DETERMINATION OF HEAVY METALS USING THE ICP-MS METHOD, IN TEAS AVAILABLE IN ALBANIAN PHARMACIES

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Abstract

Heavy metals have been shown in studies to pose a substantial risk to human health because of their ability to damage membranes and DNA, as well as disrupt protein function and enzyme activity. Metal accumulation in plant parts and secondary metabolites contribute to a distinct pharmacological action. Some of them are deemed lethal. After microwave digestion of plant samples, the concentration of heavy metals such as Cd, Hg, Sn, and Pb was measured in the leaves of black tea (Camelia Sinesis) and marshmallow (Althaea officinalis L.) and their essential oils using the incubating plasma method (ICP-MS). The samples were obtained from a Tirana drugstore. Following microwave digestion, the plants were extracted using Clevenger's apparatus. The essential oil was then analyzed to identify its heavy metal content. AOAC 2015.06-19TH:2019 metals in food method 151 were used. The findings indicate that the lead content in medicinal plants is relatively high, but still within the World Health Organization's recommended limits. (WHO). Lead concentrations in black tea are 0.19 ppm and 0.41 ppm in Althea Officinalis. Tin (Sn) is the least abundant heavy metal, with less than 0.01 ppm in both Althea Officinalis and black tea. (Camelia Sinesis).
Using the GC-FID apparatus, an extensive investigation was carried out for both plants to determine the profile of the Essential Oil.

Keywords: *heavy metals, ICP-MS, essential oil, camelia sinesis, althea officinalis, GC-apparatus.*