Simultaneous Spectrophotometric Estimation of Meclozine Hydrochloride and Nicotinic acid from combined dosage form

S. B. BARI AND S. G. KASKHEDIKAR*
Dept. of Pharmacy, S. G. S. I. T. S. Campus.
23 Park Road, Indore 0 452 003 (M. P.)

Accepted 13 February 1998
Received 29 February 1996

A simple and rapid simultaneous spectrophotometric method for the estimation of meclozine hydrochloride (MH) and nicotinic acid (NA) in two component tablet formulation has been reported using multicomponent mode and five mixed standards. MH and NA show absorbance maxima at 230 nm and 261 nm respectively. Beer's law is obeyed by MH in the range of 0.0 to 12.5 mcg/ml and by NA in the range of 0.0 to 50 mcg/ml. The method has been validated statistically as well as through a recovery study.

MECLOZINE Hydrochloride (MH), chemically, dihydrochloride of 1 - (4-chlorobenzhydryl) -4 (3-methylbenzyl) piperazine has antihistaminic and antiemetic activity. The drug and tablets are official in I.P.[1], B.P.[2] and U.S.P.[3] The official compendia describes[1] non aqueous titrimetry for estimation of MH. Nicotinic acid (NA), chemically, 3-pyridine carboxylic acid commonly known as vitamin-B group has vasodilator effect too. It is official in I.P.[4], B.P.[5] and U.S.P.[6] The official compendia describes basic titrimetry for the estimation of NA.

The combination is not official but has been marketed as tablet formulation which contains 12.5 mg of MH and 50 mg of NA. Literature survey reveals a derivative spectroscopy method[7] for their estimation in combined dosage form. In the present work, we report simple, rapid and reliable method for the simultaneous analysis of the two components in tablets using the multicomponent mode of analysis in the UV-Visible recording spectrophotometer (Shimadzu Model : UV -160A).

Ten mg of each of MH and NA were weighed accurately and dissolved in 10 ml aqueous ethanol (95%) and diluted to 100 ml with distilled water to obtain standard stock solutions of 100 mcg/ml of MH and NA, respectively. Mixed standards were prepared on the basis of their ratio in formulation. The concentrations of the two components in the five mixed standards are 2.5, 5.0, 7.5, 10.0 and 12.5 mcg/ml of MH and 10.0, 20.0, 30.0, 40.0 and 50 mcg/ml of NA. All the mixed standard solutions were scanned over the range of 220 nm to 300 nm in the multicomponent mode using two sample points of 230 nm and 261 nm.

Twenty tablets were weighed and crushed to a fine powder. An accurately weighed powder sample equivalent to 50 mg of NA was transferred to a 100 ml volumetric flask and the powder was dissolved in 10 ml of aqueous ethanol (95%) and volume was made upto the mark with distilled water. The solution was then filtered through Whatman filter paper No. 42 and the solution was diluted to obtain a final concentration of 12.5 mcg/ml of MH and 50 mcg/ml of Na respectively. This sample was scanned over the range of 220 to 300 nm in the multicomponent mode and the concentration of each component was obtained by analysis of the spectral data of the sample solution with reference to that of standards. The results obtained by repeating the estimation procedure five times each with two different batches of tablets were observed to have good statistical parameters as shown in Table - 1. Recovery study was carried out by addition of different amounts of pure drugs to a preanalysed tablet sample solution and satisfactory recovery data was obtained which is tabulated in Table -2.

The present method is accurate, simple and quick for routine simultaneous estimation of the two drugs. After

*For correspondence

Table 1 : Result of Analysis of Commercial Tablet

Tablet Sample	Analyte	Label Claim mg/tab	Found* mg/tab	% of label Claim Found	Standard Deviation	Coefficient of variation	Standard Error
Batch - I	MH	12.50	12.64	101.15	0.768	0.756	0.343
	NA	50.00	50.59	101.19	0.766	0.756	0.342
Batch-II	MH	12.50	12.59	100.72	0.691	0.686	0.309
	NA	50.00	50.88	101.76	0.531	0.521	0.237

*Mean of Five determinations.

Tablet 2 : Recovery Study Data

Sr. No.	Amount of drug added µg/ml		Amount recovered µg/ml		% Recovery	
	MH	NA	MH	NA	MH	NA
1.	2.00	2.00	1.98	1.95	99.00	98.00
2.	4.00	4.00	3.94	3.93	98.50	98.25
3.	6.00	6.00	5.97	6.03	99.50	100.25
4.	8.00	8.00	8.08	7.93	101.00	99.72
5.	10.00	10.00	10.03	10.20	100.30	102.00

MH : Meclozine hydrochloride
NA : Nicotinic acid

several trials, the use of five mixed standards and two sampling wavelengths had been found to reduce interference among the two components. The statistical analysis of data and recovery study indicates that method is accurate and reproducible. Hence, this method can be adopted for routine analysis.

ACKNOWLEDGEMENT

The authors thank the University Grants Commission for financial assistance.

REFERENCES

1. **Indian Pharmacopoeia**, 3rd Ed, Vol-I, Govt. of India, Controller of Publications, Delhi, 1985, 298.
2. **The British Pharmacopoeia** Vol-I Her Majesty Stationary office, London, 1993, 405.
3. **The United States Pharmacopoeia/National Formularly** XXIII, Mack Publishing Co., Easton, 1992, 938,
4. **Indian Pharmacopoeia**, 3rd Ed, Vol-I, Govt. of India, Controller of Publications, Delhi, 1985, 333.
5. **The British Pharmacopoeia**, vol-I, Her Majesty Stationary office, London, 1980, 304.
6. **The United States Pharmacopoeia**, XXII, Mack Publishing Co., Easton, 1990, 344.
7. Gazi, U. ni **Eczacilik Fark Derg** 1990, 7, 77, Through **Analytical Abstract** 1991, 53, 11g.