

The Effects of Hydroalcoholic Extract of *Xanthium Strumarium* on L929 Tumor Cell Line

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II. MATERIAL AND METHODS

Abstract—The studies indicate that there is association between herbal extracts and cancer treatment. This study was exerted to determine the effects of *Xanthium strumarium* extract on viability of L929 cell lines. In this laboratory experimental study, L929 cell lines were divided into 6 groups including control, and groups receiving *Xanthium strumarium* extract in 10mg/ml, 1mg/ml, 0.1mg/ml, 0.01mg/ml and 0.001mg/ml doses. After 48 hours the viability of cell lines was examined with MTT assay. The data was analyzed using ANOVA. Our findings show that viability of L929 cell lines decreased significantly in groups exposed to 10mg/ml of extract. The results show that high dose of *Xanthium strumarium* decreases the proliferation of L929 cancer cells

Keywords---Xanthium strumarium, Viability, L929.

I. INTRODUCTION

CANCER is a large group of different diseases, all involving unregulated cell growth. In cancer, cells divide and grow uncontrollably, forming malignant tumors, and invade nearby parts of the body [1]. The cancer may also spread to more distant parts of the body through the lymphatic system or bloodstream. All cancers are genetic origin, that are caused by abnormal function of the gene [2]. These genes have an effect on cell proliferation, induction of differentiation regulation of cell to cell contacts and senescence induction or apoptosis [3],[4]. On the other hand, *Xanthium strumarium* L. (Family: Compositae) is a cocklebur or burweed commonly found as a weed in roadsides, rice fields, hedges throughout the tropical parts of India [5],[6]. *Xanthium strumarium* L is a herb that contains anti-inflammatory, analgesic [7],[8], antibacterial, anticancer [9],[10], antifungal [11], antihypoglycemic [12], antimetabolic [13],[14], antitrypanosomal, antimalarial [15], and diuretic activities [16]. The *Xanthium* extract can induce in vitro DNA damage at cytotoxic concentrations [17],[18]. This study was exerted to determine the effects of *Xanthium strumarium* L leaf extract on L929 tumor cell line.

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A. Extract preparation

Xanthium strumarium extract was prepared and different concentrations of extract (1µg/ml, 100µg/ml, 1mg/ml and 10mg/ml) were used in our study.

B. Protocol of Study

We used MTT assay in this work to determine the effects of *Xanthium strumarium* extract on L929 cells viability in cell culture. Briefly, the procedure was carried out in the following steps:

DAY ONE: 100 µl of cells was added into each well (96 well plate) and incubate at 37 with 5% co2 overnight.

DAY TWO: The media was removed and extract was added and incubated at 37 with 5%co2 overnight. For control 10%FBS was added to media.

DAY THREE: extract was removed from media. 20 µl of 5 mg/ml MTT was added to each well and incubated for 4 hours at 37oC. 150 µ isopropanol was added and covered with tinfoil and agitate cells on orbital shaker for 15 min. Absorbance was read at 570 nm with a reference filter of 630 nm and recorded.

C. Statistical Analysis

Statistical significance was evaluated by one-way analysis of variance (ANOVA) using SPSS 19. Differences with P<0.05 were considered significant.

III. RESULTS

Figure I shows the viability of L929 cells in response to different doses of *Xanthium strumarium* extract.

TABLE I
VIABILITY OF L929 CELLS IN RESPONSE TO DIFFERENT DOSES

Concentration	viability	p
Control	100	-
0.001 mg/ml	89.02	1
0.01 mg/ml	102.93	0.2
0.1 mg/ml	109.68	0.46
1 mg/ml	112.49	0.99
10 mg/ml	100.34	0.32

The results of the present study show that viability of L929 cell lines decreased significantly in group exposed to 0.001 mg/ml dose of extract compared, but other concentrations could not reduce L929 cell viability.

IV. DISCUSSION

Our study indicated that administration of appropriate dose of extract *Xanthium strumarium* reduces the viability of the cell line L929. In line with our findings studies show that *Xanthium strumarium* L is a herb that contains anti-inflammatory, analgesic [7],[8], antibacterial, anticancer effects [9],[10]. Antioxidants found in herbs also help to neutralize free radical, which are unstable molecules that are linked to the development of a number of degenerative diseases and condition including cancer, cardiovascular disease, cognitive impairment immune dysfunction, cataract and macular degeneration [19],[20]. Also, superoxide anion, hydrogen peroxide and hydroxyl radical are closely involved in human diseases such as Alzheimers disease, aging, cancer, inflammation, rheumatoid, arthritis, and atherosclerosis [21],[22] and herb extracts may prevent superoxide anions formation.

V. CONCLUSION

Our findings shows that appropriate dose of *Xanthium strumarium* decrease the proliferation of L929 cell lines, according to which, it can be used for treatment of breast cancer in appropriate dose.

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