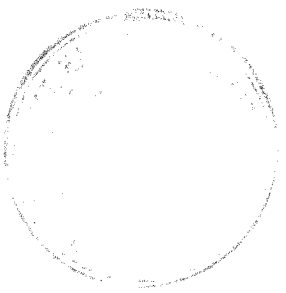

ABSTRACT

Present study was carried out in order to evaluate the antioxidant potential of two medicinal plants *Ailanthus excelsa* and *Butea monosperma*, based on the traditional claims. The selected plant material was successively extracted and screened for *in vitro* antioxidant activity. The active extracts from in vitro studies were further evaluated for their *in vivo* antioxidant activity using isoproterenol induced myocardial infarction and liver damage in rats.

Ethyl Acetate Extract of leaves of *Ailanthus* (AEEA) showed significant antioxidant activity, assessed by the content of endogenous antioxidant enzymes along with serum cardiac and liver marker enzymes. The determinations were supported with assessment of histological changes in the cellular architecture of heart and liver.

AEEA was also assessed for antioxidant activity against H_2O_2 and xanthine-xanthine oxidase induced stress in H9c2 cell using confocal microscopy and flow activated cytometry.

Although different extracts root bark of *A. excelsa* showed significant antioxidant activity in *in vitro*, chloroform extract was most active. In toxicological studies chloroform extract was found most toxic; therefore it was further investigated for its antitumor property for which the plant is known.

Two compounds AECHL-1 and AECHL-2 were isolated and characterized from the chloroform extract which were found active in H9c2 cells by generating reactive oxygen species as evidenced by confocal microscopy and flow activated cytometry.

The compounds AECHL-1 and AECHL-2 were also found to show significant changes in mechanical properties of primary culture of neonatal myocytes and increased intracellular calcium in H9c2 cell lines.

AECHL-1 showed significant antitumor action in cancer cell lines.

The flowers of *B. monosperma* when extracted with methanol gave a solid mass appeared after cooling (BM1), the remaining extract was dried and fractionated in butanol (BUT) and ethyl acetate extract (BFEA) which showed significant antioxidant activity in *in vitro*. Both BFEA and BUT showed significant action in

isoproterenol induced myocardial infarction and hyperlipidemia, in dose dependent manner. The compounds BM and BFEA-1 separated from BM1 and ethyl acetate extracts, respectively were characterized and estimated using various analytical methods.

The compound BM was also studied for its antioxidant effect using H9c2 cell lines.

The flowers of *B. monosperma* also hold a promise as their candidature as effective medicament in hyperlipidemia.

The compound from *A. excelsa* was found promising in its antitumor potential when screened in different infected cell lines

The studies signify the antioxidant potential of *A. excelsa* and *B. monosperma* as claimed in the traditional literature.