Journal of Scientific and Innovative Research 2015; 4(4): 172-174
Available online at: www.jsirjournal.com

Research Article

ISSN 2320-4818
JSIR 2015; 4(4): 172-174

Received: 17-08-2015
Accepted: 30-08-2015

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Evaluation of the analgesic activity of Tukhme Karafs (*Apium graveolens* Linn.) in swiss albino mice

Nisar Ahmed, Faizana Nasreen, Sadique Husain, Shamshad Alam, Saleem Ahmed, Khaleequr Rahman

Abstract

Aim & Objectives: To evaluate the analgesic activity of Tukhme Karafs (*Apium graveolens* seed) in Albino mice. **Methods:** The analgesic activity was determined by Hot plate method, Tail immersion method, Tail Clip method and Writhing test. **Result:** Petroleum ether extract of seeds of *Apium graveolens* (PEESAG) was tested in adult Albino Swiss mice weighing 20-30gms, at the dose of 50, 75, and 100 mg/kg body weight by different method i.e. hot plate method, tail immersion method, tail clip method and Wrihting method. The result show mild to moderate analgesic activity of celery seeds. **Conclusion:** The petroleum ether extract of celery seeds revealed mild to moderate analgesic activity.

Keywords: Analgesic activity, Tukhme Karafs, *Apium graveolens*, Unani Medicine.

INTRODUCTION

Pain is a common symptom and it indicates something is going wrong in the living body, it is a special sensation caused by specific stimuli. It has central mechanism and independent of other five senses. Pain can be defined as "effect produced in consciousness by arrival of nerve impulses generated by noxious stimuli in the brain [1].

Pain is described in Unani medicine as "*Alam*" and the drugs used for analgesic activity, are known as Musakkine Alam Advia. Tukhme Karafs (*Apium graveolens* seed) is belongs to family Umbelliferae, originally native throughout Europe, Western Asia to India [2]. Its annual herb, 60 cm in height, seed are grayish green to brownish, oval, cremocarps and 0.82-1.5 mm long [3]. Its seeds have many chemical constituents but major chemical compounds areapiin, apigeninn and caffeic acid [2]-[5]. The seeds of *Apium graveolens* are used as a medicine since antiquity in Unani medicine for analgesic purpose [5], [7] and also for other various diseases i.e. Dafe Tashannuj (Antispasmodic) [8], [9], Kasire Riyah (Carminative) [10], and Mushtahi (Appetizer) [11]. Many pharmacological actions like antilipidimic activity [12], Enhancing fertility [13], Hypotensive activity [14] and antidepressant activity [15].

MATERIALS AND METHODS

Procurement of animals: Adult male albino mice were procured from Deccan Medical College, Hyderabad (Tilangana). Animals were kept under standard laboratory condition i.e. 22-23 ^{0}C with 12 hour day and night cycle for acclimatization. The animals were supplied laboratory diet pellets and water at libitum for 5 days.

Preparation of plant extract: The test drug was procured from Begum Bazaar, Hyderabad and identity of the drugs was confirmed on the basis of description available in the Unani classical literature and botanical identification was done by botanist Central Research institute of Unani Medicine, Hyderabad. The extract of the seed was obtained in petroleum ether by soxhlet apparatus at department of IlmulAdvia (Pharmacology) Govt. Nizamia Tibbia College, Hyederabad. The solubility of the test drug was checked in propylene glycol dimethylsulphoxide (D.M.S.O.) and Tween 80 (Polysorbate), it is found that test drug was completely soluble in Tween 80. Hence Tween 80 is selected for vehicle.

METHODOLOGY

The analgesic activity was carried out by three types of stimuli i.e. Thermal Stimuli (hot plate method and tail immersion method), Mechanical stimuli (tail clip method) and chemical stimuli (Writhing test). The animals were divided into five groups for each method. Group I (control group) was given Tween 80 diluted in distilled water (1:4) by intra peritoneal route at the dose of 0.1 ml, group II (standard group) were injected Pentazocine HCl (50 mg/kg body weight intra peritoneally and three test group were administered PEESAG at dose of 50, 75, 100 mg/kg body weight respectively for thermal stimuli and mechanical stimuli.In chemical stimuli acetic acid 0.6% (1 ml/kg body weight) administered intra peritoneally and standard drug i.e. acetyl salicylic acid (Aspirin) at the dose of 100 mg/kg body weight subcutaneously. The test drug was injected in this group at the dose of 50, 75, 100 mg/kg body weight intramuscularly.

