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Study on the oral chronic toxicity of the Aqeous Extract of Pegnum harmala seeds in growth of some pathogenic bacteria

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Abstract : A preliminary investigation on the effect of the aqueous extract of peganum harmala seeds on the blood picture of albina rats was studied, two oral dose levels of 38 and 98 mg/kg bodyweight were given for 49 weeks all blood investing actions comprising of haomoglobinplatiets, leucocytes and differential counts, packed cell volume and red blood cells morphology were within the normal range, no toxic side effects were observed throughout the course of the study.

Introduction:

Peganum harmala L. (P. harmala) commonly known asSyrian Rue is a widely used herbal plant from thefamily Nitrariaceae.Activeingredients of P. harmala are many alkaloids,β-carbolines (such as harmine, harmaline, harman and harmalol) and the quinazoline derivatives vasicine and vasicinone.Total alkaloid content of P. harmala varied between 2 and 5%. Harmaline, harmine, harmalolharmol and tetrahydroharmine areidentified Seeds and roots contain the highest levels of alkaloids with low levels in stems and leaves, and absentin flowers. Harmine and harmaline accumulate in dry seeds at 4.3 and 5.6% (w/w), respectively, harmalol at 0.6% andtetrahydroharmine at 0.1% (w/w).(Fathizad et al., 2007).

Harmaline (harmidine)was first isolated from the seeds and roots of P. harmalahe aqueous extract of the seeds of P. harmala has antispasmodic, at parasympathetic, antihistaminicand ant sympathetic effects**.(1)** P. harmala and its active alkaloids possess a wide number of pharmacological activity on the nervous system involve psychoactive,analgesia, anti-depressant, Neuro protective, andstronginhibition of monoamine oxidase (MAO).Its analgesic effect acts both centrally and peripherally. Alkaloids also possess good anti-parkinsonism effects through inhibition of mono amin oxidase (MAO)**(2,3,4).**Various studies have revealed antiparasidal **(5,6),**Antifunga(7,8),antibacterial, insecticidal and antileishmanialdueto P. harmala alkaloids. Moreover current pharmaceutical studies, additional pharmaceuticaltrial of P. harmala have showed antitumor effect (**11**), wound healing, antioxidant activity, immunomodulator properties, leukemia healing (Zaker et al., 2007), hypoglycemic effects(Singh et al., 2008), analgesic and anti-inflammatory properties,antinociceptive effects

(Monsef et al., 2004), antitumor activity (Madadkar et al., 2002), hepatoprotective effect (Khaled et al., 2008) and cytotoxic activity among others.

Material and methods:

The seeds of P. harmala were collected from Gabel Elhalal in North Sinai, Egypt, in August 2011. A voucher specimen is preserved in the herbarium of our Institute (Suez Canal University). The crude extracts were prepared according to the method of (Al-Mizrakchi, 1998). The dry seeds of P.harmala were washed and dried under fresh air, then ground in electrical grinder to get fine powder of the seeds. Two equal weights of 100gm of the ground seeds were infused, one in 500 ml. of distilled water and the other in 96% ethanol for 24 hours at room temperature. Samples were agitated for infusion nusing magnetic stirrer.

Then the infusion was filtered by filter paper (Watt man No.1) and the residue was discarded. The extract left to dry in a Petri dish at room temperature and percent of extraction was 20%. Animal study :thirteen male rats was divided in to three group , group 1 represent control , group 11 represent which given 37 mg/kg of extract of harmala ,while group 111 included dose of 100mg/kg of extract , however ten cage was consumed each one contain 5 rats (three female and two male) . The experiment was persistence for six month .blood sample was collect from heart puncture under anesthesia with ketamine and xylazin for evaluate hematological parameters and collect manner was done through six periods at the end of each month.

Results:

Our study was showed animal with normal health through signs of movement, food and water consumption and there is no any signs of toxicity were record along with study.

