

Combinatorial Treatment using *Curcuma longa* and *withania Somnifera* Bioactives Can Bring new Therapeutic Approach in Cancer Treatment

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Abstract—Brain cancers are primary brain tumours, which start in the brain and almost never spread to other parts of the body through metastasis. The incidence of brain tumors in India is about 2 patients per 1,00,000 population, while the mortality rate is little less than 2 patients per 1,00,000 population. Glioma is one of the deadliest types of brain cancer. Glioma has highest number of cases of all malignant tumors with an estimated 12,390 new cases predicted in 2017. It is a broad category of brain and spinal cord tumors that arises from glial cells and develops into tumor. Glioma make up about 30% of all brain and CNS tumors and 80% of all are malignant brain tumors. Treatment of brain tumours includes surgery, radiotherapy, chemotherapy or steroid therapy, or a combination of these treatments. Several synthetic drugs are also in use for the treatment such as Cisplatin which acts as a cytotoxic drug that kills cancer cells by damaging DNA and inhibiting DNA synthesis.

In recent era the food based bioactives are becoming major weapons to fight against diseases and to that end the natural products especially of Indian origin are highly investigated which are already recommended since Vedic epoch for treating multifarious ailments. Hunt for new bioactives against brain cancer especially glioma is also on to avoid side effects of synthetic and radio or chemo therapy based treatments. Among investigated, curcumin from *Curcuma longa* and withaferin A and withanin from *Withania somnifera* showed tremendous potential as anticancer agents by apoptotic induction, decreasing invasion or metastasis or by suppressing tumor growth. A combinatorial treatment using both the bioactives to achieve the befitting synergy would be ideal scenario to validate their anticancer efficacy.

Keywords: Bioactives, Curcumin, *Withania somnifera*, Glioma, *Curcuma longa*.