In the hot plate method: The animals were place on the hot plate at the time of 15, 30, 45 and 90 minutes after injection and response of licking and jumping latency in second was recorded. The reaction time was noted before and after drug administration.

Tail immersion method: Animals was marked for identification and hot water was maintained at 55 °C and tail of the animals about 3-5 cm was immersed in hot water and pre-drug and post drugs reaction time was recorded by using stop watch.

Tail Clip Method: First of all animals were observed initial response of pain by applying tail-clip, animals those have not given response within 5 seconds were discarded. The bull dog clip with both arms protected with rubber tubing was used. It was applied for constant pressure on the tail 1.5 cm distal to root. After given the dose latencies were measured at 15, 30, 45, 60 and 90 minutes post injections.

Writhing Test: Test drug and standard drug were given subcutaneously into the back of the neck 15 minutes prior to the acetic acid. Each mouse was put into a liter beaker and the number of stretching episodes was recorded for 20 minutes.

RESULT AND DISCUSSION

Tukhm-e-Karafs are used in Unani medicine since many years as analgesic drug and in present study it is confirmed that *Tukhm-e-Karafs* are neither very potent nor very weak in efficacy but as an intermediate acting analgesic drug [5]. All the animals tolerated well the PEESAG and any other abnormal activity observed except excess urine output. It is also observed that if the dose of test drug was reduced the below 50 mg/Kg body weight then the analgesic response of almost 0 %.

In hot plate method % MPE of standard drug (Pentazocin HCl) was 68.56 % whereas in test drug it was 36.35, 44.25 and 51.75% at the dose of 50, 75 and 100 mg/kg body weight. respectively. (Fig 1). The increased reaction time period b326y 7 seconds indicates analgesic action [16]. The test showed dose dependent analgesic activity of PEESAG.

In tail clip method standard drug (Pentazocin HCL) the mean was 43.02% MPE and test drug was 27.44, 29.85 and 38.91 at different doses respectively. (Fig 2) In tail immersion method % MPE of Standard drug was 61.16% and in the test drug 39.96, 44.17 and 53.58% respectively. (Fig 3) In Chemical stimulus method Acetylsalicylic acid used in dose of 100 mg/kg body weight and %MPE was found 73.34% effect whereas in test drug it was found 55.90%, 62.57% and 68.72% respectively at different doses. (Fig 4) These three methods showed that PEESAG has analgesic activity but potency is weaker than standard drugs. It is also confirmed that the test drug has diuretic effect also as mentioned in Unani classical literature and it supports the study "Celery Seed as diuretic and the best remedy for clearing and remove uric acid form the body (Blood and Joint) [17], [18].

