

# Medicinal, Biological, Phytochemical Aspects of Rosemary

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## ABSTRACT

Rosemary (*Rosmarinus officinalis*) is a perfumed herb native to the Mediterranean. It is prepared as dried herb or a dried powdered extract, whereas tea and liquid extracts can be made from fresh or dried leaves. The leaves of the plant are used for various health benefits like improved concentration, preventing brain aging, improving digestion, anti-microbial, anti-oxidant, anti-inflammatory.

**Key Words:** *Rosmarinus officinalis*, Rosemary, Medicinal, Biological, Phytochemical, Phytoconstituents, Carnosic acid, Carnosol, Rosmarinic acid

## INTRODUCTION

Rosemary, scientifically named *Rosmarinus officinalis* from Lamiaceae family and is branded as a spice and medicinal plant. It exhibits antibacterial, antioxidant and antifungal effects and is native to the Mediterranean and Asian regions [1,2]. Rosemary contains Carnosic acid, Carnosol, Rosmarinic acid, oleoresin, and tannins, pinene, camphor, bornyl acetate, etc. Rosemary also contains large amounts of salicylates [3,4].

In traditional system of medicine, herb is used for anti-asthmatic, digestive, sedative, relieving, headache, circulatory ailments, visual perception, anti-rheumatic, and irritant effects [5,6]. Abundant pharmacological effects including antioxidant effect, growth influence stimulation, antimicrobial and antiviral activity and inhibition of hepatotoxicity have been reported [7-11]. The aim of this article is to explore various medicinal, biological, and phytochemical aspects of the plant and its essential oil.

## DISCUSSION

### Medicinal, Biological and Phytochemical Properties

Recently, appreciable scientific attention is focused on the advantageous therapeutic properties of rosemary main constituents, such as Carnosic acid, Carnosol, Rosmarinic acid, etc. Many studies specify the wide range medicinal properties of rosemary and its compounds such as anti-inflammatory (12-13), anti-oxidant (14), antinociceptive (15), neuroprotective (16), antidepressant, anti-hysterical, and mental fatigue (17-19). -2-

Rosemary also contains countless bioactive phytochemical moieties specifically polyphenols, that are responsible for anti-inflammatory, antioxidant, anti-microbial, antiproliferative, antitumor, attenuating, protective and inhibitory biological activities. [20]

The biological activities of *R. officinalis* essential oils undoubtedly rest on the chemical compositions, 13 different rosemary oil chemotypes have been identified, based on the comparative percentages of  $\alpha$ -pinene, 1,8-cineole, camphor, borneol, verbenone, and bornyl acetate [21,22-27].

In addition, an investigation has been carried out based on the compositions of numerous essential oils reported in the literature [1]. Chemical compounds of the essential oil are formulated in the following Table:

