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ANTI – TUMOUR ACTIVITY OF AN AYURVEDIC OIL PREPARATION

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ABSTRACT: *An ayurvedic oil preparation containing flowers of ixora coccinea and cortus sativum was subjected to an animal experimentation to find out how far it is efficient in preventing the development of Dalton's lymphoma as solid tumour. The oil was applied after injecting the cells and we found it could retard the development of tumour and arrest further development of already formed tumour.*

INTRODUCTION

Ayurvedic system of treatment has given valuable medicines for the effective control of diseases and research in the various medicinal plants used for the preparation of ayurverdic medicines have produced a number of drugs now effectively used in modern medicines. In case of cancer we do not have a proper medicine for complete cure even though drugs have been isolated from various medicinal plants. In this present communication we are presenting the results of your investigation on a ayurvedic oil preparation used for treatment of oral cancer. Medicinal preparation was donated by Dr. Singh and the ingredients of the oil consists among others flowers of ixora coccinea and cortus sativum.

MATERIALS AND METHODS

Animal experimentation was carried out using mice. Dalton's lymphoma cells, maintained in our Research Centre, were grown in the ascitic form in the mice and when it was reached the maximum growth (8 to 12 days), as seen by the size of the abdomen and by other symptom like difficulty in movement and start response the cells were collected under aseptic conditions. The cells were washed in sterile cold normal saline and counted. Mice having weight ranging from 15 to 20 gm were collected from the animal house and these groups of six each were separated for the animal experimentation. Since this is an oil preparation it could not sterilized to be given intramuscularly and therefore its effect on the formation of tumour was investigated. Three groups of mice A, B, and C, each consisting of six animals were given injections of 1 million Dalton's lymphoma cells on the leg after carefully shaving the area. By this process solid tumour was developed[1]. The medicine oil was applied on the leg from the second day onwards for the first group (Group A) on every day up to eighteen days. This could give an idea whether it can completely prevent the formation of tumour. To the second group (B) the medicine was applied externally from the 9^{th} day onwards till the 18^{th} day to find out whether it could reduce the size of the tumour or prevent further development of tumour. The third group

(C) was considered as the control where the medicine was not applied and the tumour allowed to grow. The size of the tumour in all groups were measured on the 20th day. The rate of growth of Dalton's lymphoma in solid form was measured by the method of Desambe et al[2], by measuring the diameter with Calipers in two perpendicular directions and the tumour volume calculated by the formula 4/3 II r_1^2, r_2^2 where r_1 and r_2 are major and minor diameters.

RESULTS AND DISCUSSION

The results of the investigations are presented in the table which indicate that the growth was retarded in the Group A, and the already formed tumour was prevented from further growth in the case of Group B, while the control developed solid tumours to the maximum size. The mass of tumour in the group A where the oil was applied the second day onwards showed the minimum growth (1.27 ml) while the control animals to which the medicine was not applied showed the maximum growth (2.55 ml). Here we find an effect of the oil preparation in reducing the rate of growth indicating the presence of some ingredient in the medicine which could get absorbed through the skin and effect the tumour formation. Assuming that this absorbable ingredient is present it could also prevent the further development of tumour as in the case of second group experiment where the oil preparation was applied from the 8th day onwards. Even though the difference is not much (2.55 and 2.33), this gives the idea that it may also possibly prevent further growth of tumour. It is considered that the medicine is absorbed through the skin as in the case of external applications of oil base preparations of ayurvedic medicines, even though we do not know how far the skin of the mice is able to transport active ingredient of oil based preparations. From these experiments we could come to conclusion that the oil preparation is able to retard the growth of solid tumour formed by Dalton's lymphoma and arrest the growth of already formed tumour. Drug could be considered as anticancer only if it could give positive findings in the case of cell viability in various cancer cell lines.

This being an oil preparation it could not be used for the standard anti – tumour drug tests such as viability of cancer cells in tissue culture experiments, metabolic blocking studies, or reverse mutation assay. However this preliminary investigation suggests that the preparation could be considered to retard the growth of solid tumour even though it could not reduce the already formed tumour. The components of the oil preparation are under investigations and we are getting some encouraging results with flowers of ixora coccinea and cortus sativus, which are two active ingredients of the oil.

TABLE – I

Group	Volume of tumour
A	1.27 ml
B	2.33 ml
C	2.55 ml

A – Animals treated with medicine from second day of injection of cancer cell.

B – Animals treated with medicines from the 8^{th} day.

C – Untreated animals.

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