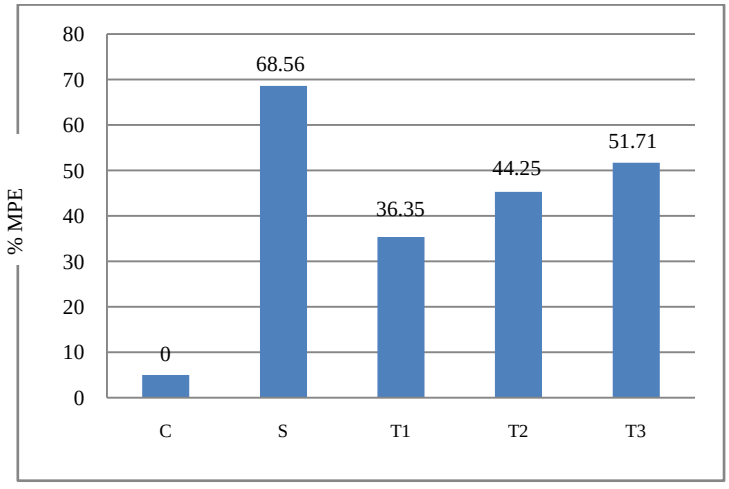

Figure 1: Analgesic effect of PEESAG by Hot-plate method

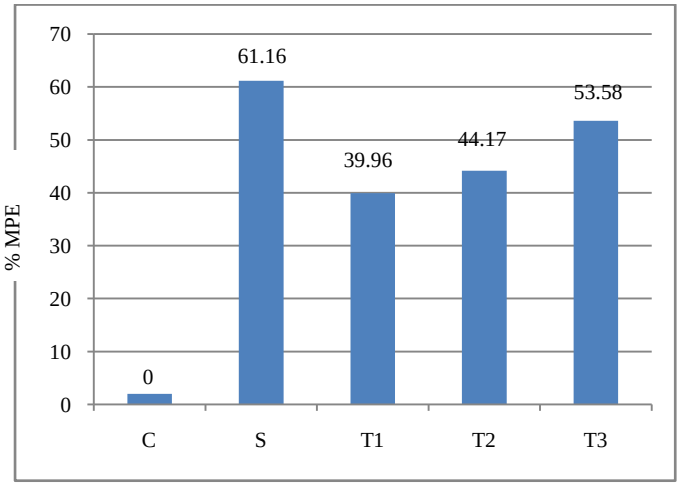

Figure 2: Analgesic effect of PEESAG by Tail-Immersion Method

C = Control group (Tween 80) 0.1 ml/kg body weight; S = Standard group (Pentazocine HCL) 6 mg/kg body weight; T1 = Test drug (PEESAG) 50 mg/kg body weight; T2 = Test drug (PEESAG) 75 mg/kg body weight; T3 = Test drug (PEESAG) 100 mg/kg body weight; %MPE = Maximal Possible Effect (Analgesia)

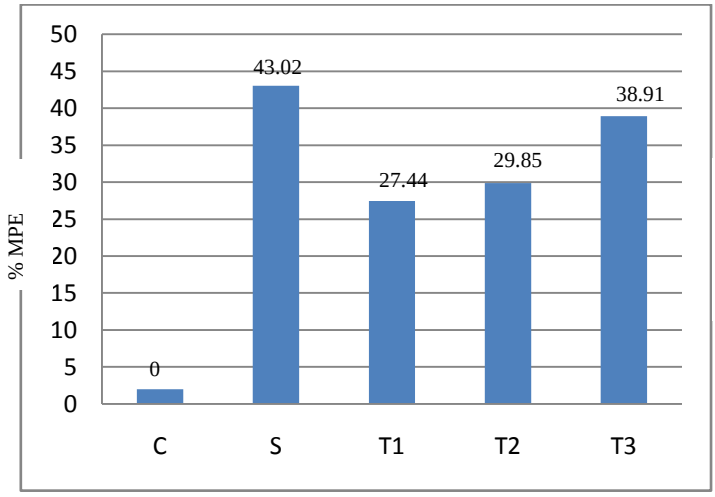

Figure 3: Analgesic effect of PEESAG by Tail-Clip Method

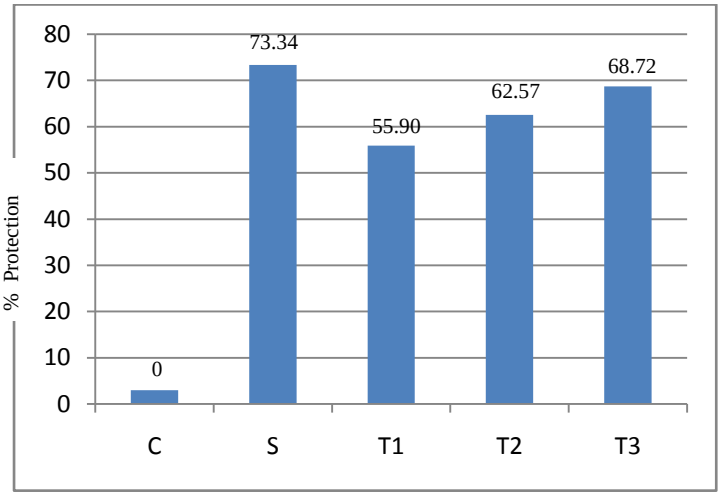

Figure 4: Analgesic effect of PEESAG by Writhing Method

C = Control group (Tween 80) 0.1 ml/kg body weight; S = Standard group (Pentazocine HCL) 6 mg/kg body weight for Tail-Clip Method and Standard (Acetyl Salicylic Acid) 100 mg/kg body weight for Writhing Method; T1 = Test drug (PEESAG) 50 mg/kg body weight; T2 = Test drug (PEESAG) 75 mg/kg body weight; T3 = Test drug (PEESAG) 100 mg/kg body weight; %MPE = Maximal Possible Effect (Analgesia)

CONCLUSION

The petroleum ether extract of celery seed showed mild to moderate analgesic activity in experimental animals and it also revealed diuretic effect in animals, it suggests that this drug has analgesic activity as well as diuretic activity also.

Acknowledgement

The author is thankful to all coauthors for giving valuable suggestions throughout shaping this research article.

Funding: Nil

Conflict of Interest: Nil

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