

Morphological and biochemical analysis of *Curcuma caesia* Roxb and *Curcuma longa* L. relating to their medicinal values

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SUMMARY

Curcuma species belongs to Zingiberaceae family. The genus is characterized by the presence of rhizomatous tubers. *Curcuma caesia* Roxb. (black zedoary) and *Curcuma longa* L. (turmeric) are widely used in indigenous medicines as a treatment for various diseases. Even though, they are in the same genus *Curcuma*, they showed marked differences in the colour of rhizomes, leaves and flowers. Therefore, a comparative study in its morphological characteristics and the biochemical components were analysed.

Key words : *Curcuma caesia*, *Curcuma longa*, Medicinal uses

Curcuma caesia Roxb. and *Curcuma longa* L. belong to Zingiberaceae family. The genus consists of rhizomatous herbs known for their medicinal values. The rhizomes of *Curcuma caesia* Roxb. is used in treating leucoderma, asthma, tumours, tuberculous glands of neck, piles, bronchitis and enlargement of spleen (Sinha, 2001). The paste is applied on bruises, contusions and rheumatic pains. The rhizome is also used in dysentery, diarrhoea and cough (Kumar, 2002). Essential oils of *Curcuma caesia* Roxb. is also known for its antifungal activity (Banerjee and Nigam, 1976). *Curcuma longa* L. has been used for centuries as a spice to give flavour. It is equally important as household remedy for various illness including hepatic and biliary disorders, skin diseases, sinusitis and as a tropical application for wounds and cuts (Chopra *et al.*, 1958). It has been reported to possess anti-inflammatory, hepatoprotective, antitumors, antiviral activities (Ammon and Wahl, 1991) and exhibits free radical scavenging /antioxidant property (Jayaprakashan *et al.*, 2006). Because of the medicinal values of *Curcuma caesia* Roxb. and *Curcuma longa* L., the present study was to investigate the presence of biochemical metabolites in these two species.

MATERIALS AND METHODS

The plants of *Curcuma caesia* Roxb.(Fig. 1a) and

Curcuma longa L. (Fig. 2a) with their inflorescence were collected for observations. The rhizomes of these two species were collected from different locations in Manipur. The fresh rhizomes were washed thoroughly under tap water to make them free from contaminants. The cleaned rhizomes were taken and then cut into small pieces and used for the estimations of total carbohydrates, total soluble proteins and amino acids. In order to assess its odour, colour and other physical characteristics, vertical sections were made of these fresh rhizomes (Fig. 1b, Fig. 2b). Again the fresh rhizomes were cut into thin slices and exposed to sun for drying. The sun dried thin slices rhizomes were then kept in an oven at 60°C for 12 hours and then grounded into fine powder, passed through a sieve and used for the analysis of total phenols and flavonoids.

Morphological characteristics:

Curcuma caesia Roxb. is characterized by the presence of palmate and simple tubers; the bulbs are inwardly pale blue (Fig. 1c), verging towards grey. Leaves lanceolate (30-40cm), petioled (30-60cm); a deep ferruginous purple down the midribs, which penetrates to the under surfaces; every other part greens. Spike appearing before leaves; bract greenish. Coma bract tinge with pink; flower pale yellow with bright yellow throat; calyx translucent white; corolla red as in Fig. 1 (a).

Curcuma longa L. is characterized by the presence of rootstock ovoid; large; sessile tubers, cylindrical, bright yellow inside (Fig. 2c), petiole as long as the plain green blade(50-60cm); leaves large(30-45cm x 10-20cm), oblong narrowed to the base; inflorescence spike, flowers bracts, pale green, ovate, those of the coma tinged with pink,

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