

Spectrophotometric determination of bisazo dye malachite green in water sample

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ABSTRACT

In this paper, a new spectrophotometric method was established for the determination of malachite green. The optimal pH for the determination of malachite green for the method is 4.0 with a suitable temperature of 35°C. In a pH 4.0 acetic acid-sodium acetate buffer solution medium, the maximum absorption wavelength of malachite green was located at 614 nm. A good linearity is presented over the concentration range of 0–6.0 µg/mL of malachite green and absorbance at this wavelength. The apparent molar absorption coefficient of the method was 7.43×10^4 L/(cm·mol) at 614 nm with a detection limit of 0.13 µg/mL and a quantification limit of 0.43 µg/mL. Then influences of thirty-three co-existing substances on the determination of malachite green were determined. The inter-day and intra-day relative standard deviation for polluted water sample is 0.60% and 0.83%, respectively. The present method was used for the determination of malachite green in a few kinds of water samples with good precision and accuracy. A rapid and accurate method has been established for the determination of malachite green in water samples.

Keywords: Malachite green; Spectrophotometry; Water sample; Determination

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