



# CINNAMALDEHYDE

The smell and flavour of cinnamon



---

[Paul M. Burnham](#)  
[Hillsborough College, Sheffield, UK](#)

---

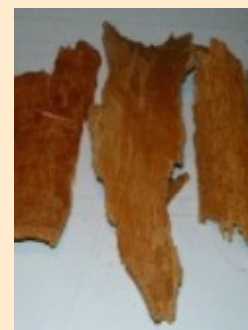
Molecule of the Month - August 2006

Also available: [Chime Enhanced](#), [VRML](#) and [JMol](#) versions.

---

## CINNAMON

The spice we know as cinnamon is the dried bark of the small evergreen tree *Cinnamomum zeylanicum* which grows in Sri Lanka and southern India (pictured right). The bark of this tree is often referred to as "Ceylon cinnamon" or "true cinnamon". This is to differentiate it from the bark of a related tree, *Cinnamomum cassia* (L.) Presl, the bark of which is often referred to as "Chinese cinnamon". Although the spices from the two trees taste similar, connoisseurs suggest that Chinese cinnamon has a slightly bitter flavour compared to Ceylon cinnamon. Most commercial ground cinnamon is often a mixture of true cinnamon and cassia. In some cases it may be entirely cassia.



## USES OF CINNAMON



Cinnamon has been known of for many years and its uses are wide ranging. It was regarded as a spice of high value by many different civilisations. In biblical times it was used as a perfume in anointing oil and also for beds. The fragrance of cinnamon was also exploited by the Egyptians who are believed to have used the spice when embalming mummies. The Romans also placed a high value on cinnamon. It is said that the emperor Nero (shown left) burned a year's supply of the spice at the funeral of his second wife, Poppaea Sabina. This act was carried out to indicate the extent of the remorse he felt after allegedly murdering her (it is thought that he kicked her to death).

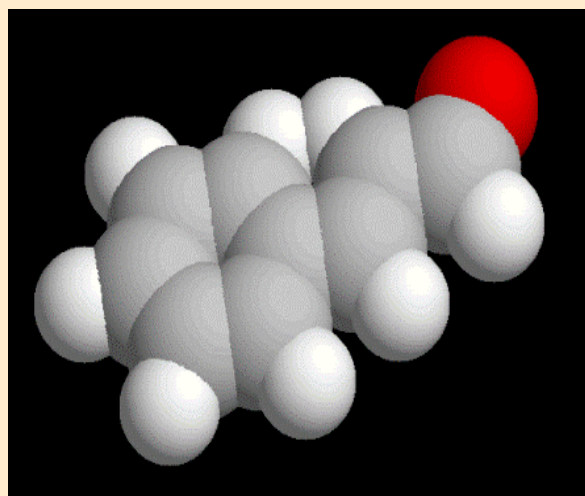
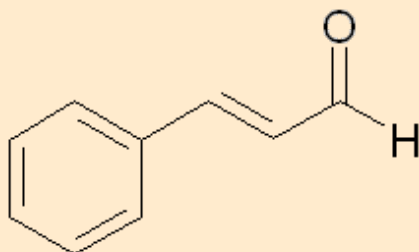
Cinnamon is reported to have many desirable medicinal and soothing effects and is thus used frequently in Chinese herbal medicine. It is claimed that cinnamon can be used to treat diarrhoea and arthritis. It can also be used to alleviate the symptoms of colds. Cinnamon is also widely used in cooking due to its intense aroma and flavour. It can be used in its bark state (cinnamon sticks) or ground to a fine powder. It is a versatile ingredient and can be added to enhance the flavour of both savoury and sweet dishes. Sweet manufacturers often use cinnamon flavourings when making hot and spicy sweets.



## CINNAMALDEHYDE

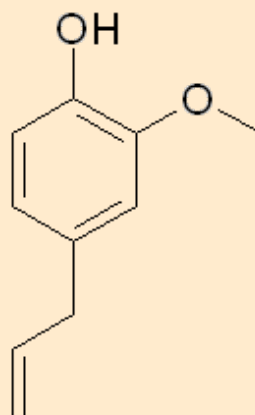
The flavour and aroma of cinnamon is due to an essential oil which makes up between 1 and

4% of the bark of the *Cinnamomum zeylanicum* tree. This oil contains many different compounds but the most abundant (65 to 75% of the oil) is cinnamaldehyde, shown below.



Cinnamaldehyde, C<sub>9</sub>H<sub>8</sub>O

Cinnamaldehyde, or 3-phenylprop-2-enal to use its IUPAC name, is an oily yellow liquid at room temperature with a boiling point of 246 °C. Cinnamaldehyde can be made synthetically but is more commonly obtained from the steam distillation of the oil of cinnamon bark which is a much more efficient process. It is mainly used as a flavouring agent or as a scent for candles. It is non-toxic but can irritate skin if in contact for too long. As with many components of essential oils cinnamaldehyde displays antiviral, antibacterial and antifungal properties. It is also reported to be a good pesticide. These properties support the medicinal and soothing properties of cinnamon bark. A minor component of cinnamon oil is eugenol (shown below). This compound makes up about 10% of the oil and displays antiseptic and analgesic properties which may also contribute to cinnamon's soothing effect.



Eugenol, C<sub>10</sub>H<sub>12</sub>O<sub>2</sub>

## BIBLIOGRAPHY

- [Gernot Katzer's Spice Pages](#)
- [Zimt Cinnamomum zeylanicum](#)
- [about.com](#)
- [Spurlock Museum](#)
- [Wikipedia](#)
- [Ethnobotanical Leaflets](#)
- [Tain Museum](#)
- [MSDS Safety Datasheet](#)
- [Positive Health.com](#)
- [Medical News Today.com](#)
- [Chemical Land 21.com](#)