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Anti-elastase activity of Ceylon cinnamon (*Cinnamomum zeylanicum* Blume): A novel skin anti-aging property

W P K M Abeysekera¹, G A S Premakumara^{1*} and W D Ratnasooriya²

¹*Herbal Technology Section (HTS), Industrial Technology Institute, Bauddhaloka Mawatha, Colombo 07*

²*Department of Zoology, Faculty of Science, University of Colombo, Colombo 03*

Very limited research has been conducted on skin anti-aging properties of natural products worldwide. Current skin anti-aging therapies are associated with a number of concerns regarding their safety and efficacy, and the prescription of these therapies is becoming a challenge from both a legal and ethical perspective. Hence, natural products having skin anti-aging properties have gained considerable attention in recent years and anti-elastase activity of *Cinnamomum* cassia has been already reported. Ceylon cinnamon (CC) (*Cinnamomum zeylanicum* Blume) known as 'true cinnamon' in the world has been used as a spice in Sri Lanka for centuries. Although many biological activities have been reported worldwide, no studies have been conducted to evaluate the skin anti-aging properties of CC to date. Therefore, the present study evaluates the skin anti-aging property of bark and leaf extracts of authenticated CC using elastase enzyme inhibitory assay *in vitro*.

Freeze dried ethanolic and dichloromethane: methanol (DCM:M) bark and leaf extracts of CC were used in this study. Skin anti-aging activity was evaluated using *in vitro* elastase enzyme inhibitory assay described by Lee and Choi (1999) with some modifications (ethanolic and DCM:M bark & leaf extracts, n = 6).

Both bark and leaf of Ceylon cinnamon showed dose dependent and significant anti-elastase activity ($p < 0.05$). However, bark extracts had significantly high anti-elastase activity compared to leaf extracts. The anti-elastase activity among the studied bark extracts were statistically insignificant (ethanol bark IC_{50} 19.78 ± 1.23 $\mu\text{g/ml}$, DCM:M bark IC_{50} 18.13 ± 0.5 $\mu\text{g/ml}$) ($p < 0.05$). However, among the studied leaf extracts only the ethanolic leaf extract had the anti-elastase activity. Further, ethanolic leaf extract showed IC_{50} at 252.66 ± 10.75 $\mu\text{g/ml}$ assay concentration whereas, DCM:M leaf extract did not show anti-elastase activity at 400 $\mu\text{g/ml}$ assay concentration.

In conclusion, this is the first study to report anti-elastase activity of Ceylon cinnamon as a novel skin anti-aging property worldwide. Further, the findings of the study indicate the potential of using Ceylon cinnamon as a skin anti-aging agent in maintenance of youthful skin and prevention of pre mature skin aging in the cosmetics industry.

Keywords: Ceylon cinnamon, anti-elastase, skin anti-aging

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