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Research of total antioxidant activity of vegetable oils

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ABSTRACT

Antioxidant activity is one of the basic criteria of vegetable oil biological value. There are many methods for antioxidant activity (AOA) assessment, based on model process including two stages: certain quantity free radicals generation and injection of scavengers or substances that affect free radicals concentration or state in the model system, that is reflected in detection system parameters. According to the basic principle analytical AOA assessment methods have been divided into three categories: spectrometry, electrochemical techniques and chromatography. Electrochemical techniques and chromatographic methods application requires expensive equipment to be available, therefore spectrometry method is dominant in the most cases. FRAP (Ferric Reducing / Antioxidant Power) is the one of the most popular spectrometry methods, based on Fe^{3+} ions and fotometric reagent interaction, followed by intensively coloured ferrum (II) complex formation. AOA is determined by calibration curve and the result is expressed as recalculation on reference substance. Long time of analysis and high requiremens to the purity of chemicals used as references are disadvantages of this method. For improvement of the method we suggested to use fat-soluble vitamin E as a reference, because it has high antioxidant activity and low cost. The analysis time was shortened of and charges of reagents. Application of nonpolar solvent for sample preparation improves antioxidant components extraction. Consequently, the developed method is not expensive, allows reducing costs for analysis as well as charges of reagents and obtaining results as recalculation on vitamin E antioxidant activity.

KEY WORDS: antioxidant activity, vegetable oil.

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