

ANTIOXIDANT EFFECTS OF NATURAL BIOACTIVE COMPOUNDS

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Abstract

High concentrations of reactive oxygen species (ROS), have harmful effects which are expressed by living organisms' biomolecules damage, including lipids, proteins and nucleic acids. Numerous studies indicate that a reduced risk of various lifestyle diseases [2, 3, and 5], mainly cardiovascular diseases and cancer, as well as other disorders, is associated to a diet rich in fruits, vegetables and their products. Our research was focused on the principal roles of ROS in biological processes and diseases and how natural bioactive compounds of herbs determine their health-promoting properties [1]. Selected compound was Green tea.

During the experimental work, 300 g of gunpowder green tea leaves were taken for caffeine extraction, using dichloromethane and anhydrous sodium sulphate. The extracted caffeine was assessed by analysis with tannic acid. Total amount of phenolic compounds has been determined by using Folin-Ciocalteu and sodium carbonate solutions. 1 mL of aqueous solution for analysis, was treated with a Folin-Ciocalteu reagent, diluted before with water in 1 : 10 ratio). 5 mL of this diluted solution was poured into 1 mL of aqueous solution. Bluish color was obtained by the addition of 4 mL 7.5% of Na₂SO₄ solution in distilled water. Spectrophotometric determinations were performed after a 30 min. period of reaction, using a UV-Vis. spectrophotometer. A calibration curve was obtained from a series of gallic acid standard (25-150µg/mL of 50% methanol) used to express the concentrations of phenolic as g of gallic acid equivalents for one gram of dry weight. Also we performed a survey, using a survey method based in questionnaires with closed-ended questions, for 600 people belonging to different population groups, principally adults and people of the third age (60% adults, 30% elderly and 10% children's). Gained data, related with the tea consumption were processed mathematically using simple statistical analysis. Data were grouped and summarized and the mid-point of all them were determined (median).

The caffeine content was 3 - 4% and total polyphenols amounts were 25 - 35%, depending by selected samples. Determined percentage of the above compounds are responsible for the powerful antioxidant properties of selected green tea; most of his effects are associated also with flavonoids and their antioxidant potentiality. Our survey showed that only about 25% of adults were consumers of green tea, considering it a dietary product. About 5% of elderly were casual consumers with minimal knowledge's related with the product.

As conclusions, considerable % of caffeine and polyphenols were determined in specific varieties of green tea. A number of responders were regular consumers of green tea and some others were not familiarized with this product. A big difference between the consumers were discovered in their knowledge's about ROS effects and the antioxidant role of green tea and similar products. A very small part of them had sufficient knowledge's for its chemical compounds and therapeutic values

Key words: *Functional food, Natural bioactive compounds, Antioxidant, Green tea.*