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Wound Healing Activity of Punica Granatum

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ABSTRACT *The flavonol glycoside of Punica granatum, was isolated from the aqueous extract of the fruit and the wound healing property of the glycoside was examined. Fruitful results have been arrived at by this investigation*

KEYWORDS: Punica granatum,Punicaceae, flavonol glycoside, Sexangularetin

Introduction:
The pomegranate botanical name Punica granatum, popularly known as madhulai in Tamil, of punicaceae family, is a fruit-bearing deciduous shrub or small tree growing between 5–8 metres (16–26 ft) tall. Native to the area of modern-day Iran and Iraq, the pomegranate has been cultivated in the Caucasus Mountains and Persia since ancient times. From there it spread to Asian areas such as the Caucasus as well as the Himalayas in Northern India. Today, it is widely cultivated throughout the Mediterranean region of southern Europe, the Middle East, northern Africa and tropical Africa, the Indian subcontinent and the drier parts of southeast Asia. Introduced into Latin America and California by Spanish settlers in 1769, pomegranate is also cultivated in parts of California and Arizona. In the Northern Hemisphere, the fruit is typically in season from September to February. In the Southern Hemisphere, the pomegranate is in season from March to May. The pomegranate has been mentioned in many ancient texts, notably the Book of Exodus, the Homeric Hymns and the Quran. In recent years, it has become more common in the commercial markets of North America and the Western Hemisphere. Pomegranates are used in cooking, baking, juices, smoothies and alcoholic beverages, such as martinis and wine.

Normal healing involves an initial inflammatory phase followed by fibroblast proliferation, formation of collages fibres, shrinking and drying of Scar. These phases are concurrent but independent of each other. Since crude plant preparations have several different constituents, it is likely that the anti-inflammatory effect is overcome by some other compounds present in the plant extract, during the next phase of healing. Flycosaminoglycons are implicated in the stabilization of collagen molecules by enhancing electrostatic and ionic interactions with it.1

These compounds have a profound effect on initial phase of healing. Several indigenous drugs like Tridax procumbens,2,3 Aloe vera,4 Moringa olerifera.4 This is a smaller attempt to find the healing property of isolated yellow pigments on the excised wound using rabbits as animal model.5

Preparation of P. granatum ointment:
The weighed P. granatum residue from the EtOAc extract (mixture of Sexangularetin 7 -Glucoside and Artimetin 5 - O – Glucoside) was triturated with required quantity of yellow soft paraffin so as to make 5 % ointment. The ingredients were uniformly and thoroughly mixed in a porcelain tile using a flexible spatula as describe earlier. The ointment was collected in a glazed paper for use.

Application of P. granatum ointment:
Healthy rabbits (wt 1-1.5 kg) were taken as experimental models. A wound of about 2 sq. cm was created an both sides of the rabbits. The prepared ointment was applied on the wound continuously for 15 days. The area of the wound was traced everyday morning and then the ointment was applied. The percentage of healing were calculated and tabulated.

TABLE – I
PERCENTAGE OF WOUND HEALING ACTIVITY

S. No.	Weight of the animal kg	Treatment	% of wound healing				
			0	4	8	12	16
1	1.5	Control	-	38.76	50	62.48	66
2	1.5	Yellow soft paraffin	-	42.69	44.70	70	74
3	1.5	Nitrofuracin	-	45	65	89	97
4	1.5	EtOAc fraction of P.granatum	-	30.3	55.2	92	100

RESULTS AND DISCUSSION
The wound healing activity of P. granatum was studied on experimental rabbits. The figure showed the area of the wound on the starting day, fourth day, twelfth day and sixteenth day. The percentage of healing was calculated on the above days and tabulated. The percentage of healing on the fourth day was poor in the case of untreated animal. For the animal treated with paraffin, it was formed to be 42.69 % on the fourth day, the standard drug nitrofuracin had 45 % healing. In the case of animal treated with P. granatum, the healing was only 30.3 %.

The rate of healing had an improvement on the eighth day, with the drug having 55.2 % activity. However, on the sixteenth day, the percentage of healing was 65 % in the case of untreated wound compared to the 75 % activity in the paraffin treated wound. Nitrofuracin increased the activity so that the % of healing is 98 % and the drug effect was tremendous and on the same day there was 100 % curing. The excised wound healing studies revealed a centpercent healing on the sixteenth day itself. While it is compared with the nitrofuracin ointment, the standard drug, the yellow pigment cures well in advance. The present investigation showed the furacin had yet to cure the wound even after the sixteenth day.

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