

## NOTE

## Visible Spectrophotometric Determination of Ornidazole from Bulk Drug and Formulations

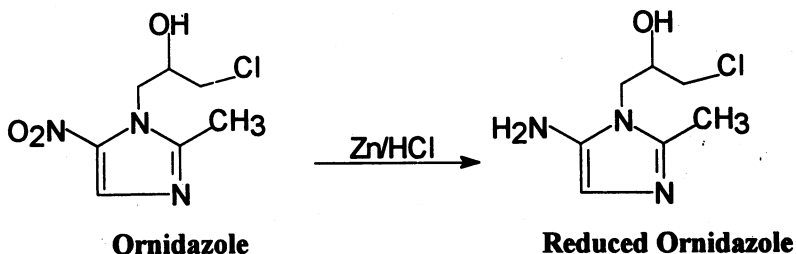
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A simple spectrophotometric method for the determination of ornidazole is developed. This method is based on the formation of green coloured species with 3-methyl-2-benzothiazolinone hydrazone (MBTH) in presence of  $\text{FeCl}_3$ , exhibiting maximum absorption at 623 nm. Beer's law was obeyed in the concentration range of 2 to 10 mcg/mL. The results of analysis of the proposed method have been validated statistically and by recovery study. The proposed method is selective, simple and economical for the determination of ornidazole.

**Key Words:** Spectrophotometric, estimation, ornidazole, drug.

Ornidazole<sup>1</sup> [1-chloro-3-(2-methyl-5-nitroimidazole-1-yl) propan-2-ol] is used in the treatment of amoebiasis giardiasis and anaerobic infections. In the proposed method, the presence of amino group in reduced ornidazole enables the use of oxidative coupling reaction with 3-methyl-2-benzothiazolinone hydrazone (MBTH) in presence of ferric chloride. The reduction of ornidazole was carried out with zinc granules and 3 N HCl. This method has been successfully extended to the pharmaceutical preparations.



All spectral measurements were made on systronics 118 spectrophotometer. Hydrochloric acid (3 N); Absolute alcohol; 0.5% w/v MBTH in 0.1 N HCl; 1% w/v  $\text{FeCl}_3$  in 0.1 N HCl.

**Preparation of calibration curve:** Various aliquots containing 2–10 mcg/mL concentrations of reduced ornidazole were taken into a series of 25 mL volumetric flasks. To each 1.0 mL of 0.5% w/v MBTH and 1.0 mL of 1% w/v  $\text{FeCl}_3$  were added and kept aside for 5 min and the total volume was made up to the mark with distilled water. A linear response was noted at 623nm against reagent blank.

**Standard solution:** Accurately weighed 100 mg of ornidazole was dissolved

in 20 mL of alcohol and treated with 10 mL of 3 N HCl and 500 mg of zinc granules were added in portions. After keeping it for 1 h with occasional shaking at room temperature, the solution was filtered through cotton wool; the residue was washed with 3 × 10 mL portions of alcohol and the total volume of the filtrate was brought to 100 mL with distilled water (*i.e.*, 1000 mcg/mL). The concentration of reduced ornidazole was brought to 20 mcg/mL by further dilution with water.

**Preparation of sample solution:** 20 Tablets were weighed accurately and powdered. The tablet powder equivalent to 100 mg of ornidazole was dissolved, in 20 mL of alcohol and treated with 10 mL of 3 N HCl and 500 mg of zinc granules were added in portions. After keeping it for 1 h with occasional shaking at room temperature the solution was filtered through cotton wool. The residue was washed with 3 × 10 mL portion of alcohol and the total volume of the filtrate was brought to 100 mL with distilled water (*i.e.*, 1000 mcg/mL). The concentration of the reduced ornidazole was brought to 20 mcg/mL by further dilution with water.

From the prepared standard and sample solution accurately pipetted out 2.5 mL in separate 25 mL volumetric flask. To each flask 12.0 mL of 0.5% w/v MBTH and 1 mL of 1% w/v FeCl<sub>3</sub> were added and kept aside for 5 min and the total volume was made up to the mark with distilled water. The absorption of the resulting green coloured species was determined at 623nm against reagent blank.

TABLE-1  
ESTIMATION OF ORDINAZOLE IN PHARMACEUTICAL PREPARATIONS

Sample*	Labelled amount (mg)	Estimated amount (mg)	Reported method <sup>3</sup>	Standard deviation	Coefficient of variation	% recovery by proposed method†
T <sub>1</sub>	500	495.50	500.32	0.7803	0.1574	99.69
T <sub>2</sub>	500	500.22	500.24	0.0703	0.0703	101.69
T <sub>3</sub>	500	500.25	500.28	0.2207	0.0441	100.80

\*Samples from different manufacturers. †Average of 6 determinations.

The results showed (Table-1) that the method has reasonable precision. Comparison of the results obtained with the proposed and reported methods for dosage forms confirmed the suitability of the method for the determination of ornidazole in pharmaceutical dosage forms. The other active ingredients and excipients usually present in pharmaceutical dosage forms did not interfere. The proposed method is found to be simple, sensitive, accurate and can be used in the determination of ornidazole and its pharmaceutical dosage forms in routine manners.

## REFERENCES

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