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A Colorimetric Assay Method for Nabumetone

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A simple spectrophotometric method has been developed for the estimation of nabumetone in pure and pharmaceutical dosage forms. In this method, the drug is made to react with ferric chloride and 1,10-phenanthroline when a red complex is formed. The chromogen can be estimated at 517 nm against a reagent blank. The method obeys Beer's law in the concentration range of 1-5 μg/ml of the drug.

Nabumetone[1] (4-(6-methoxy-2-naphthalenyl)-2-butanone) is a non-steroid anti-inflammatory drug mainly used in the treatment of rheumatoid and osteoarthritis[2]. So far, a few HPLC[3,4] and colorimetric[5] methods have been reported for the assay of nabumetone in pure and various dosage forms. The authors describe a new sensitive colorimetric method for the assay of the drug.

All the chemicals used in the assay were of analytical grade. Solutions of ferric chloride (0.9%) and 1,10-phenanthroline (0.1 M) were prepared in distilled water. Spectral and absorbance measurements were made on a Systronics UV/vis spectrophotometer. An appropriate amount of nabumetone was accurately weighed and dissolved in 100 ml of methanol to obtain a working standard solution of 50 μg/ml.

Aliquots of the working standard solution ranging from 0.2-1.0 ml were transferred into a series of 10-ml of volumetric flasks. To each of the flasks, 0.5 ml of ferric chloride and 1.5 ml of 1,10-phenanthroline solutions were successively added and the final volume was brought to 10 ml with methanol. The absorbance of the blood red colored species obtained in each tube was measured at 517 nm against a reagent blank and the corresponding calibration curve was plotted. The optical characteristics for the method were calculated and the values obtained are summarized in Table 1. For the determination of the drug in tablets by the above method, the sample solution was prepared by extracting appropriate amount of the powder of the tablets of Nabuflam of M/s Microlabs Ltd. (each containing 500 mg of

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nabumetone) into 100 ml methanol. The sample solutions were also treated as above and the absorbances of the complex formed were noted. The amount of the drug in the sample was found out by using the standard calibration curve. The average percentage drug recovery value for the method was found to be 99.9. Lactose, starch and magnesium stearate, the usual excipients and additives did not interfere in the proposed method. Thus, the method can be employed for routine determination of the drug in pure and dosage forms. The blood red color formed is due to complexation of Fe(II) ion [formed by reaction of nabumetone with Fe(III)] with 1,10-Phenanthroline. Three molecules of 1,10-Phenanthroline attach themselves to the metal ion to form a ferroin complex.

TABLE 1: OPTICAL AND PRECISION DATA OF THE METHOD.

Parameters	
Beer's law limit (μg/ml)	1-5
Molar absorptivity (l/mol/cm)	3.2341×10^4
Sandell's sensitivity ($\mu g/cm^2$/0.001 absorbance unit)	0.0070
Regression equation (Y=a+bC)*	
Slope (b)	0.1425
Intercept (a)	-0.0029
Correlation coefficient (r)	0.9999
Relative standard deviation (%)	0.6861
% Range of error	
at 95% confidence limit	0.5736
at 99% confidence limit	0.8487

*where C is concentration (μg/ml) and Y is absorbance.

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Phytochemical Investigation of Pseudobulbs of *Desmotrichum fimbriatum* Blume.

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The ethanolic extract of the pseudobulbs of *Desmotrichum fimbriatum* Blume yielded four new hydrocarbons along with stearic acid. The structures of the phytoconstituents have been established as 18-cyclohexyl-n-octadecane, 24-cyclohexyl-n-tetracosane, n-heneicosayl-1-propionate, and 23-cyclohexyl n-tricosanyl-1-propionate.

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