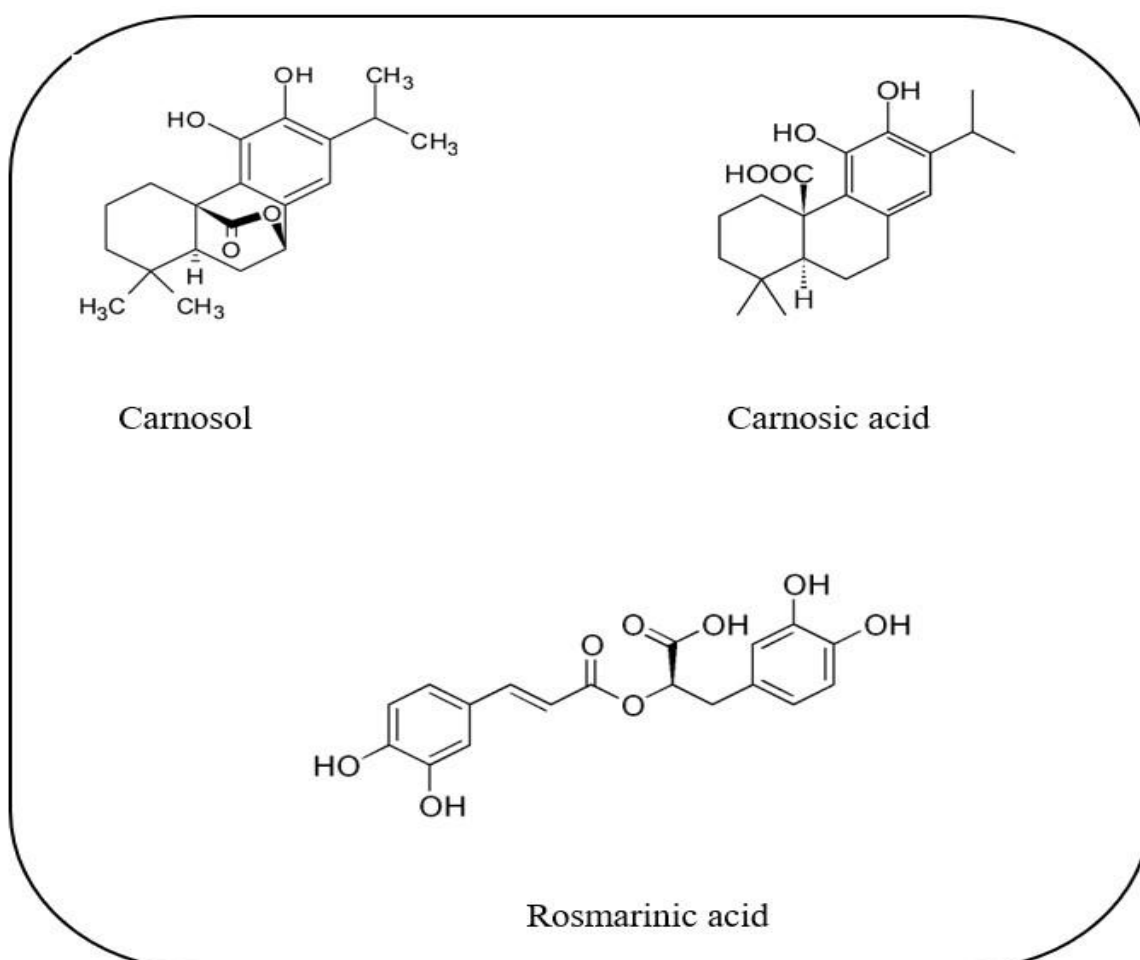
**Table 1: Chemical constituents of essential oil of Rosemary**

No.	Compounds	% of Compounds
1	1,8 Cineol	21.8
2	$\alpha$ -Pinene	18.7

3	Camphor	14.6
4	Linalool	13.4
5	Camphene	7.2
6	Borneol	5.2
7	Limonene	4.9
8	Verbenone	3.5
9	Myrtenol	2.4
10	Myrcene	2.05
11	$\alpha$ -Thujene	0.7
12	$\beta$ -Pinene	0.41
13	Trephine	0.32
14	3-Carene	0.14
15	P-Cymenene	0.1
16	Campholenal	0.08
17	Iso-Pinocamphone	0.05

The phytochemicals largely present in *R. officinalis* are Rosmarinic acid, camphor, caffeic acid, Ursolic acid, Betulinic acid, Carnosic acid and Carnosol. It is primarily a mixture of phenolic compounds, di- and tri-terpenes and essential oils. The chemical structures of the three main compounds are given in Table-2

**Table 2: Structures of main chemical constituents of *R. Officinalis***



## CONCLUSION

It can be concluded that the most of the ingredients of *R. officinalis*, are pharmacologically active and the topic of interest for scientific studies. Thus, these phytoconstituents can be proposed as a lead molecule for different diseases during uncontrolled circumstances.

Therefore, Rosemary is not only used as an herb for various culinary items, it is also an important chemical and biological tool for future drugs.

## BIOGRAPHY

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