Table (1): Effect ofharmala HB g/dl

Time of Period	T1	T2	T3
2	10.0±1.04	14.9±1.37	4.6±1.37
4	14.2±2.12	14.8±0.9	10.0±1.36
6	10.1±2.12	14.6±1.03	14.6±0.69
8	10.7±2.34	10.9±2.25	11.4±1.52
10	13.6±1.17	12.1±0.77	12.9±1.49
12	14.2±0.10	14.0±0.9	14.4±0.5
Mean:	13.8±1.49	13.55±1.3	13.87±1.22

Table (2) refer effect ofharmala percentage of PCV

Time of Period	T1	T2	T3
2	47.1±6.84	46.6±4.89	5.7±4.23
4	42.1±1.8	39.7±65	41.0±1.41
6	48.3±2.12	49.3±20.4	47.8±2.78
8	37.1±4.6	34.0±6.66	34.3±6.34
10	39.7±5.91	41.6±2.37	37.6±2.94
12	43.9±1.87	40.9±1.34	43.3±2.50
Mean:	41.87±4.45	43.35±4.12	42.45±3.51

Table (3) refer number of WBCS 109/L

Weeks Period	T1	T2	T3
2	12.2±1.99	9.5±2.61	10.9±3.81
4	7.8±1.34	6.5±2.55	8.7±3.42
6	8.4±2.61	6.3±1.15	6.6±1.34
8	8.4±2.57	7.4±2.14	6.7±1.1
10	6.4±2.04	6.5±1.13	6.4±2.65
12	4.7±1.25	4.9±1.07	5.70±1.81
Mean:	7.972.03	6.85±1.91	7.5±2.57

Table(4):Effect of months year on percentage of WBCS

Time of Period	T1					T2					T3				
Months	N	L	M	A	B	N	L	M	A	B	N	L	M	A	B
2	19.8 16.1	68.0 2.08	4.9 3.0	2.6 2.4	4.7 3.5	26.3 8.8	6.4 6.5	4.7 3.5	2.9 3.3	1.8 0.69	28.3 6.9	63.4 10.1	6.4 2.4	0.3 0.7	1.6 0.76
4	47.6 15.9	44.6 15.7	22.4 2.3	0.9 1.2	4.2 1.3	42.9 44.2	52.0 15.3	2.4 3.0	0.7 1.2	2.0 1.35	31.1 13.5	10.9 12.2	2.1 2.0	1.9 2.0	4.0 1.22
6	28.3 2.6	60.9 0.7	5.7 1.0	1.0 1.0	4.1 1.3	27.9 5.2	60.3 5.5	6.9 2.4	1.2 1.0	3.7 1.6	30.8 6.0	57.6 8.0	5.5 2.0	0.8 0.5	5.3 1.7
8	19.6 3.21	69.7 3.22	6.3 1.5	2.1 0.69	2.3 0.54	19.1 2.41	69.1 2.19	7.3 1.11	1.5 0.54	3.0 1.29	23.0 2.83	66.0 4.24	6.4 0.98	2.1 1.35	2.5 0.54
10	24.7 4.19	63.1 3.72	6.9 1.57	1.2 0.69	4.1 1.22	24.2 1.72	64.2 1.47	7.2 1.47	1.7 0.82	2.8 0.75	28.2 3.87	59.0 3.65	8.0 1.53	1.4 0.79	3.4 1.13
12	21.9 2.04	68.0 2.08	7.1 1.5	1.2 0.49	1.7 0.49	24.7 1.98	67.4 1.72	7.1 2.11	1.9 1.22	1.9 1.69	21.9 1.57	67.4 2.57	7.0 1.29	1.7 0.76	2.0 0.69

Table (5): Effect of harmala on Platelets.

Time of Period (months)	T1 RPC	T2 RPC	T3 RPC
2	N NN+ +++	NNN + ++	NNN+ +++
4	N NN + ++	NNN+ ++	NNN+ +
6	N NN + ++	NNN+ ++	N‡NN+ ++
8	N NN+ ++	N‡‡NN+ ++	N‡NN+ ++
10	NNN+ ++	NNN+ ++	NNN++ ++
12	NNN++ + +	NNN++ ++	NNN++ ++

Polychromasia :p , Normocytic Normochromic: NN , Normal :N
‡ NO of platelets low in one sample.
‡‡ NO of platelets low in two sample.

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