

Part I

**Phytochemical Investigation of the root of *Croton*
bonplandianum Bail**

Chapter I

Section A

1. Morphological feature of croton

Croton belongs to the family “**Euphorbiaceae**”. Euphorbiaceae, the spurge family consisting of about 322 genera and about 8910 species,¹ are predominantly cosmopolitan with the representation in the humid tropical and subtropical regions of both hemispheres. It is the sixth largest family in the world and occupies the seventh position in the Indian flora. Although most of the members of the family are readily discernible in the field, by the unisexual and mostly apetalous flowers, floral glands, the tricerpillary syncarpous pistil, and schizocarpic capsular fruits with three cocci and persistent columella or rarely with drupaceous fruits, the interrelationships among the genera are not sufficiently understood. The family is largely complex and forms a heterogenous assemblage of diverse growth forms and morphological features. It also includes many economically importance species. In spite of its many medicinal and economical importance very little attention about the detail phytochemistry of these species has been paid.

Croton bonplandianum is an evergreen or deciduous trees, shrubs, climbers or subshrubs, indumentum satellite. Leaves are alternate, opposite or whorled near branch ends, pinnately veinea or palmately veined, margins often serrate with two stalked or sessile glands at the top of the petiole and sometimes marginal glands, stipules minute or absent. There are two different types of flowers. Monoecious, flowers are solitary or clustered in terminal or auxiliary, simple or branched racemes. Male flowers have calyx 5-lobed, petals 5-6, stameas 10-12, free, receptacle hairy and disc-glands and free. Female flowers are sepals as in males, petals minute or absent, ovary 3-celied, styles long, bifid almost to the base. Fruits are 3-lobed and 3-seeded capsules. Seeds oblong, ellipsoid or often ovoid or squarish, usually 3-angled with a broad convex back, smooth, rarely sparsely stellate-pubescent; testa dry, more or less thin, endosperm coious, embryo straight, cotyledons broad²

It occurs in tropics and subtropics of Old and New World. The majority of the species are from South America and West Indies. Approximately 800 different species of are in the world. About 150 species are in Asia occurring in South China, Indo-China, South Asia and Malesia. In India about 16 different species are found.

2. Classification

The genera croton is further classified into several species:

1. *Croton roxburghii* Balakrishnan
2. *Croton joufra* Roxb
3. *Croton himalaicus* Long
4. *Croton tiglium* Linn.
5. *Croton caudatus* Geiseler and
6. *Croton bonplandianum* Baillon



Figure 1 Different species of croton

Croton bonplandianum Baillon is native to South America and has been introduced to India in late 1890s.

Species of croton contain a great diversity of chemical compounds, viz. several kinds of alkaloids, saponins, tannins and flavonoids. Various species exhibit antimicrobial, antomalarial, antiatherogenic, androgenic, insecticidal and antitumor activities. There is a great scope for further studies on the phytochemistry in this genus.



Figure 2 Identified species of *Croton bonplandianum* Bail

The present author has submitted two specimens of *Croton bonplandianum* with the tag numbers of R-1706, R-1707 to Taxonomy and Environmental Biology Laboratory, Department of Botany, University of North Bengal, Darjeeling, India. Accession numbers of the submitted specimens were 9629 and 9630 and were stored in NBU Herbarium, Department of Botany, University of North Bengal, Darjeeling, India.