

## **Analysis of polycyclic aromatic hydrocarbons in dried black tea**

Sithara T.A.H.<sup>1\*</sup>, Marapana R.A.U.J.<sup>1</sup>, Liyanage R.<sup>2</sup> and Senanayaka S.<sup>1</sup>

<sup>1</sup>*Department of Food science and Technology, Faculty of Applied Sciences, University of Sri Jayewardenepura, Sri Lanka*

<sup>2</sup>*Department of Bio Systems Technology, University of Sri Jayewardenepura, Nugegoda, Sri Lanka*

Polycyclic Aromatic Hydrocarbons (PAHs) are omnipresent organic compounds containing two or more condensed aromatic carbon rings; generated by incomplete combustion of organic molecules. During food preparation, processing or from the environment, food can be contaminated from PAHs. Since this is an untouched area for black tea in Sri Lanka, this study was carried out using same grade, dried black tea samples, collected from seven tea factories according to the two dryer types, which are steam furnace and firewood furnace, to investigate the occurrence and to analyze the quantity of 16 PAHs. The Quick, Easy, Cheap, Effective, Rugged and Safe (QuEChERS) method used to prepare samples and the analysis has done by using the Gas Chromatography Mass Spectroscopy (GCMS) technique. The dried black tea samples from firewood furnace has higher total PAHs content than ( $P < 0.05$ ) steam dried. The total PAHs content in dried black tea samples were 38335.45, 26222.40, 27344.91, 10895.08, 11142.79, 11143.23 and 16726.77  $\mu\text{g}/\text{kg}$  respectively. The dried black tea samples were contained two and three rings PAHs than five and six rings PAHs. According to the International Agency for Research on Cancer, the lower molecular weight PAHs are not a considerable threat to human health. Since, PAHs are lipophilic, their transferring rate to tea infusion is very low. Therefore, consumption of black tea is safe to human health.

**Keywords:** dried black tea, GCMS, PAH and quechers method

\*Corresponding author: hasinisithara93@gmail.com