

Spectrophotometric Studies of the Interaction of Ruthenium with Hesperetin

Krunoslav Vranić, Vlasta Vojković

Laboratory of Analytical Chemistry, Faculty of Science, University of Zagreb, Horvatovac 102a, 10000 Zagreb, Croatia

Hesperetin (5,7,3-trihydroxyl-4-methyl-flavanone) is a kind of flavonoid which occurs ubiquitously in plants, fruits, flowers and foods of plant origin [1]. The interest in the hesperetin is due to its some biological and pharmacological activities, including antioxidant properties [2], inhibition of cancer development [3], etc. Some metal-flavonoides complexes have more antitumor activity [4], so the past few years have seen a remarkable increase in the scientific interest for research of metal-flavonoid complexes. Therefore, in this work, the complexation process of the ruthenium with hesperetin was studied. The investigation was conducted using the spectrophotometric method.

Figure show observation of hesperetin in 50% ethanol aqueous buffer solution (pH 7.5, physiological condition, controlled by phosphate buffer) in absence and presence of Ru(III). In the absorption spectra of hesperetin are absorption band at 328 nm and shoulder at 288 nm. The absorbance value at 328 nm decreased accompanied by the increase of a absorbance at 288 nm and new absorbance around 375 nm gradually with the increase of ruthenium concentration.

The calibration graph is linear in the range from 1 to 8×10^{-5} independent of λ_{\max} used for measurement. The stoichiometric composition of the chelate is Ru(III):hesperetin = 1:1.

According to the obtained results, it can be concluded that the reaction of ruthenium(III) with hesperetin can be applied for the detection of the low Ru(III) concentrations in aqueous solutions. Compared to other methods commonly used for the determination of ruthenium the advantage of present method is that the reaction occurs at room temperature.

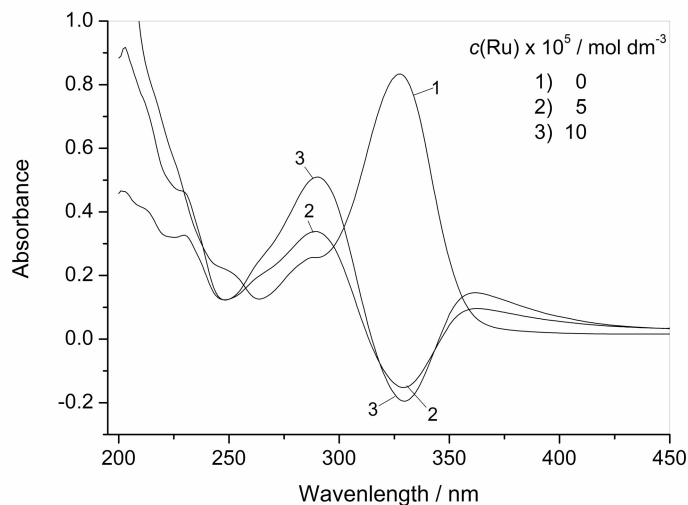


Fig. 1: Electronic absorption spectra of hesperetin in 50 % ethanol in absence (curve 1) and presence of Ru(III) (curves 2,3), at pH 7.5.

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