ANTI-TUMOR ACTIVITY OF CRUDE ROOT EXTRACT OF *POTENTILLA FULGENS*

ABSTRACT

The herb *Potentilla fulgens* L (Family: *Rosaceae*) found in the Khasi and Jaintia hills, Meghalaya, India, has been used traditionally by the local population as remedy for a variety of ailments including cancer. A preliminary investigation on the anti-tumor activity of the methanolic extract of the root was found to be active in a dose dependent manner.

Potentilla fulgens has been used traditionally by the local population as remedy for a variety of ailments including cancer. The roots are used as masticatory along with betel nuts, betel leaves and hydrated lime. This combination has been an important part of various ceremonies in the traditional Khasi society since time immemorial. Therefore, it may be concluded that the root is not toxic when consumed orally. Surveys conducted, indicated low occurrences of oral cancer amongst the senior citizens who had become habituated to chewing the roots of *Potentilla fulgens* along with betel nut. The present investigation was carried out keeping this fact in mind

As there are no reports so far with respect to its anticancer property, it was felt worthy to undertake this preliminary investigation on the anti-tumor activity of this plant.

Fresh tap roots were collected from the outskirts of Shillong where they grow wildly and abundantly; washed and sun dried. The material was then pulverized, weighed and soaked in methanol for a few days. The methanolic extract was then filtered and the filtrate was evaporated to dryness. The residue obtained was used for its biological activity. A stock solution was prepared in 3% (v/v) ethanol/ water at 100mg ml^{-1}. The stock solution of the extract was freshly diluted with distilled water to reach a planned concentration before each experiment. Swiss-albino mice, aged 2 to 3 months and weighing 25-30g, were reared in the laboratory in community cages at controlled room temperature (20 ± 2°C), with controlled lighting (12h light/12h dark). Standard mouse diet (NMC Oil Mills Ltd., Pune, India) and water *ad libitum* were used in all experiments.

The anti tumor activity of the root extract was carried out in accordance with the U.S National Cancer Institute standard protocols for primary screening[1]. Animals were transplanted intra-peritoneally with approximately $1x10^6$ Dalton's lymphoma cells. They were then divided into different groups of ten each. The survival time of the untreated group of animals recorded in days served as control. To other groups of animals different doses of the extract was administered on the 1st, 3rd, 5th and 7th day. (day 0 was taken as the day the animals were incubated with DL cells). The survival time of the treated group of animals was also recorded in days. The evaluation of this activity was established by computing the T/C value, which is the median survival time of the treated group of animals (T) divided by that of the control group (C). The T/C ratio is given as a percentage. A compound is termed active if it shows a T/C value of $\geq$120%[1].

The Treated / Control values are given in Table I. Data indicates the high antitumor activity of the methanolic extract on DL cells. The T/C value was 154% (250 mg Kg^{-1}) when the extract was treated on the 1st, 3rd, 5th and 7th day after transplantation.

The data obtained in this study are quite promising and open a way for further investigation. A lot more work is warranted before the extract of this plant can be considered for development into an effective anti cancer drug. To our knowledge this is the first account of its anticancer property.

Table I: Test of Anti-tumor Activity of Extracts of the Root of *Potentilla fulgens* carried out at Different Doses

Treatment	Days of treatment	Dose (mg/ kg Body weight)	Median survival time (days)	Range of survival time (days)	T/C%
Control	–	–	13	12-16	–
Treated	1st, 3rd, 5th, 7th	20	15	12-16	115
Treated	1st, 3rd, 5th, 7th	100	18	15-23	138
Treated	1st, 3rd, 5th, 7th	250	20	15-26	154
Treated	1st, 3rd, 5th, 7th	500	3	1-3	30

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