ORIGINAL ARTICLE

Studies to evaluate the effect of Seeds of Mirabilis Jalapa on Blood Clotting and Bleeding time in Rabbit

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ABSTRACT

Objectives: Mirabilis Jalapa belongs to the family nyctaginaceae. It is cultivated in West Indies and India. It has five varieties. Red and yellow flowers were introduced from the West Indies in 1596. Shortly afterwards it was introduced to Persia in the reign of Shah Abbas and was named Gul-e-Abbas.

Method: The study was performed to find out its efficacy in bleeding and clotting time. For this purpose three groups of rabbits were made, one control, 2nd test group with low dose, 3rd test group with high dose. The study period was 60 days.

Results: Result showed of clotting and bleeding time, PT (Prothrombin time) in control group was 9.0±0.29 seconds, in test group with low dose it was 9.2±0.32 and with high dose it was 8.7±0.24 with P value 0.396. APTT (Activated partial thromboplastim time. It was 25.2±0.46 seconds in control group and in test group it was with low dose 26.9±0.65 with high dose it was 23.4±0.65 with P value 0.002. BT (Bleeding time) it was 95.6±3.17 seconds in control group, it was 88.9±1.62 with low dose and it was 79.1±2.03 seconds with high dose with P value 0.001. CT (Clotting time) it was 103.9±5.12 seconds in control group it was 121.7±7.02 with low dose. It was 115.0±5.46 seconds with high dose with P value 0.122 (Table 2). During the study period of 60 days, no animal died and no animal behaved abnormally. The herbal drug mirabilis Jalapa is effective in blood disorders leading to certain diseases causing bleeding. However further studies are recommended.

Key words: Mirabilis Jalapa, clotting time, bleeding time.

INTRODUCTION

Mirabilis Jalapa belongs to the family nyctaginaceae, it is cultivated in West Indies & India. It has five varieties, red, white, yellow, red and white. Red and yellow flowers were introduced from the West Indies in 1596, shortly afterwards it was carried to East the plant was introduced to Persia in the reign of Shah Abbas and was named Gul-e-Abbas[1].

Gul-e-Abbas (Mirabilis Jalapa) is utilized to cure a variety of aliments, root is purgative, aphrodisiac, Seeds as astringent and styptic, administered to stop internal hemorrhages particularly excessive bleeding in menorrhagia. Flowers are dried and powdered and given to relieve piles[2]. The literature regarding mirabilis Jalapa is scanty, however in some books as in Kitabul mufradat has been shown to have antihaemorrhagic activity[3].

Mirabilis Jalapa has been tried to find out antinociceptive activity in mice. The results demonstrate to have analgesic activity which support the foloric uses as analgesic activity[4].

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Mirabilis jalapa extract has shown the significant activity against biofilm and extended spectrum of betalactamase producing uropathogenic eschericia coli[5]. Ethanolic extract of mirabilis jalapa root was found to lower blood glucose significantly and to reduce the increased level of triglycerides total cholesterol and LDL – cholesterol[6]. Experimental results have established a pharmacological evidence for the folklore claim of the drug to be used as an antinflammatory agent[7]. Antibacterial activity of mirabilis jalapa seed powder was found[8].

MATERIALS AND METHOD

The study was performed in the department of Pharmacology of Baqai Medical College, Baqai Medical University, Karachi. For this study rabbits of either sex were selected, they were kept in groups of 9, there were made three groups one for control 9 animals 2nd test group of 9 animals for low dose, 3rd test group of 9 animals for high dose (Total animals 27). The study period was of sixty days. The dose of the drug was calculated according to weight of the animals as shown in table 1. The literature regarding the dose is scanty, the dose as mentioned in a book[2], 7–12Gm leaves and root / per day for human body

was made a guide line, on the bases of men's dose. Accordingly the calculated dose remained 250mg/kilo gram body weight as a small dose and 500 mg/kg as high dose. The duration of this study was 60 days. All three groups were kept under observation one control, other two small dose & high dose. The drug in the form of powder was administered orally once daily to each animal of test groups by a syringe after making a mixture of drug in water.

Bleeding time: For bleeding time spirit swab, lancet, filter paper and stop watch were available.

Procedure: Ear of rabbit was cleaned, deep puncture with lancet was done and stop watch was started, blood flowed itself the drop was blotted at every 30 seconds. The drop became progressively smaller. When bleeding ceased stop watch was kept off, the time taken to stop bleeding was noted. The procedure was performed on animals of control and animals of test groups of low dose and high dose.

Clotting time: Spirit swab, Lancet, capillary tube and stop watch.

Procedure: Deep skin puncture with lancet was done, blood was taken into capillary tube stop watch was started. Formation of fibrin string has been noted by breaking capillary tube at regular intervals.

Time taken for first appearance of fibrin string was noted and stop watch was put off and the readings were tabulated for 9 animals of control and 9 animals for test group of low dose and high dose.

