

# Cinnamon: From exotic to curative

For the first time in Sri Lanka, the health benefits of this spice are coming under the microscope in a comprehensive, multi-centre scientific study. Kumudini Hettiarachchi reports

He was heavily into tea before but now he has turned his sights on something which attracted much attention from east and west to this teardrop island aeons ago.

Spices they came in search of to Ceylon in the Old World amongst which was the much sought after cinnamon or kurundu. These days, housewives break off pieces of this spice and stir into steaming curries to get that extra zest, without a second thought.

The team from the Sri Jayewardenepura University's Interdisciplinary Centre for Innovation in Biotechnology & Neuroscience, Faculty of Medical Sciences headed by Director Prof. Ranil de Silva is, however, looking at a different aspect - the health benefits of cinnamon.

"Cinnamon is a multifaceted medicinal plant which primarily contains vital oils and other derivatives. It has antioxidant, anti-inflammatory, anti-diabetic, anti-microbial, anti-cancer, lipid-lowering, cardiovascular disease-lowering properties and also acts against neurological disorders, such as Parkinson's and Alzheimer's diseases," says Prof. de Silva.

This is why cinnamon is under the microscope in a comprehensive, multi-centre scientific study ever undertaken in Sri Lanka by a multidisciplinary team comprising scientific and medical researchers from the Sri Jayewardenepura University's Faculties of Medical Sciences, Applied Sciences, Management Studies and Technology; the Kelaniya University's Faculty of Science; and the Colombo University's Institute of Indigenous Medicine.

The Department of Export Agriculture, Peradeniya, is also part of the programme, while the

## Cinnamon exporters, academics and researchers meet

On another front, in a major effort to link academia and industry through cinnamon, Prof. Ranil de Silva organised a meeting of minds on Thursday, in collaboration with the Director of Agriculture of the Export Development Board, Malani Baddegamage.

With academics cum researchers from the Sri Jayewardenepura and Kelaniya Universities sitting down with Ceylon Cinnamon exporters, the discussions ranged from quality to branding to value-addition.



Prof. Ranil de Silva at Thursday's meeting

team has won a competitive research grant to the value of Rs. 27.7 million to study the 'Potential protective roles of Ceylon Cinnamon in health, leading to product development' from the Primary Industries Ministry.

From across the seas, international collaboration and funding are being extended by Japan's National Institute of Advanced Industrial Science and Technology (AIST).

The 7th innovation centre in the world, along with India's Department of Bio Technology (DBT) under the Science and Technology Ministry; the European Graduate School of Neuroscience (EURON); America's George Washington University; Sweden's Gothenburg University; and Australia's Queensland University of Technology.

Pointing out that Sri Lanka is the only country exporting authentic cinnamon, Prof. de Silva reiterates, however, that there is no significant value-addition to cinnamon products manufactured at grass-roots level. The popular export products are in the form of quills, with quality mainly being decided by importers to match their quality

standards. Thus the actual economic value of cinnamon cannot be evaluated.

Getting down to detail, he says that cinnamon is one of the oldest spices used in traditional medicine and while about 250 species have been identified so far, it is just four that are used to obtain the spice. True or Ceylon Cinnamon (*Cinnamomum verum* or *C. zeylanicum*) is a small evergreen tree native to Sri Lanka which produces the highest-grade pure cinnamon, while the Chinese cassia cinnamon (*Cinnamomum cassia*) is

the other most widely available species.

With its distinctive flavour and aroma, cinnamon is not only used as a food ingredient in bakery products, Asian foods, desserts, spicy candies, hot cocoa, liqueurs and tea but also in pharmaceutical preparations and the cosmetic industry. It is a common ingredient in various products such as lip-stick, toothpaste, mouthwash, chewing gum, soap, nasal sprays and cough syrups.

"Sri Lanka is the world's largest producer and exporter of pure cinnamon and pure Ceylon Cinnamon suppliers have around 70% of the global market share," says Prof. de Silva, adding, however, that export earnings from cinnamon have stagnated in recent years.

Ceylon Cinnamon is categorised into four major grades - Alba, Continental, Mexican and Hamburg based on the diameter of the quill and the most expensive (Alba) quill has a six-mm diameter.

