



DETERMINATION OF ANTIOXIDANT PROPERTIES OF FACTORY-GROWN CHICKEN EGGSHELLS

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Relevance of the study: Today, bone diseases are increasing due to calcium deficiency, and to prevent and eliminate this condition, eggshells are a natural source rich in calcium. They are not only a source of calcium, but also play an important role in the absorption of D3, which is obtained with solar energy, into the body.

Purpose of the study: To determine the antioxidant properties of factory-grown chicken eggshells.

Research methods: Washed and cleaned eggshells, dried at room temperature, were ground into powder. The antioxidant activity of the powdered sample was determined by the method of in vitro autooxidation of adrenaline.

Research results: The antioxidant activity of eggshells was determined by the inhibition of the in vitro autooxidation reaction of adrenaline.

For this purpose, 2.0 ml of 0.2 M sodium carbonate ($\text{Na}_2\text{CO}_3\text{-NaHCO}_3$) buffer with $\text{pH}=10.65$, 56 μl of 0.18% adrenaline (epinephrine) hydrochloride solution were taken, 30 μl of antioxidant preparation were added and, with rapid mixing, the sample was examined in a 10 mm cuvette at a wavelength of 347 nm for 30 seconds to 10 minutes on a Cary 60 UV-Vis Agilet Technologies spectrophotometer. For this purpose, 2.0 ml of 0.2 M sodium carbonate ($\text{Na}_2\text{CO}_3\text{-NaHCO}_3$) buffer with $\text{pH}=10.65$, 56 μl of 0.18% adrenaline (epinephrine) hydrochloride solution were taken, 30 μl of antioxidant preparation were added and, with rapid mixing, the sample was examined in a 10 mm cuvette at a wavelength of 347 nm for 30 seconds to 10 minutes on a Cary 60 UV-Vis Agilet Technologies spectrophotometer. The amount of the test substance (concentration of the extract in 1 ml is 1 mg) is used as a standard. As a control sample, 0.2 M 2.0 ml buffer, 0.18% 56 μl (5.46 mM) adrenaline is used.

The antioxidant activity was expressed as a percentage of the inhibition of adrenaline autooxidation and was calculated by the following formula.

$$\text{AA}\% = \frac{D_1 - D_2 \times 100}{D_1}$$

Optical density of adrenaline hydrochloride solution added to buffer D1;

Optical density of the extract under study and adrenaline hydrochloride added to buffer D2.

Statistics were tested using the T-student test and Orijen 6.1 US software.

The antioxidant capacity of the drugs is determined for the in vitro form.

Sample	Composition	Solubility	<i>In vitro</i> ; mkg/ml
Home eggshell extract	Eggshell extract	30% alcohol and water	30



Quercetin	Japanese Embassy	30% alcohol and water	30
Gliklazide	-	water	30

Conclusions: The antioxidant activity of the preparations was determined by the method of in vitro autoxidation of adrenaline. The antioxidant activity of the studied preparations was assessed by chemical tests. The antioxidant activity of the preparations was determined by the inhibition of the in vitro autoxidation reaction of adrenaline and the prevention of the formation of free oxygen species. The preparations were compared with the standard antioxidants quercetin and gliclazide. The obtained preparations show the presence of antioxidant properties.