RESULTS AND OBSERVATIONS

PT (Prothrombin time) in control group was 9.0±0.29 seconds, in test group with low dose it was 9.2±0.32 and with high dose it was 8.7±0.24 with P value 0.396. APTT (Activated partial thromboplastim time. It was 25.2±0.46 seconds in control group and in test group it was 26.9±0.65 with high dose it was 23.4±0.65 with P value 0.002. BT (Bleeding time) it was 95.6±3.17 seconds in control group, it was 88.9±1.62 with low dose and it was 79.1±2.03 seconds with high dose with P value 0.001. CT (Clothing time) it was 103.9±5.12 second in control group it was 121.7±7.02 with low dose. It was 115.0±5.46 1second with high dose with P value 0.122. (Table 2)

Table 1: Weight of the animals (Rabbits):

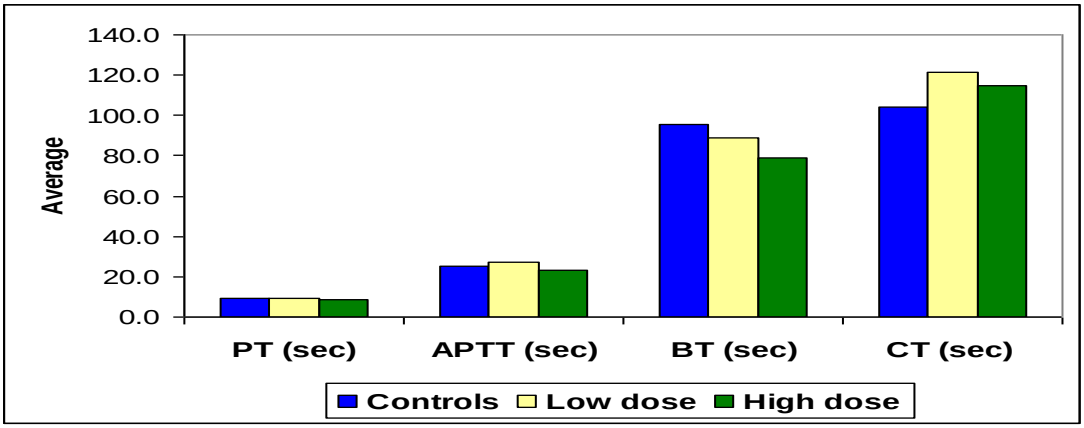
	Controls (n=9)	Mirabilis Jalapa		P-value
		Low dose (n=9)	High dose(n=9)	
	Mean ± SEM	Mean ± SEM	Mean ± SEM	
Weight in grams	1285 ± 40.8	1249 ± 23.5	1459 ± 37.9 ¨	0.001

Table 2:Comparison of Biochemical parameters of Controls with Test groups (Low dose & high dose of Mirabilis Jalapa) in rabbits:

Bio-chemical parameters	Controls (n=9)	Mirabilis Jalapa		P-value
		Low dose (n=9)	High dose(n=9)	
	Mean ± SEM	Mean ± SEM	Mean ± SEM	
PT (seconds)	9.0 ± 0.29	9.2 ± 0.32	8.7 ± 0.24	0.396
APTT (seconds)	25.2 ± 0.46	26.9 ± 0.65 †	23.4 ± 0.65	0.002
BT (seconds)	95.6 ± 3.17 * †	88.9 ± 1.62 †	79.1 ± 2.03	0.001
CT (seconds)	103.9 ± 5.12	121.7 ± 7.02	115.0 ± 5.46	0.122

** Significant as compared to low dose p<0.01,* *† Significant as compared to high dose p<0.01*

Fig.1: Comparison of Blood parameter [Prothrombin time (PT), Activated Partial Thromboplastin Time (APTT), Bleeding Time (BT) and Clotting Time (CT) in seconds in controls with test groups (Low dose & high dose of Mirabilis Jalapa) in Rabbits



Observations: During the study period of 60 days, no animal died and no animal behaved abnormally.

DISCUSSION

There are large numbers of studies on herbs regarding pharmacology but on mirabilis Jalapa the literature is scanty how ever there are some studies as antispasmodic activity of mirabilis Jalapa. The peoples of Mexico use mirabilis Jalapa for dysentery, diarrhoca, muscular pain and abdominal inhibitory effect on smooth muscles contractility whereas it stimulates contraction of rabbits aortic muscle[9].

Mirabilis Jalapa has been tried to find out antinociceptive activity in mice. The results demonstrate to have analgesic activity which supports the foloric use as an analgesic[4]. Mirabilis Jalapa has been found to stop haemorrhages as mentioned[3].

According to our study as shown in table-2 Prothrombin time decreased with high dose as compared to control. Activated partial thromboplastin time decreased with high dose as compared to control. Bleeding time was decreased with high dose as compared to control. Clotting time increased with high dose. Mirabilis jalapa roots have been found to have antiviral activity[10].

CONCLUSION

The herbal drug mirabilis Jalapa is effective in blood disorders leading to certain diseases causing bleeding. However further studies are recommended.

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