Compound from violets may help fight glioblastoma

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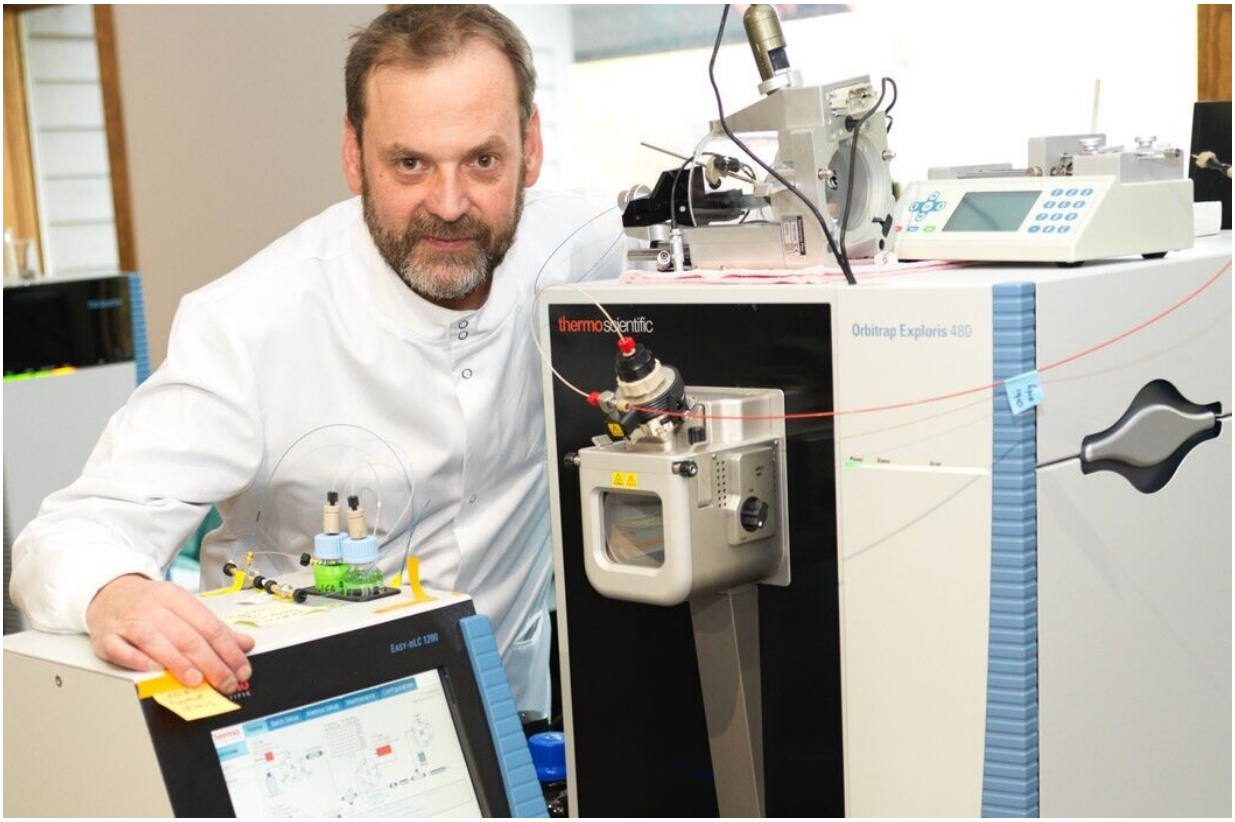

Brain Chemistry Labs Researcher Dr. James Metcalf uses Orbital Trap Mass Spectrometry to sequence antiglioblastoma peptide from violets. Credit: Paul Alan Cox

A circular peptide derived from violets could lead to new approaches in treating glioblastoma, a highly aggressive form of brain cancer.

Researchers report that cyclotides, small circular proteins produced by violets increase the power of TMZ, a chemotherapeutic agent, in killing human glioblastoma cancer cells.

Glioblastoma is a fatal type of brain cancer of adults and children with a median survival time of 9-16 months from diagnosis. Half of the tumors are resistant to the only FDA-approved treatment, TMZ, and the remainder quickly evolve resistance to this chemotherapy. Combining cyclotides with TMZ can increase the ability of TMZ to kill glioblastoma cells up to eight-fold, researchers report.

"We think we are on a path that could lead to better treatment of glioblastoma in the future," reports Dillard University Professor Samantha Gerlach, lead author of the report published last week in the *Journal of Natural Products*.

The biggest hurdle faced by researchers working in the laboratories based in Wyoming is extracting enough of the compounds from violets to test. Kilograms of violets are needed to yield a tiny dose.

"Our cell culture studies, though encouraging, are far from being useful in a clinical setting," cautions Dr. Paul Alan Cox, Director of the non-profit Brain Chemistry Labs in Jackson Hole. "Just extracting enough cyclotides to test in mice will take months."

Despite these technical obstacles, the research team remains undaunted. "Patients, particularly children, diagnosed with glioblastoma have few options," says Dr. Samantha Gerlach. "Our goal is to eventually provide new hope to glioblastoma patients and their families."

More information: Samantha L. Gerlach et al, Cyclotides Chemosensitize Glioblastoma Cells to Temozolomide, *Journal of Natural Products* (2022). DOI: 10.1021/acs.jnatprod.1c00595

Provided by Brain Chemistry Labs