CONCLUSION

Research works with turmeric or curcumin till date were carried out mostly to show their inhibitory property towards tumor growth, viruses etc. The present investigation was framed to look into detail the effect of turmeric and curcumin on immunocompetent cells, which did not get much attention so far. The effects of malignant cells were also taken into account.

The effect of turmeric was judged at cellular level for both lymphocytes and malignant cells. Blastogenesis, DNA synthesis, cell cycle study and set in of apoptosis and cytotoxicity towards tumor cells were investigated. By all these counts turmeric seems to be stimulatory for the lymphocytes and causing cytotoxic differentiation of T cells. Ethanolic turmeric extract (ETE) itself was capable of setting apoptosis in the malignant cells.

Thus, turmeric plays diabolically opposite role on lymphocytes and malignant cells in murine model. The present investigation showed in detail these opposite effects, in conjunction promotes the role of turmeric as a strong immunotherapeutic agent for cancer. Then investigation was carried out by intravenous injection and oral administration of ETE to find out its effectiveness in curbing tumor induction and tumor growth. Turmeric was effective in delaying the appearance of tumor, growth of tumor and thus increasing the life span of the tumor bearing host. The tumor growth was affected but tumor could not be totally eliminated in present experimental set up. Devising further experiments including combination of some other agents with turmeric will be attempted in future.

Furthermore we documented the anti- inflammatory role of turmeric in 2,4 DNFB induced DTH reaction in mouse paw. Inhibition of neutrophil and macrophages at the site seems to affect lesser secretion of proinflammatory cytokine which might allow faster wound healing.

Generation of free radicals by univalent reduction of O_2 is fundamental to any biochemical process and involved in cellular metabolism. Simultaneously cellular antioxidant quenches the free radicals to maintain a balance and not allow them to affect the system deleteriously. We observed a strong antioxidant role of turmeric inhibiting generation of $O_2^{\cdot-}$, H_2O_2 and $OH^{\cdot}$. This explains maintenance of integrity of cell membrane especially of the lymphocytes. This feature allows turmeric to be a therapeutic agent to fight cancer.

ETE stimulates NO production in both lymphocyte & tumor cell significantly, allowing the first to be activated and induction of apoptosis for the tumor cells.

Upon chromatographic separation of ETE two fractions (F1 & F2) were found and F2 was more comparable with commercially available curcumin. When the effect of ETE, two fractions and curcumin was judged in the cell, ETE was found better in overall performance.