Milk Thistle, can it be a preventative for Alzheimer's disease?

Jennifer Sepe
Department of Chemistry, DePaul University 1110 W. Belden Avenue, Chicago IL 60614,
February 26, 2011, 2010

jsepe91190@sbcglobal.net

ABSTRACT Alzheimer's disease (AD) is characterized by the excessive production of amyloid protein and deposition in senile plaques, which are mainly composed of 40- and 42-mer amyloid b-proteins (Ab40 and Ab42). Ab42 has a more powerful aggregative ability and neurotoxicity than Ab40 and therefore is more responsible in the pathogenesis of AD. Silymarin, a mixture of flavonolignans extracted from the seeds, fruits, and leaves of Milk Thistle, has long been used for the treatment of hepatic disorders, most commonly for liver diseases. Many studies have investigated the inhibitory effects of various flavonoids on Ab aggregation and neurotoxicity. As a result, silymarin, being a mixture of flavonolignane diastereomers and having already been proven safe for human consumption, might be capable of having a preventative effect against the Ab-dependent phenotypes of AD.

To identify silymarin as a potential therapeutic agent for the treatment of Alzheimer's disease, various Attenuated Total Reflection Infrared Spectroscopy, ATR-IR, and Ultraviolet Visible Spectroscopy, UV-Vis, assays will be developed to identify and rank whether or not the mixture of flavonolignane diastereomers could inhibit aggregation of Ab. To carry out this test, Ab will be incubated with the test compound silymarin at a controlled temperature for a set amount of hours followed by ultrafiltration in order to separate the monomeric Ab from its aggregates. Aliquots of the ultrafiltrate will be analyzed for monomeric Ab.