

Tunisian Rosemary Oil

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The distillation of essential oils is a centuries-old tradition in Tunisia. The field production of rosemary oil, as practiced today, was introduced to Tunisia by the French in the nineteen thirties. In those days Spain and the south of France were the major producers of rosemary oil. Since then, the production of rosemary oil shifted from the northern shores of the

Mediterranean to the southern shores (Tunisia and Morocco). The distillation in Spain went down drastically during the Spanish civil war. France, due to the high cost of labor, does not produce much rosemary oil anymore.

Production Output

In Tunisia, rosemary grows wild and is mostly found around the cities of Kef (west), Kairouan (central), and Zaghouan (east). The fields where it grows are mostly the property of the government and are leased off to producers in an auction held in February. There are close to 900,000 acres of rosemary fields in Tunisia. Of this total surface, only 300,000 acres are in good condition for distillation. In an effort to preserve the rosemary fields, the Tunisian government instituted a rotation system. Each year, one third of the good fields are left unused.

In the early nineteen fifties there were two large Tunisian producers 1950s who accounted for the entire production of Tunisian rosemary oil (40,000 kilos). As the demand for Tunisian rosemary oil went up, so did the number of producers. Today, there are eight producers large enough to supply the international market. By the late nineteen seventies, the production reached 200,000 kilos. By the mid-eighties, demand for the Tunisian rosemary oil started decreasing. By the early nineties the production of rosemary oil was cut down to under a 100,000 kilos. This decrease in production is partially due to lower demand and partially to unfavorable weather conditions. The production in the last five years has been as follows in Table 1.

Technology and Approach

The portable stills used today are technologically archaic. They have not changed in the last seventy years. The retort holds 700 kilos of rosemary. The plant charge rests on an elevated grid within the retort and does not come in contact with the boiling water. The water in the retort is boiled by direct fire. The condenser is an elementary coil-in-water design. The yield, which averages .5%, varies from one region to another. A still yields an average of one kg/h. Because production, sales volumes and profits from the rosemary oil are shrinking, the Tunisian producers are reluctant to invest in new production tools.

Table 1. Five-year production totals

Year	Production (metric tons)
1996	55
1997	71
1998	76
1999	70
2000	55 (estimate)

France remains the largest buyer of Tunisian rosemary oil.

Table 2. March-May analysis

Region	Kasserine	Zaghouan	
Month	March	March	May
Density at 20° C	0.910	0.908	0.915
Refraction Indices	1.463	1.466	1.465
α-pinene	12.217	14.276	13.889
Camphene	4.580	4.544	4.371
β-pinene	9.208	4.828	5.323
Myrcene	1.869	1.497	1.640
Limonene	2.345	2.849	2.804
Cineole-1,8	49.334	44.096	44.178
γ-terpinene	1.381	0.821	1.121
Para cymene	1.124	1.436	1.178
Camphor	8.652	12.798	13.126
Linalol	0.765	0.705	0.747
Bornyl Acetate	1.221	0.954	1.018
Terpene-ol-4	0.286	0.269	0.236
β-caryophyllene	4.493	4.851	5.107
α-terpineol	1.243	1.401	1.259
Borneol	1.280	4.673	4.002

The rosemary distillation season starts in late February and lasts for four months. The production is usually subcontracted out to a crew who becomes responsible for staffing and supervision of the field distillation. The field crew sells the production back to the producer. This system has a lot of drawbacks because control over production quantity and price is shifting away from the producer to the field crew. The demand for higher prices by the field crew puts great pressure on the profit margin of the producer. In years when the quantity produced is low it is not uncommon for producers to lose money.

Tunisian Rosemary Oil, a Physicochemical Signature

The most common rosemary variety growing around the Mediterranean basin is the *Rosmarinus Officinalis*. Several sub-varieties can be found. The oils obtained from these sub-varieties present different levels of the major chemical components (Cineol-1,8; camphor; α -pinene). The Tunisian rosemary oil is rich in Cineol-1,8 and Camphor, but has lower levels of α -pinene. The oils obtained from the Spanish rosemary, on the other hand, have a higher levels of α -pinene and myrcene, and lower levels of cineol-1,8 and β -pinene. These differences in composition are mostly due to differences in climate, soil condition, harvesting and distillation techniques. A study in Tunisia showed that when pressure inside the retort is increased, the level of camphor goes up while the level of α -pinene goes drastically down.

For comparative purposes, two samples were taken from the region of Zaghouan in March and May. Additionally one sample was taken from the region of Kasserine in March. The analysis showed the following results displayed in Table 2.

It is worth noting that the region of Zaghouan has a higher rainfall and a cooler weather because of its proximity to mountains. Zaghouan is forty minutes away from the Mediterranean sea while Kasserine is four hours away.

The Future

Tunisian rosemary oil is still the finest. What the long-term future holds for it is unclear. It is facing two major challenges. First, like all pure essential oils used in the fragrance industry, the demand is slowly decreasing mostly because of the availability of synthetic oils. Second, due to socio-economical changes in Tunisia, it is becoming harder to find enough labor to perform the extremely hard work of harvesting and distilling the rosemary. Tunisian producers are very creative and will probably be able to meet to these challenges.

References

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