SYNTHESIS, STRUCTURE AND PROPERTIES OF MAGNESIUM CHELATE COMPLEXES OF PROTEINOGENIC S-AMINO ACIDS AND THEIR MIXTURES WITH R-ENANTIOMERS

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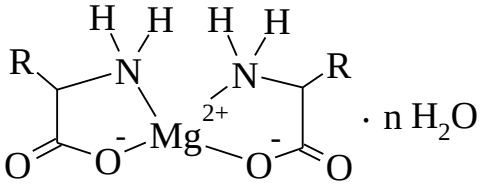
Introduction. Magnesium kation (Mg^{2+}) is one of the most important essential nutrient (not synthesised in the organism macronutrients), which entered in organs and tissues in the form of magnesium salts acids (MSA). According to the cell content he ranks second place after potassium and take part more than in 325 biochemical processes of metabolism fats, proteins and carbohydrates as coenzyme. We have found and systematized 57 MSA which are permitted for medical and food use in the farmaceutical and food world markets.

Aim. The aim of our work was to synthesise, identify and examine some properties of magnesiumdiaminoacids (MgDAA) chelate complexes of proteinogenic S-amino acids and their mixtures with R-enantiomers which have general formula:



n=0-6, R=amino acid

Materials and methods. Identification, analysis, determination of the structure and properties were conducted by known methods: per melting temperature, pH-metrically, gravimetric, complexometric; n was determined by comparing the found and calculated values of the percent of water in the homologous series of hydrates.

Results and discussion. For synthesis target compounds was used the typical neutralization reaction of magnesium oxide with corresponding amino acid. It was carried out in aqueous medium with heating to establish a certain value of the pH. As a result white or slightly yellowish-white crystalline substances, odorless, soluble or sparingly soluble in water were obtained. Their composition was: $Mg(Gly)_2$; $Mg(R,S\text{-}Asp)_2 \cdot 4H_2O$; $Mg(S\text{-}Asp)_2 \cdot 2H_2O$; $Mg(R,S\text{-}Glu)_2 \cdot 6H_2O$; $Mg(S\text{-}Glu)_2 \cdot 3H_2O$;$Mg(S\text{-}Arg \cdot HCl)_2 \cdot H_2O$;$Mg(R,S\text{-}Phe)_2 \cdot 2H_2O$;$Mg(R,S\text{-}Tyr)_2 \cdot H_2O$; $Mg(R,S\text{-}Trp)_2 \cdot H_2O$. The yields of the synthesized compounds were 44.0-96.9% of the calculated theoretically, the content of the basic substance (for Mg) was equal to 85.4-101.6% .

Conclusions. Thus, we have developed a general method for the synthesis of 9 MgDAA chelates proteinogenic amino acids, proved their structure and studied the basic properties.