Original Article

Evaluate the Effect of Mirabilis Jalapa Linn. Seeds on Liver Function Tests of Healthy Rabbits

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ABSTRACT

Objective: To observe the effect of Mirabilis Jalapa seeds on Liver function tests of Rabbit.
Study Design: Experimental study.
Place and Duration of Study: This study was carried out in the Department of Pharmacology and Therapeutics, Baqai Medical College/ University for a period of 2 months from 1.10.2011 to 30.11.2011.
Materials and Methods: For this study twenty seven rabbits of either sex were selected and divided in three groups, control group, low dose group and high dose group, each group having nine rabbits. The dose of the drug was calculated according to weight of the animals.
Results: The liver function tests (LFT) were done after 60 days administration of mirabilis jalapa seeds. Total serum bilirubin in control group was 0.69 ± 0.03, in low dose group 0.71 ± 0.03 and in high dose group 0.73 ± 0.03 with P value 0.197.
Direct serum bilirubin was 0.34 ± 0.02; 0.34 ± 0.03; 0.31 ± 0.03 with P value 0.687 in control group, low dose group and in high dose group respectively. Indirect serum bilirubin was 0.35 ± 0.01 (control group); 0.37 ± 0.03 (low dose group) but in high dose group it decreased to 0.32 ± 0.02 with P value 0.409. SGPT in control group was 78.7 ± 3.01; in low dose group it was 74.1 ± 2.08 and in high dose it was 100.0 ± 2.08 with P value 0.001.
Serum alkaline phosphate (IU/ L) was 44.4 ± 1.53 with low dose it was 26.1 ± 1.14 with high dose it was 114.6 ± 1.14 with P value 0.001.
Conclusions: Mirabilis Jalapa seems to be useful drug and further studies regarding its use are recommended.
Key Words: Mirabilis Jalapa, Liver Function Tests, Rabbit

Citation of article: Alam MA, Maheshwari MP, Abbas A, Alam N, Maheshwari RR. Evaluate the Effect of Mirabilis Jalapa Linn. Seeds on Liver Function Tests of Healthy Rabbits. Med Forum 2016;27(9):20-22.

INTRODUCTION

Mirabilis jalapa is member of the Nyctaginaceae family. It is found in West Indies and India and known to have five colours; Red, White, yellow, red and white, red and yellow. In 1596, its flowers were brought from the West Indies and shortly afterwards, carried to East. The plant was named Gul-e-Abbas, when introduced in Persia during the Shah Abbas reign[1].

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Received: March 22, 2016; Accepted: June 10, 2016

Mirabilis jalapa plant leaves are used as demulcent, topical application to the skin as poultice ripens the abscess. Its beneficial effect is observed in urticaria; and in the relief of contusions[2]. Mirabilis Jalapa is also known to have antihaemorrhagic and anlagesic activity[3,4]. Antibacterial, antiviral and antifungal activity is also found in this plant[5,6,7] and its leaves are used in the treatment of disorders like diabetes and inflammation [8].

MATERIALS AND METHODS

This study was performed in the Department of Pharmacology and Therapeutics, Baqai Medical College, Baqai Medical University, Karachi. Rabbits of either sex were kept in three groups, each group having nine animals. Group one is kept as control group, another group of nine animals were kept on low dose, and a third group of nine animals were given high dose (Total of 27 animals). The total study period was sixty days. The dose of drug was estimated according to weight of the animals.

Dose Calculation: Dose calculated according to Khan et al, mentioned in a book[2] is 7-12 Gm/day for humans made as guideline.Accordingly the calculated dose remained 250 mg / kilo gram body weight as a low 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, low dose & high dose). The drug was given in the form of aqueous mixture of powder orally, once daily to each animal of test groups by a syringe. After 60 days of duration of treatment, the blood of each animal was drawn by cardiac puncture which was analyzed according to variables.

RESULTS

The liver function tests (LFT) were done after 60 days administration of mirabilis jalapa seeds (Table 1).
Total serum bilirbin (mg%) in control group was 0.69 ± 0.03 it was 0.71 ± 0.03; in low dose and in high dose it was 0.73 ± 0.03 with P value 0.197.

