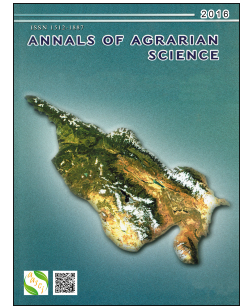


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ACCEPTED MANUSCRIPT

Polyphenol content, anti-lipase and antioxidant activity of teas made in Georgia

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Abstract

Anti-lipase and antioxidant activities of 5 types of tea produced by Ltd “Geoplant”, Georgia, were studied. Traditional Green and Jasmine Blossom revealed the highest antioxidant activity – 2.35 and 2.32 mg of ascorbic acid equivalents (AAE) per mL of tea infusion made according to the usual method used by consumers. Intermediate antioxidant activity was found for black tea – 1.24 mg of AAE per mL of tea infusion. Black tea with fruits had 0.53 mg of AAE per mL of tea infusion. Alpine Berry infusion had the least antioxidant activity – 0.35 mg of AAE per mL of tea infusion. Antioxidant activities of teas were in correlation with total polyphenol contents in tea infusions with $R^2 = 0.81$. Green traditional and black tea showed the highest level of lipase inhibition, i.e. 70.6% and 70.3 % per mL (11.7% per mg dry matter) of infusion. The values were not statistically significantly different ($p < 0.05$). Jasmine green and Alpine Berry showed the next highest levels of lipase inhibition, i.e. 66.8 % per mL (8.8% and 10.4% per mg dry matter respectively) of infusion. Christmas tea showed the least anti-lipase activity – 65.1% per mL (12.5% per mg dry matter) of infusion. Orlistat® showed 16.6% inhibition of lipase activity per mg of dry matter. So, tea infusions revealed about 30% less anti-lipase activity per mg dry matter than.

Keywords: Tea, Fruits, Anti-lipase, Antioxidant, Polyphenols, Obesity.

1. Introduction

Tea, derived from leaves of the plant *Camellia sinensis* L, after water is the most widely consumed beverage in the world. Tea can be categorized into three main types depending on the level of oxidation: green (unfermented), oolong (partially fermented) and black (fermented) tea [1].

Green tea has many components such as polyphenols, caffeine, theanine and vitamins [2]. Tea plant is rich in catechin type polyphenolics [3]. Catechins are present from 15% to 20% by weight in green tea. Generally, the major catechins of tea leaves are (+)-catechin (C), (–)-epicatechin (EC), (+)-gallocatechin (GC), (–)-epigallocatechin (EGC), (–)-epicatechin gallate (ECG), (–)-epigallocatechin gallate (EGCG), and (+)-gallocatechin gallate (GCG) [4]. Green tea catechins and theaflavins in black tea are effective antioxidants [5, 6, 7]. Polyphenolic natural products from tea have been shown to reduce blood lipids and epidemiological studies suggest that a diet rich in flavonoids can lower the risk of arteriosclerosis and other types of heart disease, help to prevent cancers, inhibit ageing and resist radiation [8], [9]. Green tea consumption has beneficial vascular and metabolic health [10].

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