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P02.97. Lipoic acid supplementation induces a transient stress response and improves episodic memory and cholesterol efflux in humans

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Purpose

Lipoic acid (LA) shows promise as a beneficial micronutrient in improving health, particularly in the elderly. Clinical and *in vitro* reports show that LA induces endogenous antioxidants and acts as an anti-inflammatory agent. LA also increases nerve conductance, improves diabetes-induced polyneuropathies, and remediates the age-associated cognitive decline in canines. Furthermore, LA significantly improves hypertriglyceridemia and glucose handling. From our preclinical research we have found that LA primarily influences three areas of health: cognition, stress response, and lipids. This study examines the effects of LA on human subjects in components of each of the three aforementioned areas of health.

Methods

This study utilized acute treatments with LA supplements as well as chronic supplementation in an 8 week, double-blind placebo-controlled cross-over trial in human volunteers. The subjects were grouped into young (18-45 years) or elderly (~79 years), and all subjects were administered the R-enantiomer of LA in the form of oral supplements. This was a small pilot study with 2-6 subjects in each experiment.

Results

Results from the backward letter span and paired associates cognitive tests indicate that LA improved verbal episodic memory in the elderly, but did not improve short-term memory in the young or elderly. Chronic LA altered stress response systems as indicated by a transient increase in salivary cortisol and aldehyde dehydrogenase 3A1. Chronic LA also increased the amount of cholesterol taken up by high-density lipoproteins, particularly in the elderly subjects.

Conclusion

LA may be useful as a complementary nutraceutical agent to improve cholesterol efflux and select memory processes, particularly in the elderly. Continuous supplementation with LA induces a transient catabolic state, as well as a transient stress response. Thus, LA may function as a hormetic agent by inducing an initial stress that primes the system to efficiently respond to future toxicological insult.

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