**ABSTRACT**

**Background & Objectives:** Cancer is a general term used frequently to indicate various types of malignant neoplasms, most of which invade surrounding tissue and may metastasize to several sites. Many Ayurvedic herbal drugs have been listed with possible antineoplastic activity. Sadafuli (Catharanthus roseus) – vinblastin, vincristin; Talispatra (Taxus bravifolia) – Taxol; are few examples of plant based anticancer drugs. Basella rubra Linn. is one of the edible herbs among list, on which very less research work i.e. antiulcer, antifungal, target for HIV activities have been reported and the earlier studies in our laboratory on the leaves of Basella rubra Linn. has showed the anticancer activity. Hence, the present work is to explore the mechanism involved in the anticancer activity of leaves of Basella rubra Linn.

**Methods:** HL-60 (Human promyelocytic leukemia) cell lines were obtained from NCCS, Pune and were cultured in RPMI-1640 and DMEM growth medium respectively supplemented with 10% FBS. The cytotoxic and antiproliferative effect of Basella rubra Linn. in the doses of 6.12- 200 μg/ml on HL-60 cancer cells were determined by MTT assay, Clonogenic assay and DNA fragmentation assay was observed using FACS analysis. HAEBR was used in the doses of 100- 1000 μg/ml for estimating the levels of TNF-, TGF- and p53.

**Results:** The maximum increase in the levels of TNF- and p53 was observed with HAEBR (1000 μg/ml) and the level of TGF- significantly decreased in HL-60 cell lines compared to the control group. HAEBR showed significant (P<0.05) dose dependent decrease in percentage cell viability on HL-60 cell line as compared to the control in MTT assay. HAEBR produced very significant (P<0.001) dose dependent decrease in percentage colony growth on HL-60 cell line as compared to control and also caused DNA fragmentation in dose dependent manner.

**Conclusion:** The present study demonstrated that the hydro-alcoholic extract of leaves of Basella rubra Linn. possesses anticancer activity. This effect has been mediated by increasing the levels of TNF-, p53 and decreasing the level of TGF-.

**Key words:** Basella rubra Linn, Anti-proliferative effect, TNF-, TGF-, p53.