

STUDY THE TOTAL CONTENT OF CATECHINS IN ETHANOLIC EXTRACT OF GREEN TEA LEAVES

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Introduction. Catechins are a type of flavonoid, which is a natural compound found in plants. Green tea is a rich source of catechins, and these compounds are thought to be responsible for many of the health benefits associated with green tea consumption. Catechins in green tea have also been shown to have anti-cancer properties. Studies have found that catechins can inhibit the growth of cancer cells and prevent them from spreading. This is thought to be due to the ability of catechins to interfere with the signaling pathways that are involved in the development and progression of cancer. In addition, catechins in green tea may also have cardiovascular benefits. They have been shown to help lower blood pressure and reduce the risk of heart disease. This is thought to be due to the ability of catechins to improve the function of the endothelial cells that line the blood vessels, which can help improve blood flow and reduce the risk of blood clots.

Aim. Determine the total content of catechins in ethanolic extract of green tea leaves.

Materials and methods. The ethanolic extract of green tea leaves was obtained by the following way: 10.0 g of the grinded leaves was mixed with 200 mL of 96% ethanol. Extraction was carried out within 1 hour on water bath with a condenser, then repeated two times with a new portion of the solvent. After that the obtained extracts were filtrated and concentrated using rotary evaporator to 20 mL. A 1.0 mL of prepared extract, 7.5 mole 1% vanillin solution in 96% ethanol were added in a 25 mL volumetric flask. Then, the solution was made up by the addition 0.5 mole/L HCl in 96% ethanol solution. The mixture was analysed at 505 nm after standing for 30 min. The total content of catechins was determined using the epigallocatechin-3-O-gallate. The calibration curve was plotted with interval concentrations 100–400 · 10⁻⁶ g/mL, the calibration equation $Y = 0.0025X - 0.0851$ ($R^2 = 0.9951$). The amount of catechins in extract, expressed as epigallocatechin-3-O-gallate was found out according to equation:

$$X(\%) = \frac{C_x \cdot m \cdot K_{dil} \cdot 100}{V_{ext}},$$

where C_x – concentration of epigallocatechin-3-O-gallate according to calibration curve, $C \cdot 10^{-6}$ g/mL; V_{ext} – volume of extract, ml; m – mass of sample; K_{dil} – coefficient of dilution.

Results and discussions. The total content of catechins was $8.47 \pm 0.25\%$ in the green tea leaves ethanolic extract.

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