Table No.1: Comparison of LFTs in Controls with Test Groups (Low Dose 250 mg / kg body wt: and High Dose 500 mg / kg body wt: of animals) Rabbits in 60 days Study Duration

Parameter	Controls (n=9)	Mirabilis Jalapa		P-value
		Low dose (n=9)	High dose (n=9)	
	Mean ± SEM	Mean ± SEM	Mean ± SEM	
Serum bilirubin (mg %)				
Total	0.69 ± 0.03	0.71 ± 0.03	0.73 ± 0.03	0.197
Direct	0.34 ± 0.02	0.34 ± 0.03	0.31 ± 0.03	0.687
Indirect	0.35 ± 0.01	0.37 ± 0.03	0.32 ± 0.02	0.409
SGPT (IU/L)	78.7 ± 3.01	74.1 ± 2.08	100.0 ± 2.08	0.001
Alkaline Phosphatase (IU/L)	44.4 ± 1.53	26.1 ± 1.14	114.6 ± 1.14	0.001

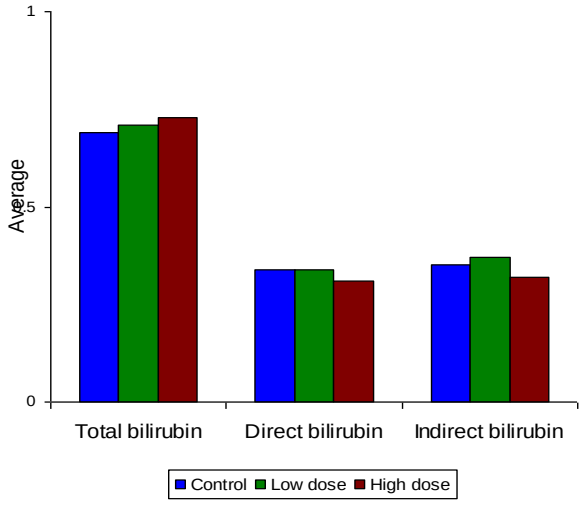

Figure No.1: Comparison of Serum Bilirubin in mg% In Controls with Test Groups (Low Dose and High Dose of Mirabilis Jalapa) Rabbits in 60 Days Duration

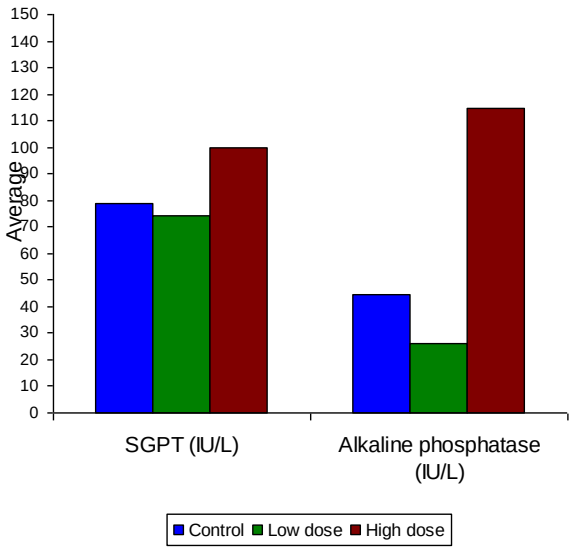

Figure No.2: Comparison of SGPT (IU/L) and Alkaline Phosphatase (IU/L) in Control with Test Groups (Low Dose and High Dose of Mirabilis Jalapa) Rabbits in 60 Days Duration

Direct serum bilirubin (mg %) in control group was 0.34 ± 0.02; in low dose it was 0.34 ± 0.03; in high dose it was 0.31 ± 0.03 with P value 0.687.
Indirect serum bilirubin (mg%) in control group was 0.35 ± 0.01; in low dose it was 0.37 ± 0.03; in high dose it decreased to 0.32 ± 0.02 with P value 0.409.
SGPT in control group was 78.7 ± 3.01; in low dose it was 74.1 ± 2.08 and in high dose it was 100.0 ± 2.08 with P value 0.001.
Serum alkaline phosphatase (IU/ L) was 44.4 ± 1.53 in control group, 26.1 ± 1.14 in low dose and 114.6 ± 1.14 with P value 0.001in high dose.

