



Turkish Journal of Chemistry

Turkish Journal

of

Chemistry

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Atomic Absorption and Spectrophotometric Determinations of Salicylhydroxamic Acid in Its Pure and Pharmaceutical Dosage Forms

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Abstract: A new method for the indirect determination of salicylhydroxamic acid (SHAM) using atomic absorption spectrometry (AAS) was proposed. The method is based on precipitating the ion associate complex of SHAM with $[\text{Cu}(\text{NH}_3)_4]^{2+}$. The excess, unreacted, Cu^{2+} ions were determined using AAS. Another spectrophotometric method based on measuring the absorbance of the formed $[\text{Cu}(\text{NH}_3)_4]$ -SHAM complex in dioxane was proposed. The green color of the complex formed was measured at 330 nm. The two methods were successfully used for determining SHAM in its pure and pharmaceutical dosage forms. Using AAS, the drug was determined over a concentration range of 3.06 to 30.63 $\mu\text{g/mL}$ with an average relative standard deviation of 1.6 to 2.2% and a recovery of 97.52 to 102.4%. The spectrophotometric method gave a linear concentration range of 1.53 to 18.38 $\mu\text{g/mL}$ with an average relative standard deviation of 1.2 to 1.3% and recovery of 96.73 to 101.31%. The results obtained showed that the methods developed are precise and accurate. They are shown to be suitable for routine SHAM quality control in its pure and pharmaceutical dosage forms.

Key Words: Atomic absorption spectrometry (AAS), spectrophotometry, SHAM, salicylhydroxamic acid, drug analysis, Cu complexes

Turk. J. Chem., **27**, (2003), 383-394.

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