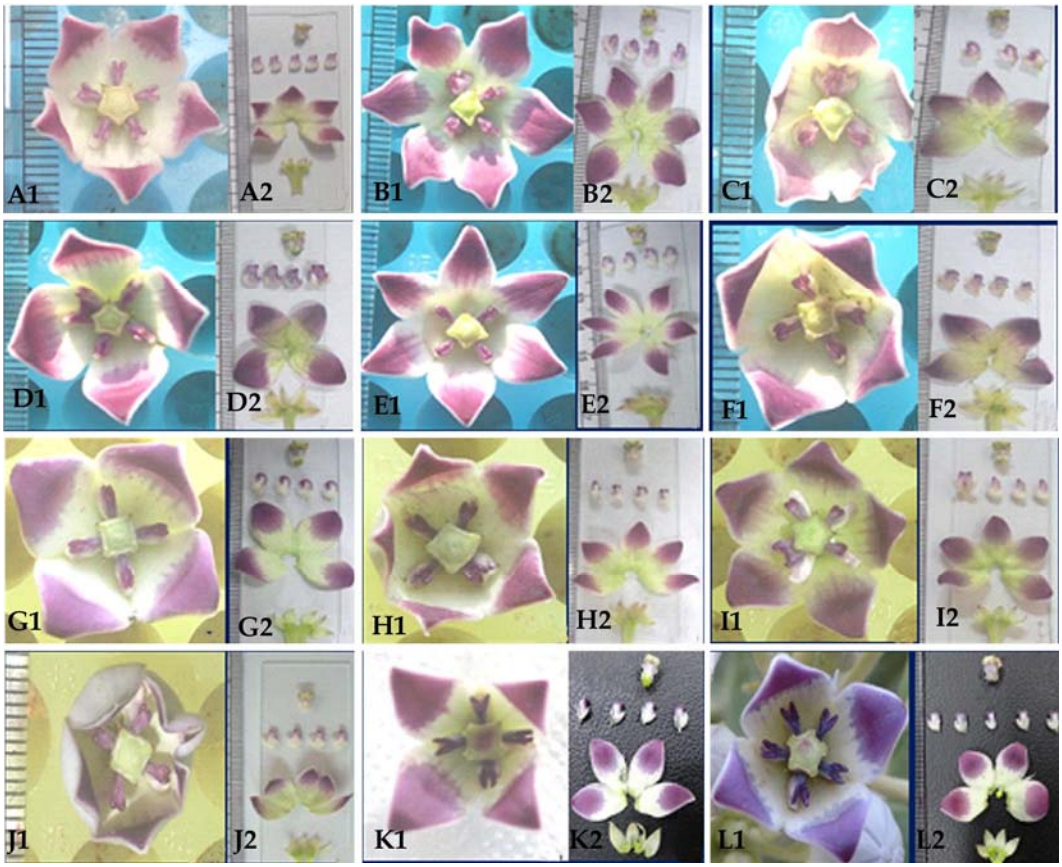

Fig. 1. Structure of normal flower and floral anomalies of *Calotropis procera* (Aiton) Dryand.: A1&A2. Normal flower; B1&B2. Anomaly 1; C1&C2. Anomaly 2; D1&D2. Anomaly 3; E1&E2. Anomaly 4; F1&F2. Anomaly 5; G1&G2. Anomaly 6; H1&H2. Anomaly 7; I1&I2. Anomaly 8; J1&J2. Anomaly 9; K1&K2 Anomaly 10; L1&L2. Anomaly 11.

Anomaly-6: Calyx 5-lobed, corolla 4-lobed, gynostegium quadrangular, coronal appendages 4, distinct (Fig. 1, G1&G2).

Anomaly-7: Calyx 5-lobed, corolla 5-lobed, gynostegium quadrangular, coronal appendages 5, of which 3 are distinct and remaining 2 are completely joined looks like a single broader appendage (Fig. 1, H1&H2).

Anomaly-8: Calyx 5-lobed, corolla 5-lobed, gynostegium pentangular, coronal appendages 5, of which 3 are distinct and 2/3 lower portion of remaining 2 are laterally joined (Fig. 1, I1&I2).

Anomaly-9: Calyx 5-lobed, of which 4 are normal and remaining one is smaller and placed below the joined 2 corolla lobes, corolla 5-lobed, of which 3 are distinct and remaining 2 are completely joined, gynostegium quadrangular, coronal appendages 4 (Fig. 1, J1&J2).

Anomaly-10: Calyx 4-lobed, corolla 4-lobed, gynostegium quadrangular, coronal appendages 4, distinct (Fig. 1, K1&K2).

Anomaly-11: Calyx 4-lobed, corolla 4-lobed, gynostegium pentangular, coronal appendages 5, distinct (Fig. 1, L1&L2).

The development of flower usually results from the controlled cell division of floral meristems followed by their differentiation and organization. The pattern and number of cell divisions of any species decide the number, shape and orientation of its floral members. According to Meyerowitz *et al*. (1998), the cell division pattern and number are strictly controlled by three genes *viz., Superman, Clavata* and *Perianthia* and any kind of alteration in expression or mutation in these genes may lead to floral abnormalities.

As each of these abnormalities or anomalies were noticed in a single flower of its whole population these abnormalities or anomalies of floral structure do not have any taxonomic significance.

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