

## Ceylon Cinnamon

Ceylon cinnamon (*Cinnamomum Verum*) is a spice derived from the bark of an evergreen tree found in tropical rainforests, growing at different altitudes. It has gained significance in Ayurvedic and folk medicine in India, used to treat respiratory, digestive, and gynecologic issues.

Behbahani et al. (2020) found that Ceylon cinnamon essential oil, rich in (E)-cinnamaldehyde (71.50%), linalool (7.00%),  $\beta$ -caryophyllene (6.40%), eucalyptol (5.40%), and eugenol (4.60%), possesses remarkable antioxidant and antibacterial properties. It can serve as a potential natural preservative in food and medicine due to its ability to scavenge free radicals, inhibit  $\beta$ -carotene oxidation, and combat Gram-positive bacteria. This highlights its promising use as a bioactive ingredient in food products.

Ceylon cinnamon has been shown to possess anti-inflammatory properties. Fractionation and chemical analysis revealed several compounds in cinnamon extract, including trans-cinnamaldehyde, p-cymene, cinnamyl alcohol, and cinnamic acid. These compounds, particularly trans-cinnamaldehyde and p-cymene, were shown to have anti-inflammatory effects, which align with previous research and in vivo studies. Synergistic effects were observed when trans-cinnamaldehyde was combined with p-cymene, cinnamyl alcohol, or cinnamic acid, suggesting that the overall efficacy of cinnamon extract may be due to the combined action of multiple compounds. (Schink et al., 2018)

Studies, including one by Khan et al. (2003), have shown that cinnamon extracts can lower blood glucose and cholesterol levels. In the study, individuals with type 2 diabetes consumed 1, 3, or 6 grams of cinnamon daily for 40 days. Results indicated that even low levels of cinnamon intake can reduce serum glucose, triglycerides, LDL cholesterol, and total cholesterol levels. The mechanism behind these effects involves increased insulin sensitivity and other metabolic changes. Importantly, the benefits of cinnamon persisted for 20 days after discontinuation, suggesting it doesn't need daily consumption to maintain its effects.

Cinnamon appears to enhance the brain's response to insulin, making it potentially beneficial for neurological conditions like Alzheimer's disease. Recent research, such as Anderson et al. (2013), indicates that cinnamon may offer neuroprotective effects and improve overall insulin sensitivity. This suggests that cinnamon might play a role in preventing or alleviating the impact of insulin resistance on memory and cognitive function, especially in conditions like type 2 diabetes and Alzheimer's disease.

### NOTES

1. Behbahani, BA., Falah, F., Lavi Arab, F., Vasiee, M., & Tabatabaee Yazdi, F. (2020, April 30). Chemical Composition and Antioxidant, Antimicrobial, and Antiproliferative Activities of *Cinnamomum zeylanicum* Bark Essential Oil. *Evidence-Based Complementary and Alternative Medicine*, 2020, 1–8. <https://doi.org/10.1155/2020/5190603>
2. Schink, A., Naumoska, K., Kitanovski, Z., Kampf, C. J., Fröhlich-Nowoisky, J., Thines, E., Pöschl, U., Schuppan, D., & Lucas, K. (2018). Anti-inflammatory effects of cinnamon extract and identification of active compounds influencing the TLR2 and TLR4 signaling pathways. *Food & Function*, 9(11), 5950–5964. <https://doi.org/10.1039/c8fo01286e>
3. Khan, A., Safdar, M., Ali Khan, M. M., Khattak, K. N., & Anderson, R. A. (2003). Cinnamon Improves Glucose and Lipids of People With Type 2 Diabetes. *Diabetes Care*, 26(12), 3215–3218. <https://doi.org/10.2337/diacare.26.12.3215>
4. Anderson, R. A., Qin, B., Canini, F., Poulet, L., & Roussel, A. M. (2013, December 13). Cinnamon Counteracts the Negative Effects of a High Fat/High Fructose Diet on Behavior, Brain Insulin Signaling and Alzheimer-Associated Changes. *PLoS ONE*, 8(12), e83243. <https://doi.org/10.1371/journal.pone.0083243>