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Comparative Study of Estimation of Asprine from Commercial Sample by UV – Visible Spectrophotometer and Hplc Method

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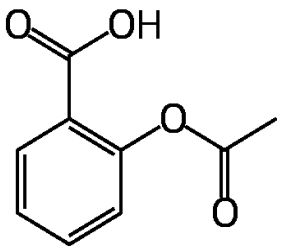
Abstract: *Simple and accurate spectrophotometric and HPLC method was developed for determination of Aspirin in tablets dosage form. The spectrophotometric method was by dissolving tablets in 1:1 methanol to make solution of 10 ppm giving absorbance at 220 nm. The experimental conditions were optimized and Beers law was obeyed over the applicable concentration range. The application of HPLC procedure depends on using a conventional reverse phase (C18) column along with mobile phase consisting of 1:1 Methanol. Both techniques were applied successfully for analysis of Aspirin in five different commercially available tablets. From the results obtained for both procedures percentage purity was found out.*
Key Words: *Aspirin, spectrophotometric, HPLC method, Methanol*

I. Introduction

Aspirin is commonly encountered organic poison after Barbiturates. The lethal dose for an adult is very large but much more dangerous to children, who are fatally poisoned by it with distressing frequency. Its identification in fatal cases is easy because its low toxicity means that plenty will be recovered. Aspirine overdose causes hypertension which cause patients PCo2 drop from normal limits. The body will try to compensate for this by excreting bicarbonates which result in increase inpH blood levels. If this is not corrected it will lead to metabolic alkalosis.(1) Literature survey showed number of method of analysis for the detection of presence of salicylic acid and Acetyl salicylic acid in delayed release aspirin tablet by second derivative UV spectrophotometer.(2).Similarly Asprine and paracetamol by UV spectrophotometer(3), There was successful investigation of of salicylic acid by electrochemical oxidation on a glassy carbon electrode using cyclic voltammetry and differential pulse voltammetric (DPV) method (4). Aspirin, Paracetamol, Caffeine, and Chlorphenamine Using Multivariate Regression Methods by spectrophotometer , Acetylsalicylic acid, paracetamol, caffeine and phenobarbital by HPLC Method(5,6). But there was a need to develop rapid method for detection of presence of Asprine quantitatively which require fewer chemicals and less man powar.The method was developed using differently commercially available drug sample which are usually prescribed or bought over the counter.



Acetylsalicylic acid

II. Material And Methods

: 1) HPLC - An Agilent 1100 liquid chromatograph equipped with a G 1322A Degassar, G1311AQuatrz form and DAD1315D detector was used for chromatographic measurements. The chromatograms were recorded and the peaks were quantities using automatic integrator.
2) UV-Visible spectrophotometer
3) Preparation of standard solutions
For spectrophotometric determination –Standard solution of Aspirin was prepared of 100 ppm concentration. Using that standard solution a series of dilutions ranging from 4 ppm to 20 ppm were prepared.
For HPLC determination –Standard solution of Aspirin was prepared of 1000 ppm concentration. Using that standard solution a series of dilutions ranging from 40 ppm to 200 ppm were prepared.
4) 1:1 methanol
5) Tablets Taken For Analysis

Table No.1

Name of Samples	Name of manufacturer	Batch number	Amount of Asprine per tablet
Disprine	Reckitt Benckiser (India) Ltd	M01085	350mg
Ecosprine	Kalindi Medicure Pvt Ltd	DLS-10012	75mg
Loprine	Benkiser (India)	A-025	75mg
Delsprine	USV LTD	13004136	75mg
ADR	Zydus Health Care	ZHK 3560	50mg

6) Preparation Of Sample Solution For Analysis by Uv – Visible spectrophotometer

For Spectrophotometric determination the contents of ten tablet strip was accurately weighed and powdered in a mortar. Exact 10 mg of sample was taken in 25 ml volumetric flask and diluted with 1:1Methanol. The solution was mechanically shaken and then filtered through membrane filter. As per Table no. 2 according to Aspirin present in given sample the corresponding volume was taken and volume made up to 25ml by 1:1 Methanol to get solution of 10 ppm of each sample.

