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STUDY THE TOTAL CONTENT OF FLAVONOIDS IN AQUEOUS EXTRACT OF GREEN TEA LEAVES

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Introduction: Tea, derived from the *Camellia sinensis* plant, is enjoyed around the world in various forms, including green, black, and Oolong tea. However, among these, the most significant health effects have been observed with the consumption of green tea. The chemical composition of green tea includes phenolic compounds (constituting 30% of the dry weight in the leaves), 3-4% of alkaloids known as methylxanthines, such as caffeine, theobromine, and theophylline, proteins (comprising 15-20% of the dry weight in the leaves), and carbohydrates (making up 5-7% of the dry weight in the leaves). Due to its rich diversity of phenolic compounds, green tea exhibits a range of pharmacological activities, including antioxidant, anti-inflammatory, antiviral, antibacterial, antitumor, and anxiolytic properties.

Aim: Determine the total content of flavonoids in the aqueous extract of green tea leaves.

Methods: The object of the study was the aqueous extract of green tea leaves, which was obtained as follows: 10.0 g (exactly weighed) of the crushed raw material was placed in a 500 mL ground flask, poured with 200 mL of distilled water and kept for 1 hour in a boiling water bath, filtered through a paper filter, extraction was performed twice. Extracts were combined and evaporated on a rotary evaporator to a ratio of 1:2 to the weight of the raw material. The total amount of flavonoids was determined by differential spectrophotometric method with $AlCl_3$. To determine the amount of flavonoids in a 50.0 mL volumetric flask, 1.0 mL of extract was

introduced and brought to the mark with distilled water (Solution A). Then, a 2.0 mL aliquot of the prepared Solution A was transferred to a 25.0 mL volumetric flask. Next, 1% $AlCl_3$ solution in methanol was added, and the volume was brought to the mark with a 5% solution of acetic acid in methanol (test solution). After 30 minutes, the absorbance of the solution was measured on a spectrophotometer at a wavelength of 417 nm in a cuvette with a 10 mm path length. A reference solution containing 2.0 mL of Solution A was prepared and brought to the mark with a 5% solution of acetic acid in methanol in a 25.0 mL volumetric flask for comparison. Simultaneously, the optical density of the rutin SPhS solution was measured. The content of the total flavonoids, as a percentage, expressed as rutin, was calculated using the formula:

$$X(\%) = \frac{A \times K_{dil} \times m_{st} \times 100}{A_{st} \times V}$$

where, A – absorbance of analyzed solution; A_{st} – absorbance of standard solution of rutin; V – volume of extract, mL; K_{dil} – coefficient of dilution, mL, m_{st} – mass of rutin, g.

Results: The total content of flavonoids was 0.80±0.02% in the in the aqueous extract of green tea leaves.

Conclusions: The green tea aqueous extract has the perspectives in the developing new medicines, dietary supplements and cosmetologically products.

STUDY THE TOTAL CONTENT OF FLAVONOIDS IN THE TINCTURE OF GREEN TEA LEAVES

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Introduction: Green tea tincture is a well-known herbal remedy with a long history of use in traditional Chinese medicine for addressing a broad spectrum of health concerns. Its applications encompass the reduction of inflammation, enhancement of cardiovascular well-being, fortification of the immune system, and the potential to play a role in cancer prevention. Within green tea tincture, a diverse array of natural antioxidants is present, including polyphenols, flavonoids, catechins, and phenolic acids. These compounds possess robust antioxidant and anti-inflammatory attributes that serve as protective shields for cells, guarding them against harm induced by free radicals, with epigallocatechin-3-O-gallate being a prominent example.

Aim: Determine the total content of flavonoids in the tincture of green tea leaves.

Methods: Tincture of green tea leaves was obtained by the maceration method with 60% ethanol in ratio raw material/solvent 1:10 (mass of dry leaves 10,0 g), extraction was carried out during 7 days and kept in the dark place. The total amount of flavonoids was determined by differential spectrophotometric method with $AlCl_3$. To determine the amount of flavonoids in a 50.0 mL volumetric flask,