

# Methods and Compositions for Improving Bioavailability of Epigallocatechin Gallate

**R**esearchers at the University of South Florida have developed a method that improves the bioavailability of catechins such as epigallocatechin gallate (EGCG) through the encapsulation of lipid nanoparticles.

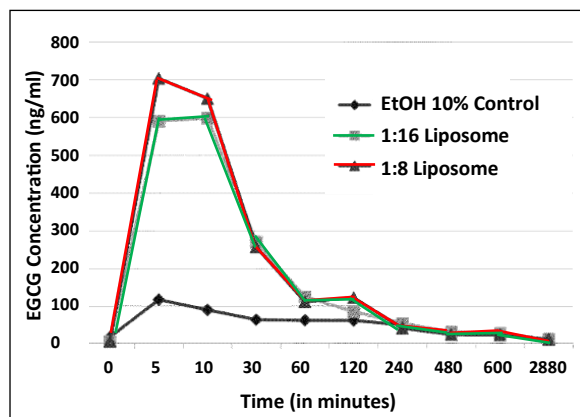
Beta-amyloid peptide plaques are a main physiologic hallmark of Alzheimer's disease (AD). Over the past decade, intense focus has been given to investigating the processes of the amyloid precursor protein (APP) as possible targets for AD therapy. Various synthetic and naturally occurring compounds have been analyzed for their efficacy in the modulation of various AD pathological events such as APP. One such naturally occurring compound is green tea. One of the most promising green tea compounds being analyzed is EGCG. Current research suggests that EGCG has implications as a treatment for many diseases including AD. However, it has yet to be fully realized due to its low bioavailability in-vivo, and therefore needs to be further developed.

USF researchers have developed compositions and methods of increasing the bioavailability of catechins such as EGCG. These include compositions where the catechin is added to a solution of ethanol and water, compositions where the catechin is encapsulated within a nanoparticle, and compositions in which a nanoparticle complex is formed between the catechin and the nanoparticle. This method significantly increases its neuronal  $\alpha$ -secretase enhancing ability in-vitro by approximately 82% and its systemic bioavailability in-vivo by nearly four-fold. This technique may be used to treat neurodegenerative diseases including AD or HIV-associated dementia.

### ADVANTAGES:

- Improved bioavailability of EGCG
- Reduced toxicity
- Significantly increases neuronal  $\alpha$ -secretase
- Potential neurodegenerative disease treatment

*A Nanoparticle Complex for Increased Bioavailability of Catechins such as EGCG*



*This Image Shows the Effectiveness of the EGCG Liposomal Formulations 1:16 and 1:8*

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