LC-MS/MS METHOD DEVELOPMENT FOR QUANTIFICATION OF BIOACTIVE COMPOUNDS IN ELDERBERRY AND GARLIC BOTANICALS

Mitch Johnson

Dr. C. Michael Greenlief, Dissertation Supervisor

Abstract

Elderberry (*Sambucus nigra* spp.) juice contains a variety of polyphenols mostly anthocyanins. The anthocyanin content of various genotypes of elderberry juice was assessed using ultra-performance liquid chromatography/tandem mass spectrometry. The effects of frozen storage, growing location, and harvest year on anthocyanin content were subsequently investigated.

It has recently been discovered that N-α-(1-deoxy-D-fructos-1-yl)-L-arginine (FruArg) is a major contributor to the bioactivity of aged garlic extract and exhibits anti-oxidant and anti-inflammatory activity. A method was developed and optimized for quantitation of FruArg in rat plasma and brain tissue samples. It was determined that FruArg is well absorbed into the bloodstream and detected in four sub-regions of the brain suggesting it crosses the blood-brain barrier (BBB).

Cyanogenic glycosides (CG) are present in a variety of plants and can rapidly breakdown to poisonous hydrogen cyanide. Ultra-performance liquid chromatography-tandem mass spectrometry methods were developed to quantitate several CGs at very low concentration levels.