Table No.2

Sample	Wt. of sample tablet (Mg)	Asprine present in tablet (mg)	First dilution (ml)	Concentration of solution (ppm)	Volume required for final dilution (ml)	Final dilution (ml)	Final concentration (ppm)
Disprine	10	6.48	25	259.20	0.96	25	10
Ecosprine	10	7.97	25	319.12	0.78	25	10
Loprine	10	3.56	25	142.48	1.75	25	10
Delsprine	10	6.81	25	272.72	0.92	25	10
ADR	10	3.72	25	149.03	1.68	25	10

7) Preparation Of Sample Solution For Analysis by HPLC

For HPLC determination the contents of ten tablet strip was accyrately weighed and powdered in a morter. Exact 100 mg of sample was aken in 25 ml volumetric flask and diluted with 1:1Methanol. The solution was mechanically shaken and then filtered through membrane filter . As per Table no. 2 according to Asprine present in given sample the corresponding volume was taken and volume made upto 25ml by 1:1 Methanol to get solution of 80 ppm of each sample.

Table No.3

Sample	Wt. of sample tablet (Mg)	Asprine present in tablet (mg)	First dilution (ml)	Concentration of solution (ppm)	Volume required for final dilution (ml)	Final dilution (ml)	Final concentration (ppm)
Disprine	100	64.70	25	2588	0.77	25	80
Ecosprine	100	79.78	25	3191	0.63	25	80
Loprine	100	35.62	25	1424	1.40	25	80
Delsprine	100	68.18	25	2727	0.73	25	80
ADR	100	37.25	25	1490	1.34	25	80

III. Result And Discussion:

Analysis By Uv And Visible Spectrophotometer.

For UV-visible spectrophotometer the λmax value for standard solution was found to be 220nm.The calibration graph when plotted using different concentration of Aspirin sample was found to be straight line passing through origin obeying Beer's law. Using this calibration graph values for samples were found out which are depicted in table no. 4. They were all found in range using their values percentage recovery was calculated which was found to be in range as shown in table no.4,

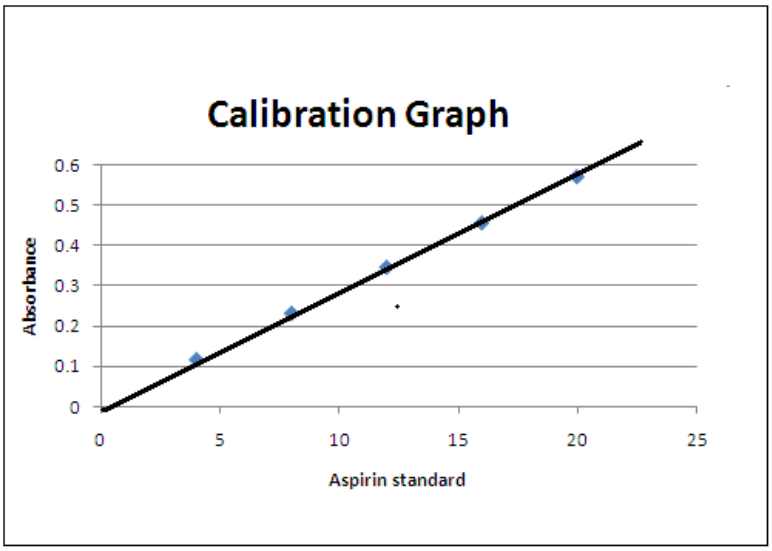


Table No.4

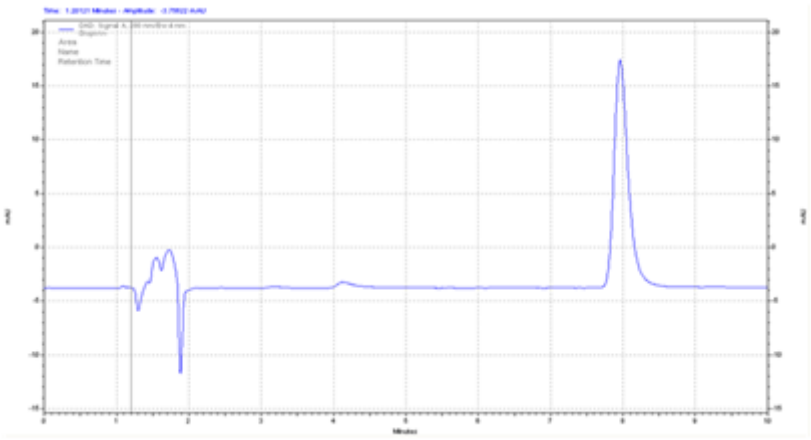
Sample	Concentration ppm	Absorbance at 220nm (OD)	% Assay	Label claim on sample	% Recovery
Disprine	10	0.2779	341.9	350	97.70
Ecosprine	10	0.2802	74.05	75	98.73
Loprine	10	0.2760	72.63	75	96.85
Delsprine	10	0.2841	74.81	75	99.75
ADR	10	0.2799	49.11	50	98.22

