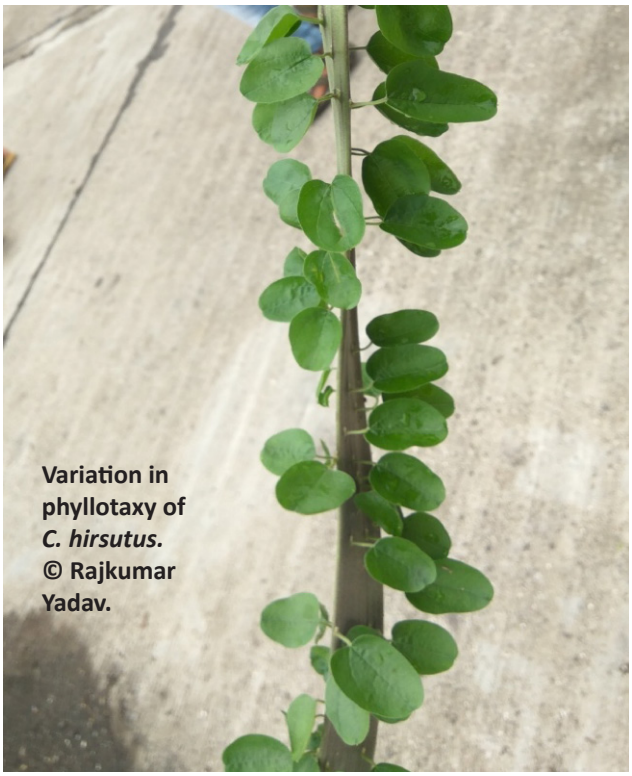
A record of stem fasciation phenomenon in *Cocculus hirsutus* (L.)

Fasciation phenomenon is not rare in plants rather widely known in the plant kingdom (Barannon 1914). The term is originated from the Latin word 'fascis', which means 'bundle' and could appear in different plant organs (Iliev & Kitin 2010). In this phenomenon, the broadening of the shoot apical meristem, flattening of the stem and changes in phyllotaxy may be observed in various plant species (Iliev & Kitin 2010).

Fasciated stem of *C. hirsutus*. © Rajkumar Yadav.

Literature survey showed that most of the fasciation has/had been reported in trees, shrubs, flowers, and cacti belonging to 107 families, more frequently in Rosaceae, Ranunculaceae, Liliaceae, Euphorbiaceae, Crassulaceae, Leguminosae, Onagraceae, Compositae, and Cactaceae (White 1948; Binggeli 1990). The study of fasciation subject is known as teratology, meaning the study of physiological abnormailities (Bos 1957; Binggeli 1990). During a personal field visit to the Tapi District (21.0511° N & 73.2482° E), Gujarat, India, a remarkable natural stem fasciation phenomenon was noticed in *Cocculus hirsutus* (L.) Diels, where the stem had converted into a flattened and ribbed structure, as shown in the figure, which was different from the normal plant of the same species. On the examined stem, the phyllotaxy of *Cocculus hirsutus* (L.) was also found to be different than the normal individual of the species, which may change periodically as described by Bausor (1937) in *Phaseaolus multiflorus*



Variation in phyllotaxy of *C. hirsutus*. © Rajkumar Yadav.

Willd. Similar leaf arrangment is also described by El-Banna et al. (2013) in fasciated stem. The species was identified as *Cocculus hirsutus* (L.) using the Flora of Gujarat State prepared by Shah (1978) and herbarium of GEER Foundation located in Gandhinagar, Gujarat, India. The specimen of this species was collected and the voucher specimen 02352 (GEER) was deposited in herbarium of GEER Foundation for reference purposes. *Cocculus hirsutus* (L.) is an evergreen, perennial climber species belonging to Menispermaceae, an angiosperm family. It is also known as the broom creeper plant and is widely distributed throughout India, especially in dry regions of the country (Goodla et al. 2017).

As per the available literature and sources known to us, fasciation has not been reported in the species *Cocculus hirsutus* (L.) but, fascinated, flattened, wide and ribbed type of interesting phenomenon had been reported by Odneal (2016) in Sweet Potato *Ipomoea batatas* L. (Lam.), which he thought could be due to hormonal imbalance from mutation or other factors. Fasciation phenomena is also noted in *Senna surattensis* (Sunshine tree) which was found to be due to phytoplasmic infection (Wu et al. 2011).

Observation during the current study revealed the stem to be as broad as 3.5 cm, which looked like a pant belt. Other morphological features such as leaf size (1.5–6 × 0.5–2.5cm) and shape (ovate, obtuse, or mucronate at apex, rounded or truncate at base) were found to be almost similar to the normal individual of *Cocculus hirsutus* (L.). As per various experiments done by White (1948), fasciation phenomenon may be due to infection (by bacteria and viruses), chemical or mechanical damage, somatic mutation, hormonal imbalance, and environmental causes. The current observational study documented a stem fasciation phenomenon in *Cocculus hirsutus* (L.) which was unknown yet in this species and a detailed study of teratology is required to know the teratogen responsible for this character of the plant.

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