
Spectrophotometric Method for Fenbendazole

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Fenbendazole is a highly effective broad spectrum anthelmintic agent with adulticidal, larvicidal and ovicidal actions of the class of benzimidazole anthelmintic agents. Fenbendazole is mainly used as veterinary anthelmintic with wide safety margin (1). The drug has been analyzed by non-aqueous titration and HPLC (2).

A new simple and sensitive spectrophotometric method for the determination of fenbendazole is reported here. Spectral measurements were made on a systronics - 108 UV-Visible spectrophotometer. All chemicals used were of Analar grade and were used as such without any purification. Fenbendazole was obtained as a gift sample from Sarabhai Chemicals, Baroda, and was used as such without further purification. Its standard solution was prepared 100 mg/L in methanol. Potassium ferricyanide solution was prepared by dissolving 1 g of potassium ferricyanide ($K_3Fe(CN)_6$) in 100 ml of double distilled water. The solution is stable enough for several weeks at room temperature. A 5% sodium hydroxide solution was also prepared by dissolving 5 g of sodium hydroxide in 100 ml of double distilled water.

An aliquot of Fenbendazole (50 mcg/ml) was transferred to a 60 ml separating funnel and to this 1 ml of potassium ferricyanide is added followed by 2 ml of sodium hydroxide solution. A pale orange coloured product is formed immediately which was extracted with 5 ml of chloroform. The extract was dried over anhydrous sodium sulphate and volume was made up to 10 ml with chloroform. The absorbance was measured at 353 nm against reagent blank. The calibration curve was prepared in the concentration range of 10-240 mcg/ml fenbendazole in the final solution.

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A mixture of fenbendazole was prepared with excipients commonly used such as starch, talc and magnesium stearate. A portion of mixture equivalent to 10 mg. of fenbendazole was accurately weighed and dissolved in 100 ml of methanol. The solution was filtered and aliquots of the filtrate were analyzed by the proposed method.

Commercially available tablets Panacur - 150 VET (Hoechst) and Panfugal (Merind) were analysed. Twenty tablets were weighed and powdered. An amount equivalent to 10 mg. of fenbendazole was weighed and dissolved in 100 ml of methanol. The solution was then analysed by the method described above. The results are presented in Table 1.

Fenbendazole was analyzed in presence of other similar drugs e.g. mebendazole and albendazole of same class to check the selectivity of the method. The method does not suffer any interference.

The pale orange coloured product has a maximum absorbance at 353 nm. The reagent blank has no absorbance between 300 and 40 nm. The Beer's law is obeyed in the range of 10 - 240 mcg/ml of fenbendazole. The molar absorptivity is 8.12×10^2 mol/cm.

The effect of potassium ferricyanide was studied by taking a fixed concentration of fenbendazole solution (50 mcg/ml) and varying the volumes of potassium ferricyanide. The results showed that 1 ml

Table - 1: Analysis of Fenbendazole in Pharmaceutical Products :

	Labelled Amount mg	Amount taken for analysis mg	Amount obtained mg	% recovery
Panacure - 150 Hoechst	150	10	11.10	111
Panfugal Merind	150	10	10.13	101.3

of 1% solution is sufficient to produce the coloured compound.

The new method is applied for the determination of fenbendazole in tablets and in the presence of other drugs. The method is simple, reproducible and can conveniently be used for routine analytical work.

REFERENCES

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