# *Baccaurea ramiflora*

## Scientific Name

***Baccaurea ramiflora* Lour.**

## Synonyms

*Baccaurea cauliflora* Loureiro, *Baccaurea flaccida* Müll.Arg., *Baccaurea oxycarpa* Gagnep., *Baccaurea pierardi* Wall., *Baccaurea propinqua* Müll.Arg., *Baccaurea sapida* (Roxb.) Müll. Arg., *Baccaurea* wrayi King ex Hook.f., *Gatnaia annamica* Gagnep., *Pierardia flaccida* Wall., *Pierardia sapida* Roxb.

## Family

Phyllanthaceae, also placed in Euphorbiaceae

## Common/English Names

Baccaurea, Burmese Grape, LanternTree, Mafai.

## Vernacular Names

***Chinese***: Mu Nai Guo;
***Bangladesh***: Kusumtenga;
***Burmese***: Kanazo, Kanaso, Krak-Hsu-Ro:Ni;
***India***: Leteku (Assamese), Lotqua (Bengali), Dojuka (Garo), Lutka, Latka, Kataphal, Lutco (Hindu), Dieng Sohmyndong, Soh Ramdieng (Khasi), Moktok (Manipuri), Pangkai (Mizoram);
***Indonesia***: Tampoi Kuning, Tampoi Merah (Kalimantan), Mafai Setambun, Tajam Molek, Pupor;
***Khmer***: Phnhiew;
***Laotian***: F'ai;
***Malaysia***: Pupor, Tempui, Tampoi, Tampoi Kuning, Tampoi Merah, Rambai;
***Nepal***: Kala Bogoti;
***Thailand***: Mafai (General), Khi Mi (Northern), Sae-Khruea-Sae (Karen-Mae Hong Son), Ham Kang (Phetchabun), Pha-Yio (Khmer-Surin), Mafai Pa (Eastern, South-Eastern), Mafai Ka, Som Fai (Peninsular);
***Vietnamese***: Dâu Da Đất, Giau Gia Dat, Giau Tien, Dzau Mien Dzu O'i.

## Origin/Distribution

Wild distribution of the species occurs in India (Assam), Burma, China (Yunnan, Hainan), Vietnam, Laos, Thailand, Andaman and Nicobar Islands, Peninsular Malaysia. It is commonly cultivated in home backyards in Peninsular Malaysia, Burma and Thailand.

## Agroecology

A tropical species, occurring in primary rain forest from 50 to 1,700 m above sea level and cultivated. It grows in well-drained soils derived

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from sand, and granite. Fruiting throughout the year with flowering in December to June and September.

## Edible Plant Parts and Uses

The sweet to sour pulpy arillode of ripe fruit is eaten fresh. To consume the fruit one is advised to break the fruit open with the fingers and/or peel the skin. The pulp is then eaten directly and usually the seeds are also swallowed. The rind of the fruits is occasionally used for making chutney. Squash-making has increased the value of the fruits as the fruit is rich in vitamin C. In Thailand, mafai drink is quite popular. The fruits are also are utilized for making wine. The young tender leaves and flowers are also eaten. The flower is eaten raw in northeast India.

