

Selenium content in rice consumed by Sri Lankans

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Selenium, a trace metal in the earth crust is essential to the human body as a micronutrient. In recent past research has revealed that the range of selenium required is narrow (26 µg/day as maximum for 65 kg person) and selenium has toxic effect in a broad range. As a result, the World Health Organization (WHO) has drawn their attention to establish the micronutrient range of selenium, required to the human body. Report from China has shown that an ecological correlation exists with the selenium content in soil and increased mortality due to cancer and cardiovascular diseases. This led to the interest in assessing the nutritional status of selenium. Studies on selenium content in food or soil from Sri Lanka are not available.

Since rice is the major food consumed by Sri Lankans, the uptake of selenium by paddy as the source for rice was studied, covering locations spreading across the island *i.e.* twelve districts namely Gampaha, Colombo, Matara, Hambantota, Kegalle, Matale, Anuradhapura, Pollanaruwa, Kurunegalle, Puttalam, Ampara and Moneragalle. Selenium content was determined, using Hydride Generation

Atomic Absorption (HGAAS) spectrometric method on acid digested samples of paddy, rice and soil. The Maha season of the year 2006 was considered for the present study and field survey was carried out before drawing the samples to identify the factors that contributed to the selenium content of paddy.

The present study revealed that the amount of selenium in rice and paddy showed a direct relation to selenium content in soil. Samples of rice, paddy and soil from Gampaha and Colombo districts did not contain selenium in detectable levels. Of the samples that showed the content of selenium in paddy ranged from 7.8 ppb (Matale) – 61.2 ppb (Pollanaruwa) while those in rice ranged from 7.5 ppb (Matale) – 56.9 ppb (Pollanaruwa). It was observed that range of incorporation of selenium into rice from paddy ranged from 93-98%. The content of selenium in soil ranged from 9.5 ppb (Matale) – 69.8 ppb (Pollanaruwa).

Statistical analysis by ANOVA and Tuckey's pairwise comparison revealed that the selenium content in paddy, rice and soil obtained from most of the districts were significantly different.