DISCUSSION

Different parts of Mirabilis jalapa such as, roots, shoots, leaves, fruits and seeds were used for different affections[9]. In traditional medicine, the plant roots are utilized for diuresis, purgative action and for healing of wounds. Leaves of plant has anti-bacterial[10,11], antiviral, anti-fungal, anti-inflammatory, antispasmodic and anti-noceptive effects[12].
We evaluated effect of Mirabilis jalapa seeds on liver function of healthy rabbits using low dose and high dose of aqueous mixture of powdered seeds. It is evident from the results that there is no significant change in total, direct and indirect bilirubin levels in all three groups that is control as well as low dose and high dose group (P-value being non- significant). It is important to remember that the study animals were healthy rabbits, thus, no change in serum bilirubin levels show that Mirabilis jalapa seeds are not hepatotoxic especially in low dose. A study conducted by Jyothi et al 2013, shows hepatoprotective effect of

Mirabilis jalapa leaves extract against hepatotoxic effect of Anti-tubercular drugs[13].

Similarly, it is clear from comparison of serum levels of hepatic enzymes SGPT and Alkaline Phosphatase in all three groups that in the low dose group there is slight decrease in serum SGPT level, while there is significant decrease in serum Alkaline Phosphatase levels confirming the hepatoprotective role of Mirabilis jalapa at a low dose. Whereas, in high dose group, serum levels of both the hepatic enzyme increased significantly when compared to control group.

CONCLUSION

Mirabilis Jalapa seems to be useful drug and further studies regarding its use are recommended for longer duration to evaluate and confirm hepatoprotective effect of Mirabilis jalapa in healthy as well as diseased animals.

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

1. Dymock W, Warden CJH, Hooper D. Pharmacopia Indica, A history of the principal drugs of vegetable origin 1890 (reprinted by the institute of health and Tibbi Reasearch) Pakistan.p.363.
2. Khan U.G, Saeed A, Alam MT: Mirabilis Jalapa Linn, cited from the book Indusunic Medicine P 472. Published by Dept of Pharmacology faculty of Pharmacy University of Karachi 1997.
3. Awan MH. Mirabilis Jalapa kitab ul Mufradent 1960.p.404.
4. Walker CL, Trivisan G, Rossato MF, Franciscato C, Pereira ME, Ferreira J, et al. Antinociceptive activity of Mirabilis Jalapa in mica. J Ethnopharmacol 2008;120(2):169-175.
5. De Bolle MF, Osborn RW, Goderis IJ, Noe L, Acland D, Hart CA. et al. Antimicrobial peptides from Mirabilis Jalapa and Amaranthus Candatus expression, processing, localization and biological activity in transgenic tobacco Plant. Mol Biol 1996;31(5):993-1008.
6. Vivanceo JM, Salazar LF: Antiviral and antivoroid activity of MAP containing extracts from Mirabilis Jalapa roots. Plant Disease 1999;83(12):1116-1121.
7. Osaka M, Sani D, Antimicrobial Screening of some Turkish medicinal plants. J Pharm Biol 2007;45: 176-181.
8. Koski RR. Practical review of oral antihyperglycemic Agents for type 2 Diabetes Mellitus. The Diabetes Educator 2006;32:869-876.
9. Encarnacion DR, Gigenin, Onchos N: Antimicrobial activity of medicinal plants. J Pharm Biol 1998; 36.33 – 43.
10. Kasumba C, Byanima K, M bayi WM. Antibacterial activity of Mirabilis Jalapa. J Ethanophol 1991; 35(2): 97-99.
11. Lai GF, LUO SD, Cao JX, Wanig YF. Studies of chemical constituents from roots of Mirabilis Jalapa. Zhongguo Zhong Yao ZaZhi 2008;33(1): 42-46.
12. Doss VAD, Sowndarya R, and Moorthi N. Anti Diabetic Activity of Hydroethanolic Extracts of Mirabilis jalapa Leaves in Streptozotocin Induced Diabetic Rats. Ijppr Human 2015;4(2): 331-338
13. Jyothi B, Mohanalakshmi S, Anitha K. Protective effect of Mirabilis jalapa leaves on anti-tubercular drugs induced hepatotoxicity. Asian J Pharm Clin Res 2013;6(3):221-224