

Levels of coumarin in cassia cinnamon vary greatly even in bark from the same tree

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Cinnamon obtained from the bark of Cassia trees (left) contains widely varying amounts of coumarin, a potential liver toxin, even among samples taken from a single tree. Credit: American Chemical Society

A "huge" variation exists in the amounts of coumarin in bark samples of cassia cinnamon from trees growing in Indonesia, scientists are reporting in a new study. That natural ingredient in the spice may carry a theoretical risk of causing liver damage in a small number of sensitive people who consume large amounts of cinnamon. The report appears in *ACS' Journal of Agricultural and Food Chemistry*.

Friederike Woehrlin and colleagues note that cinnamon is the second most popular [spice](#), next to black pepper, in the United States and Europe. Cinnamon, which comes from the bark of trees, is sold as solid sticks and powder with the country of origin rarely declared on the package label. There are two main types: Ceylon cinnamon (also known

as "true" cinnamon) and cassia cinnamon. Ceylon grows in Sri Lanka (formerly Ceylon), the Seychelles, and Madagascar. Cassia generally comes from China and Indonesia. Both types can contain coumarin, a natural flavoring found in plants. Studies have linked high coumarin intake to [liver damage](#) in a small number of sensitive people.

The scientists analyzed 91 cinnamon samples purchased from stores in Germany. They found that coumarin levels varied widely among different bark samples of Cassia cinnamon. Therefore they analyzed cassia bark samples of five trees received directly from Indonesia and found a huge variation even among samples collected from a single tree. The study confirmed that cassia cinnamon has the highest levels of coumarin, while Ceylon had the lowest levels. On average, cassia cinnamon powder contained up to 63 times more coumarin than Ceylon cinnamon powder and cassia cinnamon sticks contained 18 times more coumarin than Ceylon sticks. "Further research is necessary to identify factors influencing the coumarin levels in cassia cinnamon and to possibly allow the harvesting of cassia cinnamon with low coumarin levels in the future," the report notes.

Health officials say it is almost impossible for consumers to distinguish between Ceylon and cassia in cinnamon powder. Cinnamon sticks, however, do look different. Cassia cinnamon sticks consist of a thick layer of rolled bark, while Ceylon cinnamon sticks have thin layers of bark rolled up into a stick.

More information: "Quantification of Flavoring Constituents in Cinnamon: High Variation of Coumarin in Cassia Bark from the German Retail Market and in Authentic Samples from Indonesia", [Doi:10.1021/jf102112p](https://doi.org/10.1021/jf102112p)

Provided by American Chemical Society

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