

TABLE 1: RECOVERY EXPERIMENTS

Drug	Amount added ( $\mu\text{g}$ ) n=3	Amount recovered ( $\mu\text{g}$ ) n=3	Percent recovery	Average percent recovery
Rofecoxib	0.3591	0.3538	98.6	98.4
	0.5052	0.4959	98.2	
	0.6580	0.6468	98.3	
Paracetamol	7.0801	7.0701	99.9	99.3
	10.1202	9.9961	98.8	
	13.1312	13.0223	99.2	

Recovery experiment data for ROF and PAR showing the amounts of drug added and recovered from sample solution at each level (n=3), percentage recovery and the average percentage recovery. ROF stands for Rofecoxib and PAR stands for Paracetamol

combined dosage form containing rofecoxib and paracetamol in tablets.

#### REFERENCES

1. Indian Pharmacopoeia, The controller of Publications, New Delhi, 1996, 554.
2. British pharmacopoeia, General Medical Council, 1998, 743.
3. United States of Pharmacopoeia, US Pharmacopoeia Convention, 2003, 23, 16.
4. Mashru, R.C. and Banerjee, S.K., *Eastern Pharmacist*, 1998, 41, 141.
5. Raman, B. and Patil, D., *Indian Drugs*, 2000, 37, 437.
6. Mao, B., Abraham, A.G., Ellison, D.K. and Wyratt, J., *J. Pharm. Biomed. Anal.*, 2002, 28, 1101.
7. Woolf, E., Fu, I. and Matuszewski, B., *J. Chromatogr. B. Biomed. Sci. Appl.*, 1999, 730, 221.
8. Sodhi, R.A., Chawla, J.L. and Sane, R.T., *Indian Drugs*, 1996, 33, 280.
9. International Conference on Harmonization, Guidance for Industry In: Q2B Validation of analytical procedures, 1996, 2.

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## Spectrophotometric Determination of Repaglinide in Tablet Dosage Forms

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**A simple visible spectrophotometric method has been developed for the estimation of repaglinide in tablet formulations. Beer's law is obeyed in the concentration range of 5-50  $\mu\text{g}/\text{ml}$  of repaglinide. The method is simple, precise and accurate for pure analyte with recovery of 99.5-99.9%. It does not require any separation of soluble excipients present in tablets, as they do not interfere in the estimation.**

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Repaglinide, (S)-2-ethoxy-4-[2-[3-methyl-1-[2-(1-piperidiny) phenyl] butyl] amino]-2-oxoethyl]benzoic acid, is a fast and short-acting non-sulfonylurea type oral hypoglycemic agent used in the management of type 2 diabetes mellitus (NIDDM) before meal<sup>1</sup>. It belongs to a new chemical class of insulinotropic agents (secretagogues) called meglitinide analogs<sup>2</sup>. It was approved by FDA in December 1997 and became available in the US market in the spring of 1998. The repaglinide-induced insulin release requires the presence of functioning pancreatic  $\beta$ -cells and depends on the blood glucose level<sup>3</sup>. The insulin release diminishes as the glucose level declines. Repaglinide binds to specific receptors in the  $\beta$ -cell membrane leading to the closure of ATP-dependent  $K^+$ -channels and the depolarization of  $\beta$ -cell membrane. This, in turn, leads to  $Ca^{++}$  influx, increased intracellular  $Ca^{++}$  and the stimulation of insulin secretion<sup>4,5</sup>. Primarily the liver metabolizes repaglinide. Metabolites of the drug do not have a hypoglycaemic action<sup>6</sup>. It is available as tablets and the analytical method reported for its determination is based mainly on HPLC<sup>7</sup>. Therefore, the aim of the present investigation was to develop method for the determination of repaglinide in various dosage forms, which is simpler and cheaper as compared to HPLC method.

A Cintra 10, UV/Vis spectrometer with 1 cm matched quartz cells was used for absorbance measurement. Repaglinide was obtained as a gift sample from M/s Torrent Pharmaceuticals, Ahmedabad. All reagents used were of analytical grade. Tablets of two different brands viz. Rapilin of Aztec Pharma (division of Sun Pharma) and Eurepa of Torrent Pharmaceuticals were procured from pharmacy.

Repaglinide (10 mg) was accurately weighed and dissolved in 0.5 N HCl. The final volume was made up to 100 ml with 0.5 N HCl to obtain a concentration of 100  $\mu$ g/ml. This stock solution was used to prepare further standard solutions of drug. Aliquots (0.5-5.0 ml) of stock solution of repaglinide were transferred into a series of 10 ml volumetric flasks and volume was made up to the mark with 0.5 N HCl to give the concentration range from 5 to 50  $\mu$ g/ml. The absorbance was measured at 247 nm against the reagent blank.

The repaglinide content in two marketed brands of repaglinide tablets were determined. The tablet powder equivalent to 10 mg of repaglinide was accurately weighed and transferred to 100 ml volumetric flask. About 40 ml of 0.5 N HCl was added to the flask and sonicated for 15 min. The solution was filtered through Whatman filter paper No. 41. The filter paper was washed with 0.5 N HCl. The washings were added to the filtrate and the final volume was made up to 100 ml with 0.5 N HCl. After suitable dilution, the absorbance of the sample solution was recorded at 247 nm. The drug content in the sample was then calculated from the calibration curve.

