

COMPARATIVE STUDY OF ASPIRIN IN DIFFERENT PHARMACEUTICAL SAMPLES

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ABSTRACT

A comparative study of aspirin content in tablets A.S.A., anacin, loprin, disprin, micropyrin, aspro, E. prin and ecosprin has been made.

Key words : Aspirin, Comparative study

INTRODUCTION

Physiologically, pain is a specific distressing sensation excited by noxious stimuli of sufficient intensity acting on nerve endings in the skin, muscles, bones, joints, etc. It is recognized as a warning signal of danger to the organism. The clinical control of pain is dealt with under the group of medicine namely analgesics and antipyretics. Analgesics are agents, which relieve pain by acting centrally to elevate pain while antipyretics are drugs, which reduce elevated body temperature. Hence, drugs, which exhibit one or both of these actions, are considered under this topic.

EXPERIMENTAL

Materials and Methods

The commercial aspirin samples used for the present study are listed in Table.1

Table 1

Tablets	Produced by	Content
Disprin	Reckitt & Conlman of India Ltd.	Aspirin IP -350 mg CaCO ₃ IP-105 mg Anhydrous citric acid IP-35 mg
Ecosprin	Sidmak Lab (India) Ltd.	Aspirin IP - 150 mg
A.S.A.	German Remedies Ltd.	A.S.A. IP - 50 mg
Anacin	Geofrey Manners & Co. Ltd.	A.S.A. IP-400 mg Caffeine IP-30 mg
Loprin	M.M. Labs Marketed by Unisearch	A.S.A. IP - 75 mg
Aspro	Nicholas Lab Ltd.	A.S.A. IP-350 mg Caffeine IP - 20 mg
E.prin	Elder Pharmaceuticals Ltd.	Aspirin IP - 150 mg
Micropyrin	Nicholas Lab Ltd.	A.S.A. IP - 350 mg Caffeine IP - 30 mg

The samples were analysed for thermal degradation and aspirin content by methods as described by Lochman et al. ² and I.P. ³, respectively.

RESULTS AND DISCUSSION

Tha aspirin samples were subjected to study for their thermal degradation and the amount of aspirin content in the tablets at different temperatures. The results are given in Table 2 and 3, respectively.

Table 2. Thermal Degradation

Samples	Day	Amount of aspirin in table at			
		Room Temperature	40°C	60°C	80°C
A.S.A.	1 st	50.55	50.20	50.05	49.75
	2 nd	50.55	50.00	49.90	49.75
	3 rd	50.55	49.88	49.65	49.25
	4 th	50.55	49.78	49.35	49.14
	5 th	50.55	49.50	49.00	48.90
Loprin	1 st	75.00	73.85	73.10	72.75
	2 nd	75.00	73.00	72.80	72.15
	3 rd	75.00	72.75	72.55	71.85
	4 th	75.00	72.25	72.00	71.55
	5 th	75.00	72.00	71.85	71.00
Anacin	1 st	400.00	398.00	394.75	392.85
	2 nd	400.00	396.00	393.00	390.00
	3 rd	400.00	395.00	390.50	388.25
	4 th	400.00	393.00	388.55	396.17
	5 th	400.00	391.00	385.00	384.20
Disprin	1 st	340.00	339.50	338.30	335.00
	2 nd	340.00	338.40	335.20	330.10
	3 rd	340.00	337.60	330.30	323.00
	4 th	340.00	335.30	328.03	320.00
	5 th	340.00	331.36	322.03	318.03
Ecosprin	1 st	150.00	148.75	146.36	144.35
	2 nd	150.00	146.75	145.36	143.83
	3 rd	150.00	146.38	144.83	141.63
	4 th	150.00	144.25	140.78	138.08
	5 th	150.00	140.38	135.08	133.05
Aspro	4 th	368.78	366.02	365.52	361.46
	7 th	368.78	364.36	361.74	357.02

	10 th	368.78	361.87	358.35	351.81
	13 th	368.78	359.34	354.84	343.34
	18 th	368.78	346.14	339.14	333.28
E.Prin	4 th	150.00	150.00	148.75	146.25
	7 th	150.00	146.70	146.75	141.70
	10 th	150.00	146.35	143.87	136.18
	13 th	150.00	144.55	140.25	129.75
	18 th	150.00	140.85	135.15	118.87
Micropyrin	4 th	378.69	378.14	376.72	372.54
	7 th	378.69	376.26	372.29	366.07
	10 th	378.69	373.14	369.14	361.20
	13 th	378.69	371.50	361.26	354.18
	18 th	378.69	369.47	360.12	343.18

