Identifying the Molecular Mechanisms of a Safer Neuroblastoma Cure Using the Native Hawaiian 'Awapuhi (Zingiber zerumbet) Herb

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Neuroblastoma is one of the most severe tumors in young children with nearly 500 new cases reported each year. Currently, the only treatments available for this cancer are chemotherapy and radiation therapy, both of which have detrimental side effects. As a result, there is an urgent demand for an effective yet safer anticancer reagent. In light of recent research, natural products derived from plants have been shown to be more tolerable anticancer reagents. Hawai?i is a place of exceptionally rich traditional medicinal knowledge with traditional healers often using a variety of Hawai?i's herbs for disease treatment. However, due to the lack of research on these herbs' effects and molecular mechanisms, much of this potential remains unrealized. Thus, this project aims to quantitatively analyze the effects of traditional Hawaiian herbal medicine and apply this knowledge into modern applications such as cancer treatment. Through a literature screening, Zingiber zerumbet (?awapuhi) was found to be a promising candidate for anticancer research due to its prominent usage in native Hawaiian medicine. However, Zingiber zerumbet's effects on neuroblastoma have not been researched and more importantly, its detailed molecular mechanisms remain undiscovered, greatly hindering the development of a promising anticancer reagent. Here, the anticancer activity of Zingiber zerumbet on neuroblastoma was found to be significantly safer, yet just as effective, compared to conventional chemotherapy. Furthermore, a novel antioxidant-mediated molecular mechanism was identified and refined. By elucidating the anticancer mechanisms of Zingiber zerumbet, this research will be able to provide valuable information for the future design of safer anticancer drugs.

Awards Won:
Fourth Award of $500