

Anti-oxidants Increase Leucine Synthesis

Contributed by Robbie Durand
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If your grandpa wants to increase lean muscle mass, tell him to take his Centrum Silver.

Researchers from France reported that in older rats, taking an antioxidant increased leucine synthesis indicative of increased protein synthesis. Aged rats were fed either a basal diet or the same diet supplemented with anti-oxidants. At the end of seven weeks, they observed in the older rats a decreased ability of leucine to stimulate muscle protein synthesis. They found that the defect in leucine-stimulated protein synthesis in muscles of old rats was reversed when they were supplemented with antioxidants, independently of an increase in leucine availability. Antioxidant supplementation also tended to improve the leucine-induced inhibition of protein degradation, especially in muscles from old rats. This data suggest that antioxidant supplementation, through synergistic effect with amino acids (leucine), can improve muscle protein anabolism in old rats by restoring the leucine signal. Because oxidative stress (free radical damage) is increased during aging, it was hypothesized that chronic inflammation could be implicated in the age-associated impairment of the anabolic effect of leucine. Aging is also characterized by the development of a low grade inflammation with an increase of cytokines and acute phase protein levels, which has been suspected to be one of the components implicated in sarcopenic development. There has been talk on the message boards about studies showing that NSAIDS increased muscle mass in older adults. Similar to NSAIDS, the researchers reported that anti-oxidants reduced markers of inflammation and enhanced leucine synthesis. Older men with chronic inflammation may find that NSAIDS or anti-oxidants enhance muscle mass by reducing chronic inflammation.

Marzani B, Balage M, Vénien A, Astruc T, Papet I, Dardevet D,

Mosoni L. Antioxidant supplementation restores defective leucine

stimulation of protein synthesis in skeletal muscle from old rats.

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