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The Efficacy of Simarouba Glauca Extract on Brain Cancer

Vasudha Saini, Caleb Vegh, Christopher Nguyen, Siyaram Pandey

Brain cancer is an aggressive disease characterized by proliferation of tumor cells of the brain and central nervous system. Some treatments include surgery, radiation therapy, and chemotherapy. Unfortunately these treatments are as effective for brain cancers and tumor relapse for brain surgery is very aggressive and fatal. A main concern with chemotherapeutics is that they often cause side effects (toxic to normal cells) and the survival rate remains relatively low. With this in mind, some natural extracts have shown vary selective anti-cancer activity while leaving normal cells unaffected. Most natural extracts are well tolerated and have been used by traditional medicines for a long time. Lakshmi Taru (*Simarouba glauca*) extract is known to have anti-microbial, anti-malarial, and anti-inflammatory activities. We wanted to investigate if there are anti-cancer properties in this extract. Previously it has been shown that purified bioactive compounds from Lakshmi taru target cancerous cells to selectively induce apoptosis with minimal side effects. We use a total ethanolic or aqueous extract (as natural health prproducts) in in-vitro and in-vivo cancer models to evaluate anti-cancer efficacy. Preliminary results have shown aqueous and ethanolic extracts induce apoptosis selectively in human neuroblastoma cells (SH-SY5Y) without affecting normal human fibroblasts. Furthermore we also saw reducing in tumor growth in xenograft mice with human colon cancer. We will further investigate its interactions with the most common chemotherapeutic drugs, cisplatin and methotrexate. The outcome of this research study could potentially lead to an effective treatment of brain cancer using either Lakshmi Taru alone, or in combination with cisplatin and methotrexate.