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Potentiometric method of investigation antioxidant capacity of pharmacy objects

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Antioxidants are increasingly used in the prevention and treatment of a wide range of diseases associated with an increase in the intensity of free radical processes in the body. In this regard, the study of the antioxidant capacity of objects of pharmacy belongs to the field of modern urgent problems. An approach based on the use of an oxidized metal form in the complex compound as an oxidizer model with potentiometric detection of an analytical signal is developed. The potential is measured after passing a chemical reaction between the antioxidants of the test sample and the oxidizer, and then adding the oxidant. The studies used $K_3[Fe(CN)_6]$, which satisfies the thermodynamic and kinetic requirements. The developed method was used to study dosage forms for ophthalmic use with claimed and potentially possible antioxidant properties. Comparative studies were carried out using the spectrophotometric method with a stable radical of 2,2-diphenyl-1-picrylhydrazyl. An analysis of the antioxidant capacity of medicinal plant material was carried out. Model solutions of antioxidants (flavonoids, phenolcarboxylic acids, ascorbic acid), included in the composition of the plant material and mixtures thereof were studied. Comparative studies of the total content of polyphenols using the Folin-Chokaltea reagent were carried out. Thus, the developed approach allows determining antioxidant capacity as an integral parameter, to obtain results in universal units without using standards, and is quite promising for the study of various objects of pharmacy, which is also confirmed by a high degree of correlation with independent methods.

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