Prof. de Silva's contention is that with value-additions, especially considering its potential health benefits, cinnamon could be exported in the form of oil, powder and tablets, bringing in more foreign exchange to the country.

## Bioactive compounds to battle CVD?

Picking up key bioactive compounds found in cinnamon, Prof. Ranil de Silva and his team are hoping to get an insight into cinnamon's effects on numerous non-communicable diseases such as cardiovascular disease (CVD), diabetes, cancer, neuro-degeneration and oxidative stress.

CVD is the leading cause of death worldwide with many succumbing to heart attacks or strokes, he says, explaining that cinnamon has demonstrated therapeutic properties in studies both in-vitro (outside) and in-vivo (inside) linked to animals and humans.

With hypertension or high blood pressure a major risk factor for CVD, he quotes a recent meta-analysis of randomized, placebo-controlled clinical trials which reported that cinnamon supplementation (1.2 g/d to 10 g/d) in sub-

jects with pre-diabetes or type 2 diabetes resulted in significant decreases in the SBP or systolic blood pressure (-5.39 mm Hg) and DBP or diastolic blood pressure (-2.6 mm Hg), on average.

While the most significant decreases in SBP (3.8%) were found at higher doses of cinnamon (500 mg/d extract, equivalent to 10 g/d powder), even the lowest dose (1.2 g/d powder) showed significant decreases in SBP in patients with a higher baseline SBP.

Referring to neuro-degenerative diseases such as Alzheimer's Disease (AD), Parkinson's Disease (PD), Amyotrophic Lateral Sclerosis, Huntington's Disease and Friedreich's ataxia which are devastating age-related conditions, Prof. de Silva whose pet subject is the brain, points out that cur-

rently, their aetiology remains largely unknown. The available treatment options are unable to slow, reverse or cure the underlying neuro-degeneration and the natural course of the disease.

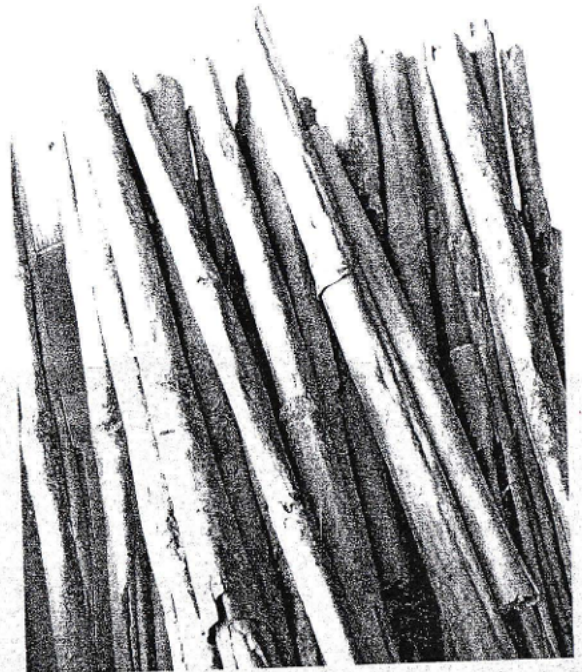
"Present medications only address single pathologies that manifest as a result of neuro-degeneration and are associated with many side-effects. As such, there is a critical need for safe and effective therapies to prevent or slow the progression of disease," he says.

As natural products have been recognized for their health promoting effects for thousands of years, he says that central to the health benefits of plant-based products is a complex mixture of structurally diverse phytochemicals that act synergistically to promote cellular health and survival. However, plants not commonly consumed may

pose the risk of toxicity due to unique phytochemicals that are not typical to human diets.

One of the oldest spices used in traditional medicine, cinnamon has shown that it can modulate multiple mechanisms involved in neuro-degeneration. In-vivo, cinnamon has shown that it can reduce oxidative stress and neuro-inflammation, while reducing A aggregation and improving cognitive function in an AD mouse model. This is why Prof. de Silva and his team are now bent on looking closely at cinnamon.

Earlier, along with a team of local and international researchers from India, Singapore, China, Australia, Korea, the United Kingdom and the Netherlands, Prof. de Silva confirmed the protective effects of Sri Lankan natural products such as green tea, black tea, green and yellow vegetables and coffee.



The spice that has attracted much attention from east and west to this teardrop island aeons ago. Pix by Nilan Maligasepe and Indika Handuwalla

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