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**SPECTROPHOTOMETRIC DETERMINATION OF TRACE
NITRITE WITH A NOVEL SELF-COUPLING DIAZOTIZING
REAGENT: J-ACID**

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A simple and sensitive method for the spectrophotometric determination of nitrite was described and optimum reaction conditions along with other important analytical parameters were established. In the presence of potassium bromide at 25°C, nitrite reacted with J-acid in hydrochloric acid producing diazonium salt and then coupled with excess J-acid in the sodium carbonate solution yielding red colored azo compounds. At wavelength of 500 nm, Beer's law was obeyed over the concentration range of 0,02 – 0,60 mg · L⁻¹. The molar absorptivity was 3,92 · 10⁴ L · mol⁻¹ · cm⁻¹. This method was easily applied to the determination of trace nitrite in environmental water with recoveries of 98,7 – 101,2%.

Keywords: nitrite, J-acid, self-coupling, spectrophotometric.

Introduction

Nitrite is a kind of harmful substances present extensively around us. When it in human body greatly, it will react with iron (III) in the hemoglobin of the red blood cells, forming methemoglobin which is unable to carry oxygen thus causing hypoxia and acute poisoning. Moreover, nitrite has direct impact on the health because of its reaction with secondary and tertiary amines and amides in human body, which produce toxic and carcinogenic nitrosamines compounds [1 – 4]. Therefore, the concentration of nitrite in foods and environmental water is limited strictly by the U.S. Public Health Association [5]. Researchers make great amounts of efforts to establish accurate and simple analytical methods.

Under acidic condition, the diazotization with nitrite and primary aromatic amine is always simple and very general. The reaction has the advantages of free from interference, high sensitivity and excellent selectivity. Consequently, scientists all over the world study spectrophotometric determination of nitrite

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