

PRO/ANTIOXIDANT PROPERTIES OF NON- AND PROTEINOGENIC AMINO ACIDS IN THE PRESENCE OF Cu (II) IONS

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The ability of some amino acids to regulate the formation of hydroxyl radicals in the presence of copper ions and the Cu²⁺-mediated fragmentation of biologically active phospho derivatives of glycerol has been studied. Method of fluorescence probes and spectrophotometry were used for this purpose.

It has been established that cysteine and N-acetylcysteine (ACC) in combination with Cu²⁺ ions or vitamin B₁₂ induce the formation of HO[·]. It has been shown that under the conditions of Cu²⁺/H₂O₂-mediated HO[·] generation at the concentrations range of (0.005-10 mM) methionine and methionine sulfoxide are unambiguously effective HO[·]-scavengers. Taurine has a low anti-radical activity. Cys, ACC and histidine at low concentrations (0.005-0.1 mM) exhibit pro-oxidant properties, promoting an increase in HO[·] amount, at high concentrations become effective antioxidants. Under these conditions, glycine, α- and β- alanine at low doses (0.005-0.1 mM) do not show any antiradical activity. However, in the concentration range of (0.15-2.5 mM), Gly and α-Ala are better HO[·]-scavengers than β-Ala.

The obtained data on the radical-scavenging activity of the studied amino acids correlate with their effect on free radical fragmentation of glycerol-1-phosphate with rupture of the phosphoester bond. All tested compounds, with the exception of Tau and β-Ala, inhibited this process.

References:

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