Effect of Fagonia indica on experimentally produced Tumours in Rats

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Abstract

Introduction: The use of Fagonia indica (Sacchi booti) for the treatment of cancer patients has been reported locally. This study was undertaken to see its effects on experimentally produced tumours in rats.

Material and Methods: Rhabdomyosarcoma/ Leiomyosarcoma was produced subcutaneously in 26 out of 30 albino rats by a combined use of methylcholanthrene, tobacco paste, croton oil and cortisone.The day the size of the subcutaneous nodule became 1 cm, became day 0 for the experimental animals and they were allocated to the treated or the control group. Ten animals (5 male and 5 female) were given a daily dose of 5.0 ml of a crude water extract of the whole Fagonia indica plant for six weeks. The other 16 animals (6 male and 10 female) served as untreated controls. All the experimental animals were observed daily till they died. An autopsy was performed on the day of the death of the animal. The size of the tumour and the length of the survival were among the parameters recorded.

Results: Male treated animals survived for 59.4±10.07 days while female treated animals survived for 83.2± 12.67 days from day 0. In the untreated control group the males survived for 17.0±2.55 days while the female survived 38.9±4.16 days. The difference in survival between the treated and untreated groups was significant ($p<0.0$) for both the sexes. At autopsy residual tumour was found in all 26 cases.

Conclusion: Crude water extract of the whole Fagonia indica plant has a tumourostatic effect on experimentally produced soft tissue tumour in albino rats (JPMA 53:224;2003).

Introduction

Various varieties of Fagonia are commonly found throughout Pakistan, parts of India and the Middle East.[1] Fagonia indica is the variety found in Sindh and is locally known as Sacchi Booti, which literally translates as the 'True Herb'. It is used in folk medicine for cancer as well as all disorders considered to be due to poisons. This study was undertaken to see its effect on experimentally produced tumours in rats.

Materials and Methods

Thirty albino rats (15 male and 15 female) were used for producing a tumour. A number of carcinogens and co-carcinogens and their combinations including 20-methylcholanthrene, tobacco qawam, cortisone and croton oil were applied on the shaven skin of the back of the rats for fifteen weeks. As no tumour could be detected, in the 16th week four subcutaneous injections of 75 micrograms of methylcholanthrene mixed in 0.5 ml of olive oil were given at twice a week interval. In the 18th week 6 injections of 0.5 mgm of Hydrocortisone were given intramuscularly in the thigh muscle. Local application of tobacco qawam on the shaven skin was continued from the 19th to 22nd weeks. The first subcutaneous tumour nodule was palpated in the 23rd week. From then on till the 40th week tumour nodules appeared in 26 out of the 30 animals. When the tumour nodules reached the size of 1 cm the animals became eligible for study and that day became day 0 for further observations. In 2 rats a biopsy was done to confirm the appearance of a malignant tumour.

The extract of Fagonia was prepared by cutting in to small pieces the whole plant-stem, thorns, leaves, fruits and flowers. All the pieces were soaked in 1.5 litres of water for 24 hours. After filtering through muslin cloth 5 ml of the extract was fed to designated rats.

Results

The survival of the rats administered Fagonia extract was significantly longer than the control group (Table). In the treated group the survival of female rats was 83.2±12.67 days (range 55-118 days), while that of the treated male rats was 59.4± 10.07 days (range 39-98). In the untreated female rats the survival was 38.9±4.16 days (range 21-57 days) while the non-treated males survived for 17.0±2.55 days (range 10-27 days). The difference in survival between the treated and untreated rats was statistically significant ($P<0,.01$) in both the male and female rats. In treated group the difference between the survival of female and male rats

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		Mean Survival in days from day 0 ± SD	Range in days	P Value
Treated	Female (n=5)	83.2 ± 12.67	55-118	<0.01
	Male (n=5)	59.4 ± 10.07	39-98	
Untreated	Female (n=10)	38.9 ± 4.16	21-57	> 0.1
	Male (n=6)	17.0 ± 2.55	10-27	

P Value of treated vs non-treated in both males and females = < 0.01
At autopsy the tumours were histologically classified as Rhabdomyosarcoma.

was statistically significant (P <0.01) with the females surviving longer. In the non-treated group no such difference was found between the survival of male and female rats (P>0.1).

Discussion

This initial experiment has shown that an aqueous infusion of Fagonia indica has a tumourostatic effect which is more significant in the females. There is available reason for the longer survival of females receiving treatment.

An unpublished double blind trial of an extract of Fagonia indica done in stage 4 cases of carcinoma of the oral cavity showed similar tumourostatic effect.

There is a need for further studying the effect of various Fagonia extract in experimental animals.

Reference

1. Ahmad V, Basha A. Spectroscopic data of Saponins. CRC Press, Boca Raton: USA, 2000.