

## SYNERGISTIC INTERACTIONS OF ASCORBIC AND DIHYDROXYFUMARIC ACIDS INVESTIGATED BY EPR SPECTROSCOPY

Crina Vicol <sup>a\*</sup>, Alexandra Sârghi <sup>b</sup>, Adrian Fifere <sup>b</sup>, Gheorghe Duca <sup>a</sup>

<sup>a</sup>*Institute of Chemistry, Moldova State University, 3, Academiei str., Chisinau MD-2028, Republic of Moldova*

<sup>b</sup>*'Petru Poni' Institute of Macromolecular Chemistry of the Romanian Academy, 41A, Grigore Ghica Voda Alley, Iasi RO-700487, Romania*

*\*e-mail: crina.vicol@ichem.md*

**Abstract.** The intricate dynamics of antioxidant interactions holds promise for innovating formulations to reduce patient antioxidants doses and prolong efficacy, these aspects being also important for other industrial applications, such as food preservation. In this context, the study presents data on the antioxidant interaction between ascorbic (AA) and dihydroxyfumaric acids (DHF) determined *via* DPPH method, by applying EPR spectroscopy. Two calculations methods used demonstrated strong and moderate synergistic effects, with antioxidant interaction parameter (AI) of 1.24 and 0.9, respectively. The type of antioxidant interaction is dependent on the concentration ratio of the ascorbic and dihydroxyfumaric acids, thus, at the mM DHF/mM AA ratios of 1.4 and 1.7 the highest synergistic effects with AI of 1.24 have been noticed, but at the mM DHF/mM AA ratio of 1 – an antagonistic effect with AI of 0.93 was registered.

**Keywords:** dihydroxyfumaric acid, ascorbic acid, EPR spectroscopy, synergy, antioxidant.