

Synthesis and study of antioxidant activity of α -amino acid derivatives of taurine

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Abstract

Synthesis of derivatives of α -amino acids and taurine with alkali and alkaline earth metals. Based on the data of IR, ¹H NMR spectrometry, the structure of synthesized compounds was confirmed. The salts were synthesized: lithium taurate, sodium taurate, potassium taurate, magnesium taurate, calcium taurate. Synthesis of salts of D-leucine, L-alanine, taurine with metals of alkali and alkaline-earth metals is as follows: to compounds (salts in alkaline metals (Li, Na, K) or oxide for alkaline earth metals (Mg, Ca) are added to distilled water. For an hour with constant agitation on a magnetic stirrer. The precipitate is filtered, the solvent is evaporated and the desired compounds are obtained. Compounds are mainly white or light yellow powders. The synthesis of the salts is almost complete. In the original zwitterionic form of taurine, leucine and alanine, an NH₃⁺ group is present, and IR spectra of amino acid salts indicate the presence of the NH₂ group (the introduction of alkaline and alkaline-earth metal salts occurred). The compounds are highly soluble in water and polar solvents, some can be dissolved in an alcoholic mixture, and the antioxidant properties of the synthesized salts are studied. Was carried out by studying the effect of compounds on the generation of active forms of oxygen (ROS) and antioxidant activity by lipid peroxidation (LPO). Antioxidant effect was found in lithium D-leucinate and potassium L-alaninate. A pronounced prooxidant effect was found in lithium taurate and magnesium taurate. The introduction of lithium salt of leucine leads to a reduction in the formation of free radical products of lipid and protein oxidation in comparison with the control and is much larger than the decrease for potassium alaninate in the bond and the presence of an isopropyl fragment of the magnifying electron density near the NH₂ group.

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