

Short Communication

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Effect of *Peganum harmala* Oil on Rabbit Skin

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Seeds of *Peganum harmala* (Zygophyllaceae) have been used in herbal medicine system for the treatment of intermittent and remittent fevers, palsy, lumbago, relieve of toothache and pain in the liver [1,2]. The seeds contain alkaloids namely harmaline, harmine, harmalol, peganine, harmalacine, norharmine etc. [3,4]. Oil has also been extracted from harmala seeds [5,6]. The alkaloids are concentrated in the husk while the kernel contains oil [7]. All the medicinal properties mentioned above are due to alkaloids. Recently a simple method has been designed for the separation of husk and kernel [8].

The plants of *Peganum harmala* grow wild in semi-arid areas of Asia, Africa and Southern Europe. These plants could be cultivated easily without disturbing crops [9]. The kernel oil could be used as an alternate source for edible oil, as emollient and in the making of soap. The present study aims to study the toxicity of kernel oil.

Extraction of oil. Seeds of *Peganum harmala* were purchased from the local market. Husk was separated from the kernel by mechanical means. Soaking of harmal seeds loosens the tight bond between husk and kernel and enables the husk to be shaved off by means of a kitchen chopper (1000 r.p.m.) [8]. The kernel free of alkaloids was crushed and the oil was extracted using n-hexane in a 5 litre Soxhlet extractor. Solvent was removed under vacuo. The oil was treated with dilute sodium hydroxide to neutralise free fatty acids decolourized using charcoal. The oil produced was pale yellow in color and had the following properties: pH: 7; density: 0.908; refractive index: 1.473; saponification value: 180 ± 5 ; iodine value: 119 ± 1 ; acid value: 6 ± 1 . (6-8).

Animal experimentation. Rabbits having an average weight of 1.5 kg were used. Pairs (male and female) of rabbits were divided into three groups, the animals were placed in separate cages viz. Group I, II and III for test, standard and control respectively.

Part of the skin was shaved off. The shaved portions were

washed with lukerious water to remove dust and other adhering particles. Sensitization tests [10,11] were carried out on either side. The animals were photographed before and after completion of observation period (Table 1). The oil (0.1 ml) was taken from the measuring dropper and rubbed with spatula on either side of the animals skin. Oil was absorbed from the skin, there was no protection over the shaved area. No precautions were taken to prevent the animals from ingesting the oil because the oil is non-toxic (unpublished data). The animals were kept in separate cages for 30 days. No animal showed any sign of injurious, redness and swelling effects to skin during the observation period and are comparable to standard and untreated area of control animals.

The results of toxicity tests using *Peganum harmala* oil has been compared with olive oil and control in Table 1. The results indicate that performance of both the oils are almost identical. Olive oil was used as standard because it is a well known emollient having no toxic effect. [12].

TABLE 1. SKIN SENSITIZATION TESTS ON RABBITS.

Group	No. of rabbits	Age (months)	Dosage (ml of oil)	No. of application per day	Period of experiment (days)	Amount of oil applied in 30 days (ml)	Toxic effect
Test	2	3	0.1 (<i>P. harmala</i>)	2	30	12.0	Nil
Standard	2	3	0.1 (Olive)	2	30	12.0	Nil
Control	2	3	Nil	-	30	-	Nil

Average animal weight 1.5 kg. Test carried on either side. Diameter of shaved portion 2.5 ± 0.2 inch.

Cutaneous toxicity could be attributed to skin sensitization (allergic dermatitis) and primary irritation (irritant dermatitis). Toxicity is defined as any alteration in cellular homeostatics which alters the cells abilities to adopt, survive, reproduce or carry out specialized functions [3]]. Cutaneous toxicity should ideally measure whether use of any oil has altered the ability of skin to carry out all of above stated functions. These tests assess the inflammatory response animal skin proved by the oil insult. Measurement make a subjective assessment of redness, oedema, gross skin abnormalities or any inflammatory response by the animals.

The photographs indicate no redness or any skin abnormalities on test animals. Further no animal showed any inflammatory response during the whole observation period.

It could therefore be concluded that oil from the kernel of *Peganum harmala* has no cutaneous toxicity. Detailed patho-

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Group-I

Test before treatment.



Test after treatment.



Group-II

Standard before treatment.

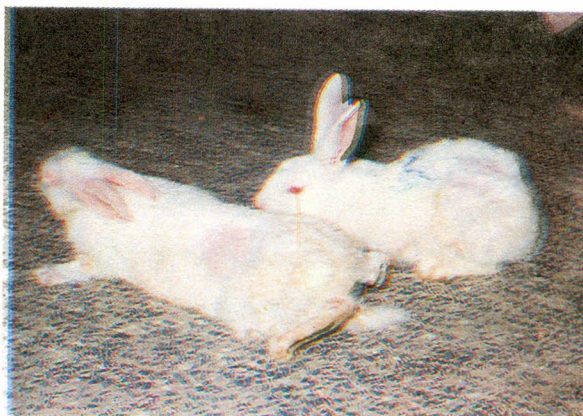


Standard after treatment.



Group-III

Control before treatment.



Control after treatment.

Groups I-III. Rabbits being used as Test, Standard and Control groups before and after experimental period. (*Effect of P. harmala* oil in rabbit skin).

logical tests have not been carried out as the result would still be subjective [13]. The study was hence restricted to comparative response of animals.

Key words: *Peganum harmala*, Cutaneous toxicity.

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