

# *Agathosma betulina* (P. J. Bergius) Pillans, *A. crenulata* (L.) Pillans, *A. serratifolia* (Curtis) Spreeth

Standardized Common Name: Buchu

**Other Common Names:** Boegoe, Ibuchu

**Family:** Rutaceae

**Parts in commerce:** Leaves

**Identification:** The leaf shape of *A. betulina* differs from that of *A. crenulata* (and *A. serratifolia*):

	<i>A. betulina</i>	<i>A. crenulata/serratifolia</i>
<b>Leaf size</b>	(0.7-)1-2 cm long	(1-)1.5-3(-4) cm long
<b>Leaf shape</b>	Broadly obovate to broadly elliptical or rhomboid; length usually not over twice breadth	Narrowly elliptical to lanceolate, oblong, ovate or obovate
<b>Leaf apex</b>	Obtuse, usually toothed all the way around and shallowly recurved	Obtuse to rounded-truncate, with a visible gland
<b>Leaf teeth</b>	Shallow, irregular, usually pointed, serrate to dentate	Very shallow, usually blunt, crenate to serrate

However, they have a number of features in common:

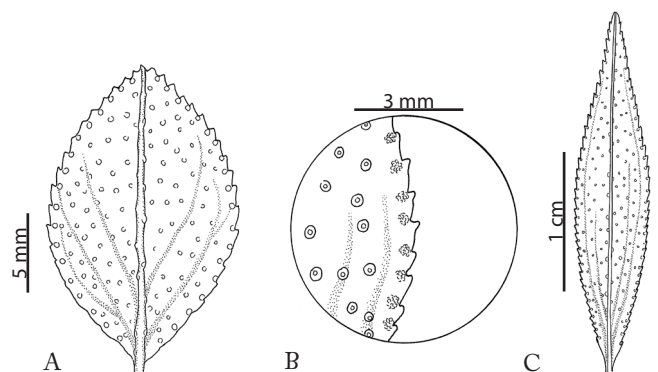
- Lower surface pale yellowish green, paler than upper surface, notably glandular-punctate; glands circular, embedded in leaf tissue, yellowish or darkened
- Leaves glabrous on both surfaces (at most, with few tiny hairs along lower part of sunken midrib on upper surface)
- Texture thick, surface often slightly wrinkled
- Margins shallowly toothed; inconspicuous yellow glands present just inside the notches between leaf teeth
- Midrib raised and conspicuous beneath; secondary veins few, arcing, often invisible
- Base tapering to very short petiole
- Odor aromatic, similar to blackcurrant or mint
- Taste aromatic, bitter, similar to blackcurrant or camphor

**Adulterants:** Most of the previously reported adulterants also belong to Rutaceae (the citrus family), including other *Agathosma* species, *Empleurum* Sol. ex Aiton (which is used like buchu), *Adenandra fragrans* (Simms) Roem. & Schult. (which is used as a tea) and *Diosma* L. (known as False Buchu). Most relatives of the preferred species are smaller and have smaller leaves. *Agathosma pulchella* (L.) Link has leaves sometimes similar in size to those of

*A. betulina*, but the teeth are reduced to near zero length, the margins may be pubescent, there are no conspicuous glands on most of the leaf surface, and the scent is lemony; the ovary and fruit are usually 3-lobed.

Leaves of *Adenandra fragrans* are narrowly oblong to linear, whereas leaves of *A. serratifolia* or *A. crenulata* are more noticeably broader in the middle than at the base and apex. The margins are more or less entire, minutely papillose and often thickened and darkened; it has a scent similar to licorice. Leaves of *Empleurum unicapsulare* (L.f.) Skeels are of similar shape and frequently 4-5 mm long; the margins are only minutely toothed but do bear glands between the teeth. They can be distinguished from the official species of *Agathosma* by the apex, which is acuminate with a sharp tip; the glands on the lower surface are sometimes absent or present in a single row down each side of the midrib rather than scattered.

Legumes with glandular-punctate leaves have also been found as adulterants of buchu, especially *Otholobium obliquum* (E. Mey.) C. H. Stirt. (reported under its original name, *Psoralea obliqua* E. Mey.). *Otholobium*, like *Psoralea*, is pubescent and has raised glandular hairs; the leaf apex bears a short sharp recurved point (mucron). *O. obliquum* has trifoliolate leaves whose obovate leaflets somewhat resemble the leaves of *Agathosma*; the lateral leaflets are asymmetrical, the midrib and margins are hairy especially in young leaves, and the petiole has two small stipules attached.



**Figure 4:** a-b, *Agathosma betulina* leaf and close-up of lower surface; c, *A. crenulata* leaf.

**Taxonomy:** *Agathosma* includes about 150 species of shrubs, all native to South Africa, which are highly variable in chemistry and scent. Several are used medicinally; *A. betulina*, *A. crenulata* and *A. serratifolia* are used interchangeably as Buchu according to *Herbs of Commerce*. The latter two are very similar, and authorities disagree as to whether they should be considered two different species or a single species. According to van Wyk et al., *A. crenulata* is less desirable than *A. betulina* due to higher pulegone content. The two species hybridize and intermediate forms may be observed. These species were formerly placed in the genus *Barosma*, which is now lumped into *Agathosma*, and the synonyms *B. betulina* (P. J. Bergius) Bartl. & H. L. Wendl., *B. crenulata* (L.) Hook., and *B. serratifolia* (Curtis) Willd. are still frequently encountered in literature.

**Description:** Shrubs to 2 m high; twigs often with reddish bark in long strips, with minutely papillate and glossy appearance. Leaves opposite, small, short-petioled, glabrous, conspicuously glandular-dotted beneath; margins toothed with inconspicuous glands between teeth and at apex. Flowers solitary, axillary, on short pedicels; sepals 5, 2.5–3.5 mm long, with slightly ciliate margins; petals 5, 7–10 mm long, white to pink or mauve; stamens 5; filaments pubescent below, attached to a cup-shaped disk that surrounds the ovary; sterile, glandular-tipped staminodes present; ovary 5-lobed; style 1, recurved, pubescent below. Fruit a 5-chambered capsule, with deep clefts between locules; seeds 1 per locule, glossy black.

## References:

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