Analysis By Hplc Method

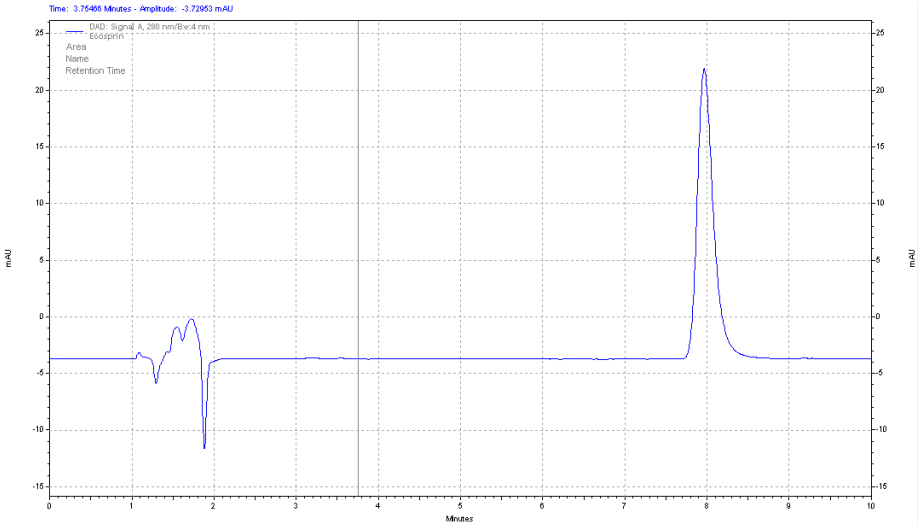
Sample	Concentration ppm	Area at 280nm (mAu)	% Assay	Label claim on sample	% Recovery
Disprine	80	821532	342.33	350	97.80
Ecosprine	80	830379	74.15	75	98.86
Loprine	80	810298	72.30	75	96.40
Delsprine	80	832454	74.30	75	99.07
ADR	80	823974	49.01	50	98.02

$$\% \text{ Assay} = \frac{\text{OD of sample}}{\text{OD of std}} \times \frac{\text{std weight}}{\text{first dilution}} \times \frac{\text{vol of std solu required}}{\text{final dilu. Of std}} \times \frac{\text{dilu. of sampl}}{\text{aspirine pres in samp}} \times \text{Avg wt ofsample}$$

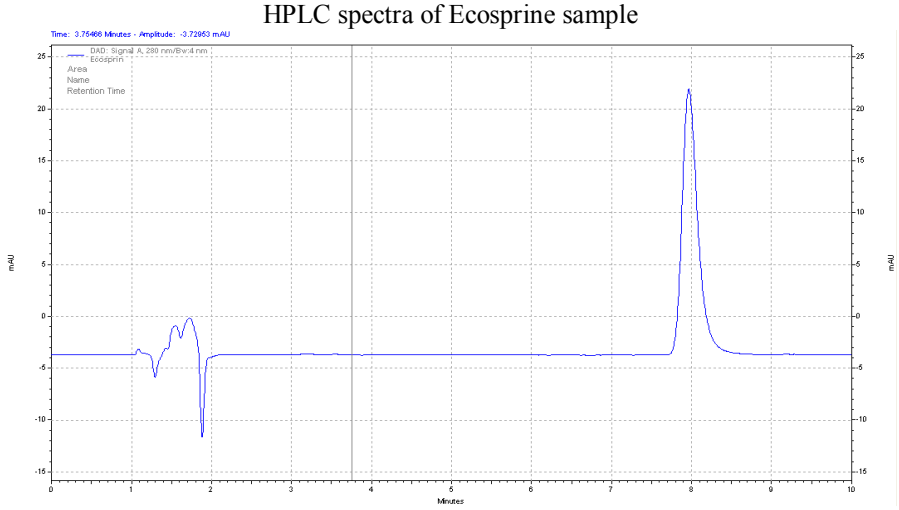
$$\% \text{ Recovery} = \frac{\% \text{ Assay}}{\text{Lable claim on sample}} \times 100$$



