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A. SHIVANANDA
ABSTRACT

Leaves, stem bark and fruit peels of *Citrus maxima* (Pomelo) and *Citrus aurantium* (Bitter orange) were collected from the local gardens around Devanahalli, Bangalore, (Karnataka). Coarse powder of Leaves, stem bark and fruit peels *Citrus maxima* (Pomelo) and *Citrus aurantium* (Bitter orange) was extracted with ethanol, acetone and water solvents.

The extracts of leaves, stem bark and fruit peels of *Citrus maxima* (Pomelo) and *Citrus aurantium* (Bitter orange) subjected to Preliminary qualitative phytochemical investigations and was found to possess alkaloids, carbohydrates, Steroids, Saponins, flavonoids, glycosides, phytosterols, proteins and tannins.

Similarly, the Ethanol, acetone and water extracts of each of the leaves, stem bark and fruit peels of *Citrus maxima* (Pomelo) and *Citrus aurantium* (Bitter orange) shows significant zone of inhibition against bacteria and fungi. The ethanol, acetone and water extracts of each of the leaves, stem bark and fruit peels of *Citrus maxima* (Pomelo) and *Citrus aurantium* (Bitter orange) was found to possess superoxide anion radical, DPPH, hydroxyl radical and nitric oxide radical scavenging activities. Therefore, for further studies is ethanolic, acetone and water extracts of each of the leaves, stem bark and fruit peels of *Citrus maxima* (Pomelo) and *Citrus aurantium* (Bitter orange) selected for anti cancer, anti microbial, anti inflammatory, analgesic activities. The phenolic and flavonoid content analysis shows that, fruit peel contains the maximum amount and between *Citrus maxima*
and Citrus aurantium, Citrus aurantium contains the greater amount of phenolics and flavonoids.

The present study indicates that, ethanolic, acetone and water extracts of each of the leaves, stem bark and fruit peels of *Citrus maxima* (Pomelo) and *Citrus aurantium* (Bitter orange) demonstrated the anti-cancer activity in HeLa cell line against by trypan blue dye exclusion method. Ethanol fraction of Citrus maxima leaf has 300 mg/kg b.w. p.o., shown high percentage of anticancer property as 69.1% of dead cells. *Citrus aurantium* leaf and fruit peel have 300 mg/kg b.w. p.o., shown higher percentage of anticancer properties. (higher % of dead cells such as 96.5% and 74.5% respectively).

The effect of ethanol, acetone and water extracts of each of the leaves, stem bark and fruit peel extracts of *Citrus maxima* (Pomelo) and *Citrus aurantium* (Bitter orange) demonstrated the anti-cancer activity in EAC cell inoculated swiss albino mice. With CM-LF-ETH, CM-BRK-ETH, CM-FP-ETH, CA-LF-ETH, CA-BRK-ETH and CA-FP-ETH at the dose of 300 mg/kg b.w. p.o. has shown significant prolongation of lifespan, reduction in tumor volume, improvement in the hematological parameters when compared to the rest of groups. There by it can be concluded that CM-LF-ETH, CM-BRK-ETH, CM-FP-ETH, CA-LF-ETH, CA-BRK-ETH and CA-FP-ETH at the dose of 300 mg/kg b.w. p.o. possesses better anticancer activity than CM-LF-ACET, CM-BRK-ACET, CM-BRK- WATE, CM-FP-ACET and CM-FP-WATE, CA-LF-ACET, CM-LF-WATE, CA-BRK-ACET, CM-BRK-WATE and CA-FP-ACET and rest of the doses. Whereas, the foresaid
fractions of the selected plant materials for acute toxicity study, analgesic, anti-inflammatory activities have shown maximum activity.

All the three drugs showed the anti cancer activity in EAC bearing animals and demonstrated a significant reduction in body weight, tumor volume, packed cell volume and percentage increase in life span (%ILS), with CM-LF-ETH, CM-BRK-ETH, CM-BRK-WATE, CM-FP-ETH, CM-FP-WTR and CA-LF-ETH, CM-LF-WATE, CA-BRK-ETH, CM-BRK-WATE, CA-FP-ETH, CA-FP-WATE 300 mg/kg b.w. p.o., dose showing maximum activity.

On the whole, the Leaves, stem bark and fruit peels of *Citrus maxima* (Pomelo) and *Citrus aurantium* (Bitter orange) are having *in vitro* antioxidant, *anti microbial, anti inflammatory, analgesic, HeLa* cell line against by trypan blue dye exclusion method, Ehrlich ascites carcinoma (EAC) inoculated tumor-bearing mice (anticancerous) properties. Thus, the findings from the present work may add to the complete value of the medicinal potential of the selected herbs.