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Formation of Binary Complexes of Co (II), Ni (II), and Cu (II) with L-Phenylalanine in TX100 – Water Mixtures

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ABSTRACT

Chemical speciation of binary complexes of Co (II), Ni (II), and Cu (II) with L-phenylalanine was investigated pH-metrically in TritonX(100) – water mixtures. The stability constants were calculated using the computer program MINIQUAD75. The best-fit chemical models were selected based on statistical parameters and residual analysis. The models for the binary species contained ML, ML_2 and ML_2H_2 for Co(II), Ni(II) and Cu(II) in TritonX(100) – water mixtures. The trend in variation of stability constants with change in the mole fraction of the medium was explained on the basis of electrostatic and non-electrostatic forces. Distribution of species, formation equilibria and effect of influential parameters on the stability constants has been presented. The possible structures of the various species are elucidated on the basis of the analysis of the pH metric data.

Keywords: Chemical Speciation, Binary complexes, L-phenylalanine, MINIQUAD75, TritonX (100), and Stability constants.