Table 3. Estimation of aspirin content

S.No.	Samples	Wt. of tablet in mg	Amount of aspirin present in mg	Deviation from the limit	Standard deviation	Mean deviation
1.	A.S.A.	76.50	50.50	0	0	0
		75.45	49.67	0		
		75.55	49.70	0		
		76.80	50.55	0		
		76.76	51.25	0		
		76.95	50.85	0		
		75.85	49.95	0		
		76.75	50.95	0		
2.	Anacin	498.00	415.67	0	0.125	0.445
		492.30	418.50	0		
		495.30	419.65	0		
		492.62	410.55	0		
		497.75	418.61	0		
		498.70	420.95	0.95		
		497.85	421.00	1.00		
		498.70	421.61	1.61		
3.	Loprin	110.50	78.00	0	0.845	1.203
		100.60	78.65	0		
		100.85	79.55	0.80		
		100.60	80.75	20.00		
		100.95	79.88	1.13		
		105.65	80.95	2.20		

		105.95 105.00	80.55 80.95	1.80 1.70		
4.	Disprin	495.03 495.63 495.83 495.04 495.63 495.83 495.63 495.60	377.80 373.63 369.83 366.80 365.83 366.88 346.60 364.30	10.30 6.13 2.33 0 0 0 0 0	2.0639	1.876
5.	Ecosprin	195.03 194.04 193.80 198.60 193.60 193.60 193.08 194.83	163.83 155.60 168.30 169.30 155.08 153.98 158.60 144.60	6.33 0 10.80 11.80 0 0 1.10 0	3.0532	3.003
6.	Aspro	460.53 453.68 462.25 460.00 467.60 475.00 474.00 371.70	377.77 370.66 372.97 374.54 365.33 370.10 367.80 367.97	10.27 3.16 5.47 7.04 0 2.60 0.30 0.47	3.322	3.051
7.	E.Prin	195.75 192.88 203.14 192.80 191.50 194.00 198.50 198.80	169.16 161.83 159.90 150.30 150.00 149.36 149.50 152.50	11.66 4.33 2.40 0 0 0 0 0	3.542	1.833
8.	Micropyrin	461.70 452.90 469.67 466.00 470.90 470.50 475.10 473.49	374.58 363.11 374.33 367.60 373.51 372.59 372.80 372.30	7.08 0 6.83 0.10 6.01 5.09 5.30 4.80	2.474	4.305

From the Table 2, it is clear that the thermal degradation of aspirin increases with increase in temperature. Hence the thermal stability of these samples is as follows:

A.S.A. > Anacin > Loprin > Disprin > Micropyrin > Aspro > Ecosprin > E.prin.

From the Table 3, it is clear that in A.S.A., loprin, anacin, disprin, ecosprin, aspro, E.prin and micropyrin the maximum amount of aspirin determined are 52.5, 78.75, 420, 367.5, 157.5, 367.5, 157.5 and 367.5 mg, respectively, whereas the minimum amount of aspirin determined are 47.5, 71.25, 380.0, 332.5, 142, 332.5, 142.5, and 332.5, respectively.

On the basis of above discussions, the selected pharmaceutical samples can be ranked for their aspirin content as :

A.S.A. > Anacin > Loprin > Disprin > E.prin > Ecosprin > Aspro > Micropyrin

The result shows that in anacin, disprin, ecosprin and aspro there is slightly more aspirin content than the normal value; E.prin, micropyrin and loprin deviate from the prescribed maximum limit whereas A.S.A is in good agreement as prescribed in the specification (According to pharmacopoeia of India)⁴.

CONCLUSION

On the basis of above discussions, these drugs can be graded as given in Table 4.

Table - 4

	RANK Criteria	1	2	3	4	5	6	7	8
1.	Thermal degradation	A.S.A	Anacin	Loprin	Disprin	Micro -pyrin	Aspro	Ecosprin	E.prin
2.	Amount of aspirin content	A.S.A.	Anacin	Loprin	Disprin	E.prin	Ecosprin	Aspro	Mirco pyrin

A.S.A.	-	1 + 1 = 2				Anacin	-	2 + 2 = 4	
Loprin	-	3 + 3 = 6				Disprin	-	4 + 4 = 8	
Micropyrin	-	5 + 8 = 13				Aspron	-	6 + 7 = 13	
Ecosprin	-	7 + 6 = 13				E.Prin	-	8 + 5 = 13	

Overall grading -

A.S.A. > Anacin > Loprin > Disprin > Micropyrin = Aspro = Ecosprin = E.Prin

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Accepted : 25.6.2003