**Plate 1** Globose red-fruited variety of *Baccaurea ramiflora*

## Botany

Evergreen, medium sized tree 5–20 m high with bole diameter of 5–60 cm, gray-brown bark, buttressed trunk and hispid branchlets becoming glabrescent with age. Leaves with raised glands and borne on 3–8 cm, glabrous petiole with stipules 2.5–6 by 1–2.5 mm, caducous (to late caducous), glabrous to sparsely hairy outside. Lamina is obovate-oblong, oblanceolate, or oblong, 9–15 × 3–8 cm, papery, green adaxially, yellowish-green abaxially, glabrous on both surfaces, base cuneate, margin entire or shallowly repand, apex shortly acuminate to acute with 4–9 pairs lateral veins depressed above, raised below. Flowers are small, dioecious, apetalous, many flowered, compound into raceme-like panicles. Staminate inflorescences are densely papillose, often fascicled on branchlets as well as on trunk, to 15 cm with bracts ovate-lanceolate, 2–3 mm, chestnut-yellowish and puberulent outside. Male flowers are yellow with 4 or 5, oblong sepals 5–6 mm and puberulent outside, 4–8 stamens and terete, bipartite pistillode. Pistillate inflorescences to 35 cm long with bracts as in male inflorescence. Female flowers are yellow with 4–6, oblong-lanceolate, 6 mm sepals, puberulent outside, 3-celled, ovoid or globose ovary (Plate 2), densely ferruginous and hispid, very short, ca. 0.5 mm styles and depressed stigma bifid at apex. Fruit is a baccate berry, globose, ovoid to slightly pear-shaped, 2–3.7 × 1.4–3 cm, yellowish (Plate 3), pinkish,

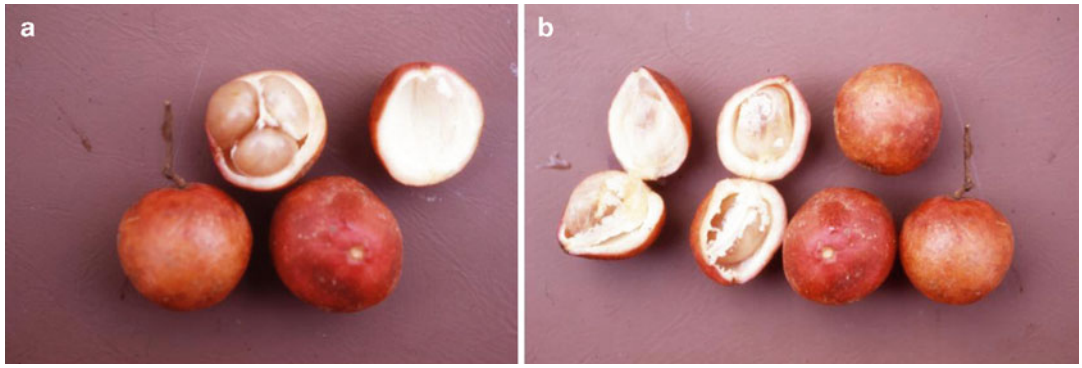


**Plate 2** (**a**, **b**) Fruit with 3-loculed and translucent white, juicy arillode

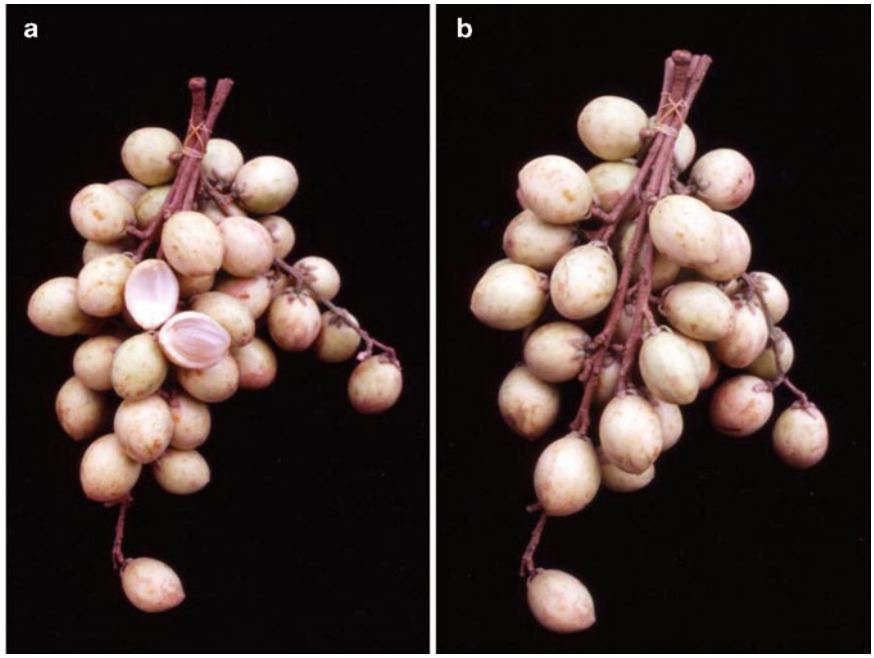


**Plate 3** (**a**, **b**) Pinkish-pale yellowish-fruited Mafai with translucent pinkish-white juicy arillode

purplish to red (Plates 1 and 2) when ripe, indehiscent, 3-celled. Arillode is white to pinkish white, translucent and seeds are flat-elliptic or rotund, 1–1.3 cm with purplish red testa.

