Asian Journal of Chemistry Vol. 10, No. 4 (1998), 1007–1008

NOTE

Visible Spectrophotometric Methods for Estimation of Ketoprofen from Capsule Formulation

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Two simple, sensitive and accurate extractive colorimetric methods for estimation of ketoprofen from capsule formulation have been developed. Copper(II) acetate and copper(II) chloride were the analytical reagents used for colour development. The methods are based on the quantitative formation of coloured chloroform extractable complexes of drug with copper(II) ions. The complex formed using copper acetate has an absorbance maxima at 676 nm and complex formed using copper(II) chloride showed absorbance maxima at 710 nm. For both methods Beer's law was obeyed in the concentration range of 0–5 mg/mL. Results of analysis were validated statistically and by recovery studies.

Ketoprofen is a nonsteroidal anti-inflammatory agent used in management of rheumatic disorders and painful musculoskeletal conditions. Few HPLIC[1-4] and gas chromatographic[5] methods are reported for analysis of ketoprofen from pharmaceutical formulations.

Jasco UV-visible recording spectrophotometer (model 7800) with 1 cm matched quartz cells was used.

Solution of copper acetate (0.25 M) was prepared by dissolving 4.991 g of copper acetate in 10 mL of acetic acid and diluting the solution to 100 mL with distilled water. Copper chloride solution (30%) was prepared by dissolving 3 g of copper chloride in 25 mL of pyridine and diluting the solution to 100 mL with distilled water. Standard ketoprofen solution (10 mg/mL) was prepared in chloroform.

Contents of twenty capsules were accurately weighed and average weight per capsule determined. Powdered the contents and powder equivalent to 125 mg. Ketoprofen was accurately weighed and transferred to 50 mL volumetrc flask. Added 35 mL of chloroform and shaken for 5 min to dissolve ketoprofen. Filtered the solution through Whatman filter paper no. 41 into another 50 mL volumetric flask. Washed filter paper with chloroform and added washings to filtrate. Made the volume to mark with chloroform. For Method-I, 5 mL of the filtrate was taken

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in a separating funnel, added 4 mL of copper acetate solution and 4 mL acetate buffer pH 6, shaken gently for 5 min. The chloroform layer was separated out and absorbance measured at 676 nm against reagent blank. For Method-II, 5 mL filtrate was taken in a separating funnel, added 5 mL of copper chloride reagent and shaken gently for 5 min. The chloroform layer was separated and measured absorbance at 710 nm against reagent blank. Quantity of ketoprofen was calculated by using respective calibration curves prepared in similiar manner using standard drug solution. Results of analysis are reported in Table-1.

TABLE-1
RESULTS OF ANALYSIS OF KETOPROFEN CAPSULES

Method	Tablet sample	Labelled amount (mg/cap)	% of label claim estimated*	Standard deviation
Method-I	A	50	97.52	0.496
	B	50	99.28	0.584
Method-II	A	50	97.84	0.673
	B	50	98.93	0.642

*Average of three determinations.

Recovery studies were carried out by addition of known standard drug solution to preanalysed sample solution at three different levels. Results of recovery are reported in Table-2.

TABLE-2
RESULTS OF RECOVERY STUDIES

S. No.	Conc. added (mg/mL)	Recovery mg/mL		% Recovery	
		Method-1	Method-II	Method-I	Method-II
1.	0.5	0.494	0.492	98.80	98.40
2.	1.0	0.987	0.991	98.70	99.10
3.	1.5	1.506	1.486	100.40	99.06

The proposed visible spectrophotometric methods for determination of ketoprofen from capsule formulations are simple, accurate, rapid and sensitive. These developed methods can be used for routine analysis of solid dosage forms of ketoprofen.

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(*Received*: 1 March 1998; *Accepted*: 15 June 1998) AJC-1534