JOURNAL ARTICLE

EXTH-121. Immune-12, a marine-derived nutraceutical, exhibits anti-glioblastoma activity in vitro and in vivo with minimal toxicity

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Alain Valdivia, Rajaneekar Dasari, Breanna Mann, Laura Herring, Whitney Stutts, Aaron Ebbs, Matthew Smith, Shawn Hingtgen, Albert Baldwin, Andrew Satterlee

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Abstract

Glioblastoma (GBM) remains one of the most lethal and treatment-resistant cancers, underscoring the urgent need for novel therapeutic strategies. Marine-derived nutraceuticals offer a promising avenue due to their unique and myriad bioactive compounds. Immune-12 is an orally available marine organism-derived product that has shown preliminary evidence of anticancer activity in the published literature. Now, our team is conducting a comprehensive investigation of Immune-12 to characterize its molecular makeup, mechanisms of action, and *in vitro/in vivo* antitumor potencies. We have already conducted proteomic, peptidomic, and metabolomic profiling of this complex compound alongside several *in vitro* and *in vivo* efficacy and safety studies. *In vitro* cytotoxicity assays across 18 tumor cell lines, including six GBM lines, revealed potent activity, with IC_{50} values ranging from 0.1% to 1.4% Immune-12 in media (volume/volume). *In vivo* toxicity studies, in which healthy mice were given Immune-12 for 28 days via oral gavage, showed no signs of systemic toxicity or weight loss. Furthermore, in orthotopic tumor-bearing mouse models, including GBM, Immune-12 inhibited tumor growth as a monotherapy and enhanced the antitumor efficacy of standard therapeutics in combination regimens. These findings suggest that Immune-12 exerts broad-spectrum cytotoxic effects against tumor cells while maintaining a favorable safety profile *in vivo*, highlighting its potential as a marine-derived therapeutic candidate for GBM and other malignancies. Based on these promising early data, we are rapidly conducting further experiments to maximize its potential for clinical application.