COMPARISON OF ANTIOXIDANT ACTIVITY OF TEA EXTRACTS PRESENTED ON THE MARKETS OF THE REPUBLIC OF LITHUANIA

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Camellia sinensis, commonly known as the tea plant, is an evergreen shrub or small tree that belongs to the Camelia genus of the *Theaceae* family of the *Ericales* order. This species is known for being the primary source of tea, including black, green, white, and oolong teas. The main difference between them is the oxidation period. Black tea is fully oxidised, green and white are minimally oxidised, and oolong is medium. Herbal teas deserve a special mention. They do not belong to the classic tea because they are made from other plants, such as chamomile, hibiscus, ginger and others. *C. sinensis* is recognised for its complex composition of active components, each of which contributes to the variety of flavours and potential health advantages associated with tea drinking. The composition and concentration of these components vary depending on the type of tea, processing methods, and brewing conditions. However, the basic composition remains unchanged and includes such bioactive compounds as phenolic compounds, alkaloids and nutrients. These are mainly caggeine, l-theanine, micronutrients and vitamins, as well as antioxidants, which include polyphenols and flavonoids. Some vitamins and minerals are also considered antioxidants.

The aim of our research is to study the composition and properties of natural biologically active components of tea presented on the Lithuanian market and then compare the antioxidant activity in tea extracts. For this purpose, we examined six types of tea: four black (“Greenfield”, “Lipton”, “Loyd”, “Eilles”), one green (“Dilmah”) and one red (hibiscus, “Klingai”) tea. All teas were purchased from a local store. For the evaluation and determination of the chemical composition of the teas chromatography was used.

This method effectively separates components, simplifying identification and quantitative analysis. In this study, we utilised GC-MS using the Shimadzu QP2020 NX system with the SH-Rxi-5ms column (30 m*0.25 mm*0.25 μm). The inert gas helium (99.999 %) was used as a carrier gas. The temperatures of the mass transfer line and injector were 250 and 290 °C, respectively. The programmed temperature for the oven ranged from 60 °C to 300 °C. Mass spectra were compared with reference libraries containing standards, notably NIST 2005 v.2.0 and Wiley Access Pak v.7.

Results showed that only tannins were detected in black and green tea extracts. We don't know whether any of them contain antioxidants or not. However, hibiscus extract contains many compounds, but only one antioxidant is found in it – phytol. The remaining compounds are not antioxidants and the exact activity of the detected substances is unknown.

There may be several reasons for ambiguous results. It is possible that due to improper factory preparation of teas, the antioxidants decomposed or their low content did not allow the chromatograph to detect the signal. Thus, in order to confirm or discuss the obtained results it is necessary to conduct additional studies.