A linear curve was constructed between the absorbance and concentration and the equation of line was obtained which is  $Y=0.021X-0.0076$  with correlation coefficient of 0.9999. This indicates a good linearity between absorbance and concentration. The optical characteristics such as Beer's law limits 5-50  $\mu$ g/ml, molar absorptivity  $9.28 \times 10^3$  l/mol.cm, Sandell's sensitivity  $4.85 \times 10^{-5}$   $\mu$ g/cm<sup>2</sup>/0.001 absorbance unit and optimum photometric range 5-40  $\mu$ g/ml were determined.

The proposed method was successfully applied for the analysis of repaglinide in its two marketed tablets (Rapilin and Eurepa). It was observed that the excipients did not interfere in the determination of repaglinide. Reproducibility of method was checked by recovery studies and the results were found to be close to 100% and the values of standard deviation were negligibly low (Table 1). The authors conclude that the proposed spectrophotometric method for the estimation of repaglinide is simple and sensitive and can be applied to dosage forms also.

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TABLE 1: ANALYSIS AND RECOVERY STUDIES

Formulation	Label claim (mg/tab)	Amount found (mg/tab)	% label claim* $\pm$ sd	Standard error	% Recovery
Rapilin (Sun)	2.0	1.98	99.0 $\pm$ 0.71	0.006	99.9
Eurepa (Torrent)	2.0	2.02	101.0 $\pm$ 0.27	0.002	99.5

\* Mean of five determinations.

## REFERENCES

1. Mark, M. and Grell, W., *Brit. J. Pharmacol.*, 1997, 121, 1597.
2. Davis, S.N. and Granner, D.K., In; Hardman, J.G. and Limbrid, L.E., Eds; Goodman and Gilman's The Pharmacological Basis of Therapeutics, 10th Edn., McGraw-Hill Medical Publishing Division, USA, 1996, 1704.
3. Malaisse, W.J., *Horm. Metab. Res.*, 1995, 27, 263.
4. Wolffenbuttel, B.H.R., *The Nether. J. Med.*, 1999, 55, 229.
5. Fuhlendorff, J., Carr, R., Kofod, H. and Rorsman, P., *Pharmacol. Res.*, 1995, 31, 32.
6. Culy, C.R. and Jarvis, B., *Drugs*, 2001, 61, 1625.
7. Krishna Reddy, K.V.S.R., Babu, J.M., Mathad, V.T., Eswaraiah, S., Reddy, M.S., Dubey, P.K. and Vyas, K., *J. Pharm. Biomed. Anal.*, 2003, 33, 1.

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## Antiinflammatory Activity of the Leaves of *Nothapodytes foetida*, Miers

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To study the antiinflammatory activity of *Nothapodytes foetida*, Miers using Wistar rats of either sex, the leaves of *Nothapodytes foetida* were extracted using petroleum ether and then with ethanol for 72 h each. Both the extracts were in 3 dose levels of 50 mg/kg, 100 mg/kg and 200 mg/kg. Antiinflammatory activity of the extracts was studied by carrageenan-induced hind paw edema in rats and the paw measured plethysmometrically at 0, 2 and 4 h after injection. The activities of the extracts were compared with control and standard, ibuprofen. All the drugs were administered orally. When compared to the petroleum ether extract the antiinflammatory activity of ethanolic extract was found to be effective and 200 mg/kg dose of ethanolic extract significantly ( $P < 0.01$ ) reduced the inflammation, which was comparable with that of the standard, ibuprofen.

The aerial parts of the plant *Nothapodytes foetida*, Miers, family (Icacinaceae) were used as anti fungal, anti-bacterial<sup>1</sup> and anti cancer<sup>2</sup>. The main constituent of plant was found to be alkaloids<sup>3</sup>. According to the local healers, the leaves of the plants have antiinflammatory activity. Since there is less information regarding this plant, qualitative chemical tests were performed and to confirm the tribal claim, antiinflammatory study was carried out using petroleum ether (60-80°) and ethanolic extracts of leaves.

The aerial parts of fresh *Nothapodytes foetida* were collected, identified and authenticated by taxonomist in the

survey of medicinal plants and collection unit, Udagamandalam. The air dried and powdered leaves of *Nothapodytes foetida* were extracted with petroleum ether (60-80°) and then with ethanol in soxhlet apparatus for 72 h each. The extracts obtained were made solvent free by distillation.

The phytoconstituents in the extracts were identified by treating the extracts with various chemical reagents<sup>4</sup>. The antiinflammatory activity of petroleum ether and ethanol extracts of *Nothapodytes foetida*, Miers was evaluated in Wistar rats of either sex weighing between 180-220 g using carrageenan-induced rat paw oedema method<sup>5</sup>. The study design was approved by Institutional Animal Ethics Committee (IAEC). The animals were fed with standard labora-

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