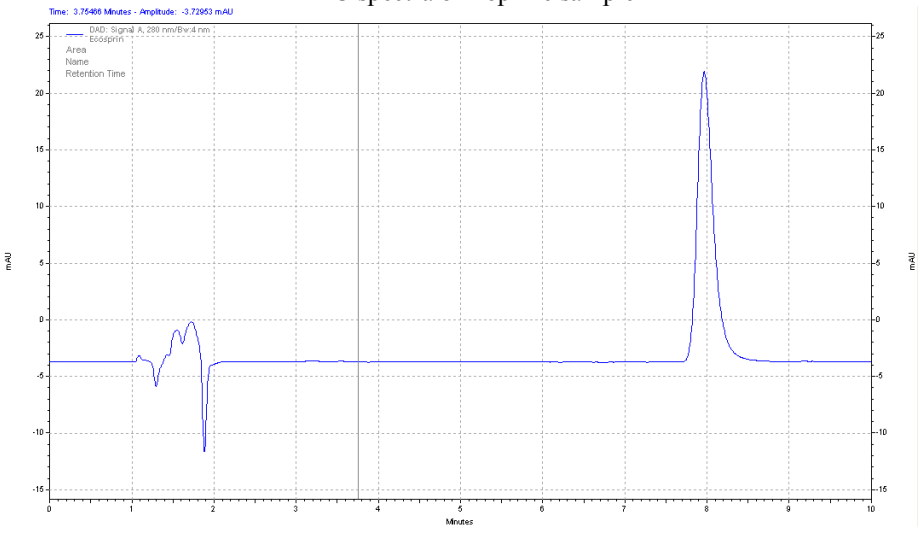
HPLC Spectra of Disprin Sample



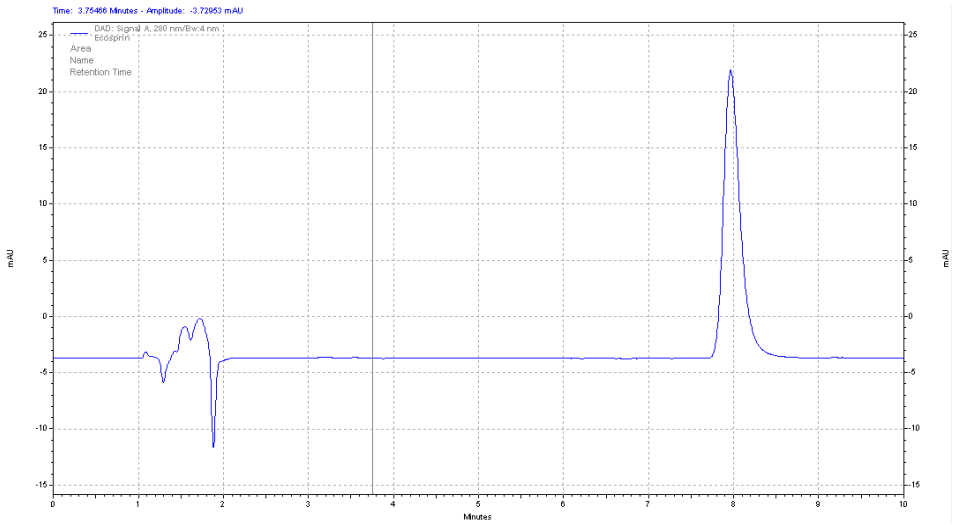
HPLC spectra of Ecosprine sample



HPLC spectra of Loprine sample



HPLC spectra of Delsprine sample



HPLC spectra of ADR Sample

IV. Conclusion

Despite the number of methods described by different researchers for analysis of acetyl salicylic acid, the proposed UV-VISIBLE Spectrophotpmetric method and HPLC method for determination of acetyl salicylic acid in pharmaceutical samples is simple and rapid than other sophisticated instruments. All the samples analyzed were within the range as prescribed on tablet. These methods are very appropriate for routine analysis of active drugs in the laboratories. The procedures are easy to execute and require less sample handling than methods described in the literature. The following table gives the summary of result.

Table No.5

Sample	% Recovery Of Asprine By Uv-Visible Spectrophotometry Method	% Recovery Of Asprine By HPLC Method
Disprine	97.70	97.80
Ecosprine	98.73	98.86
Loprine	96.85	96.40
Delsprine	99.75	99.07
ADR	98.22	98.02

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