## Nutritive/Medicinal Properties

The nutrient composition of raw Mafai fruit per 100 g edible portion conducted in Thailand was reported as moisture 88.2 g, energy 48 kcal, protein 0.7 g, fat 0.3 g, carbohydrate 10.5 g, ash 0.3 g, Ca 2 mg, Fe 3.3 mg and vitamin C 55 mg (Puwastein et al. 2000).

Recent studies in China reported that the leaves contain phenols with antioxidant properties (Yang et al. 2007). Seven phenolic compounds including two new ones, 6′- O-vanilloylisotachioside and 6′- O-vanilloyltachioside, exhibited potent antioxidant activities against hydrogen peroxide-induced impairment in PC12 cells, and also exhibited significant DPPH radical-scavenging activities with $IC_{50}$ values of 86.9, 142.9, 15.2, 37.6, 35.9, 30.2, and 79.8 μM, respectively.

Hill tribes in northern Thailand used the bark, root bark and wood in decoction of dried and grinded material as folkloric medicine. In Mizoram, India, the plant called *pangkai* is used for stomach ache, colic and stomach ulcer in traditional ethnomedicine.

## Other Uses

The wood is used for furniture, house-posts and cabinet-work. The bark serves as a mordant in dyeing.

## Comments

*B. ramiflora* occurs in both red- and white-fruited varieties.

## Selected References


Burkill IH (1966) A dictionary of the economic products of the Malay Peninsula. Revised reprint, 2 vols. Ministry of Agriculture and Co-operatives, Kuala Lumpur. vol 1 (A–H), pp 1–1240, vol 2 (I–Z), pp 1241–2444

Chayamarit K, van Welzen PC (2005) Flora of Thailand, vol 8 Part 1: Euphorbiaceae (Genera A-F). Forest Herbarium, Royal Forest Department, Bangkok, 303pp

Environment and Forest Department Government of Mizoram, India (2009) Medicinal plants in use in Mizoram. http://www.forest.mizoram.gov.in/index.php?option=com_content&task=blogsection&id=21

Foundation for Revitalisation of Local Health Traditions (2008) FRLHT Database. http://envis.frlht.org

Haegens RMAP (2000) Taxonomy, phylogeny, and biogeography of *Baccaurea*, *Distichirhops*, and *Nothobaccaurea* (*Euphorbiaceae*). Blumea Suppl 12, 216

Hu SY (2005) Food plants of China. The Chinese University Press, Hong Kong, 844pp

Kayang H (2007) Tribal knowledge on wild edible plants of Meghalaya, northeast India. Indian J Trad Knowl 6(1):177–181

Li B, Gilbert MG (2008) *Baccaurea* Loureiro. In: Wu ZY, Raven PH, Hong DY (eds) Flora of China, vol 11, Oxalidaceae through Aceraceae. Science Press/ Missouri Botanical Garden Press, Beijing/St. Louis

Puwastien P, Burlingame B, Raroengwichit M, Sungpuag P (2000) ASEAN food composition tables 2000. Institute of Nutrition, Mahidol University, Salaya, 157pp

Subhadrabanhdu S (2001) Under utilized tropical fruits of Thailand. FAO Rap publication 2001/26. 70pp

Yang XW, Wang JS, Ma YL, Xiao HT, Zuo YQ, Lin H, He HP, Li L, Hao XJ (2007) Bioactive phenols from the leaves of *Baccaurea ramiflora*. Planta Med 73(13): 1415–1417