

Rosmarinus officinalis L.

Lamiaceae



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■ Morphological description

Rosemary is a perennial plant forming a stiff shrub, much branched and densely bushy, with a characteristic aromatic smell. The leaves are simple, tough, linear with revolute margins, greenish and crinkled on top and tomentose underneath, 2-4 mm. wide. The flowers are grouped in little axillary and terminal clusters with bracts. The calyx is bell-shaped and bilabiate and has a pale to bright blue corolla; the upper lip is entire and lower lip trilobate. Two prominent stamens with a simple filament bearing a fertile loculus; a long very exert style. The nutlets are smooth.

Rosemary foliage has a seasonal dimorphism; it flowers abundantly in late spring.

In Tunisia, four variants are mentioned, including one Tunisian endemic (Neffati et al., 1999).

They differ as to colour of corolla, shape, inflorescence, bract and calyx: var. *typicus* Batt. with a pale blue corolla; var. *laxiflorus* De Noé often with a white corolla; var. *trogodytorum* M. with a bright blue corolla; and var. *lavandulaceum* Batt. = *Rosmarinus tournefortii* De Noé with a bright blue corolla but a hairier calyx.

■ Geographical distribution

Local: Rosemary covers large areas (about 346,000 ha.) in the regions of Béja, Kasserine, Le Kef, Siliana, Kairouan and Zaghuan. It is also found in the

Rosmarinus officinalis L., Sp. Pl. 23. 1753

Rosmarinus laxiflorus De Noé; *Rosmarinus lavandulaceus* De Noé

Arabic: Klil

French: Romarin officinal

English: Rosemary

north-east, the Medjerda valley, Cap Bon and central Tunisia for the var. *typicus* Batt.; southern

Tunisia: Matmata for the var. *trogodytorum* and Matmata, Sakket and Tamerzet for the var. *lavandulaceum*.

Regional: A species that is very widespread in Tunisia and North Africa.

Global: The Mediterranean: in the northern Mediterranean, it extends from Portugal to Turkey; in the southern Mediterranean, it extends from eastern Morocco to Cyrenaica. It is also present in the Near East.

■ Ecology

Rosemary is a perennial chamaephyte, usually growing in the garrigue and thin forests of pine, Barbary thuja or juniper. It is found in various bioclimates (from the sub-humid to the upper arid) but is dominant in the semi-arid Mediterranean bioclimatic stage.

■ Status, conservation and culture

The plant, both flowering tips and leaves, is present throughout the year, fresh or dried in herbalists' and in regional markets.

It is much sought after for its therapeutic virtues and as a condiment.

There is an ever-growing demand for essential oil of rosemary on the national and international market. In Tunisia, rosemary is one of the species most used for its medicinal interest; it is picked. Its use as a source of essential oil much prized by industrialists has caused the Régie d'Exploitation Forestière to take very strict steps concerning such picking. Every year the areas where rosemary is picked in all the country's *gouvernorats* is defined according

to an action plan based on a three-to-five year rotation according to the state of the plants. These areas are then made available to farmers after a tender. The rosemary is distilled on the spot in a traditional, ecologically-friendly way.

This method of controlled exploitation of vast stretches of rosemary in Tunisia helps keep it young. The laws enforced by the Régie de la Direction Forestière allow for a rational exploitation by applying the rotation system, and by the laws' precision as to which part of the plant may be picked.

The state of the stretches of rosemary exploited must be assessed after five cuttings to discover trends in the species' plant matter yield. This assessment must be accompanied by an analysis of its main active substances in order to judge the quality of the essential oil extracted in comparison with that produced in other countries.

The mushrooming demand for Tunisian-origin essential oil of rosemary has led some farmers to grow it in Tunisia, and researchers to work on the biodiversity (morphological, genetic, chemical, etc.) of the Tunisian taxa. Thus strategies to protect and rationally use the natural populations are under way and should be strengthened to protect this natural heritage. Research programmes are being set up to analyse the biodiversity found within the Tunisian taxa (morphology, genetic polymorphism, floral pigmentation, etc.), to create varieties, and to develop growing techniques (*in vitro* cultivation) etc. All such action is closely linked to socio-economic imperatives.

■ Economic value

The total area covered by stretches of rosemary in Tunisia is thought by the Forestry Commission to be 346,000 ha. In 1990, only 59,516 ha. was made available to farmers to extract essential oil (Badri, 2000). This figure rose to 90,657 ha. in 2000, i.e. only 40% of available area. It should be noticed that the production is between 0.3 and 0.8 tons/ha. of plant matter, an average 1.2 kg. of essential oil of rosemary.

According to the Cepex (2000) statistics, exports of essential oil of rosemary are about 70.45 tons, at a price of 20 TD the kilo. The countries concerned by these exports are France, Belgium, Germany, Italy, Spain, etc.

■ Part used

The leaves and flowery tips. The leaves of cultivated rosemary can be 3 cm. long and 4 mm. wide; their smell is very aromatic, the taste bitter and rather pungent.

■ Constituents

An essential oil (1-2.5%) made up especially of cineol, camphor and α -pinene; tricyclic phenolic diterpenes including carnosolic acid and carnosol; tannins; methylated flavons; triterpenes; steroids; lipids, especially in the young shoots; polysaccharides; and traces of salicylate.

■ Pharmaceutical action and toxicity

Rosemary has many very diverse actions:

- antibacterial and antiseptic
- limited antiparasitic
- antispasmodic, anticonvulsant
- cholagogic and choleric, seen especially with young shoots
- antioxidant action of rosmarinic acid
- general tonic action of the essential oil
- diuretic
- stimulates the scalp
- anti-inflammatory
- analgesic
- hepato-protective
- emmenagogic and ocytotic.
- The essential oil of rosemary is very irritating to the skin and can provoke burns; it is strongly hyperemiant.

■ Traditional medicine

In Tunisia, rosemary leaves are used as an antispasmodic for the digestive tracts and as a vermifuge. Dried leaves ground up and mixed with olive oil are put on the recent circumcision wound.

■ Use in herbal medicine

The essential oil of rosemary is part of many antiseptic and antibacterial medicines for the respiratory passages. Taken by mouth, a rosemary tisane is given for flatulence, bloating and mild spasms of the gastro-intestinal and biliary tracts. Externally, rosemary preparations are incorporated in mixtures used in the supplementary treatment of rheumatism of the joints and muscular pain.

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