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DETERMINATION OF ANTIOXIDANT ACTIVITY IN MILK EXTRACTS BY THE METHOD INHIBITION OF HYDROGEN PEROXIDE

Ilmije Vllasaku[1*], Julijana Tomovska[2]

[1]UBT - Higher Education Institution, Kalabrija nn, 10000 Prishtina, Kosovo
[2]Faculty of Biotechnical Sciences, University "St. Kliment Ohridski" - Bitola, Partizanska bb, 7000 Bitola, Macedonia

[*]e-mail: ilmijevllasaku@hotmail.com

Abstract

Antioxidants are defined mainly as compounds that are not nutrients in food but have antioxidant capacity *in vitro* and provide an artificial index of antioxidant power. They are compounds (enzymes, vitamins, and phytochemicals) that inhibit or delay the oxidation of other molecules by inhibiting the initiation or propagation of oxidative chain reactions, also called oxidation inhibitors. Milk contains lipophilic and hydrophilic antioxidants, which play a key role in maintaining homeostasis as prooxidants and antioxidants. The aim of this study was to determine the total antioxidant activity *in vitro* by the method of removing hydrogen peroxide in milk extracts.

Milk samples of three farms from different regions in Macedonia (Kumanovo, Tetovo, and Gostivar) were taken as testing material. The cattle were of the Friesian breed and used following feed: two types of concentrates, alfalfa and straw. The feeding was three times a day but with a different components composition. The first milk was extracted with 3% trichloroacetic acid in order to remove the effect of milk fat on the reading of hydrogen peroxide absorption. As a control commercial milk with milk fat 3.2% was taken. A test for H_2O_2 removal in milk samples according Al-Amiers method was applied. Vitamins A and E were tested by HPLC method Perkin Elmer, detector LC-135 / LC -235C DA and vitamin C by 2,4-dinitrophenylhydrazine colorimetric method.

Highest values for vitamins A and E are established in the milk from the farms in Gostivar (38.25µg/100g) and (1.09 µg/100g), while highest value for vitamin C was fund in the milk from the farm in Kumanovo (2.8 µg/mL). Commercial milk had the highest total antioxidant activity (57.6%) calculated as IC50 (50% inhibited or purified H_2O_2).

According to this, the antioxidant activity in depends on the presence of vitamins A, E, C in milk, the type and composition of food.

***Key words**: Antioxidants, Antioxidant activity, Vitamins, Cow milk.*