

Myogenic Satellite Cell Proliferative and Differentiative Responses to Components of Common Oral Ergogenic Supplements

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Abstract

This study evaluated the ability of common ergogenic supplement components to alter satellite cell proliferative activity in vitro. Compounds studied were cinnamic acid, ferulic acid, L-glutathione, β -hydroxybutyric acid, calcium- β -hydroxy- β -methylbutyrate monohydrate, DL-thioctic acid (α -lipoic acid), and ornithine α -ketoglutarate. Satellite cells were exposed to different levels of ergogenic test compound for a specified amount of time and analyzed by counting mononucleated and multinucleated cells. At the levels evaluated, none of these compounds altered satellite cell proliferation over that of control cultures ($p > 0.05$). Four of the compounds were shown to alter satellite cell differentiation over control cultures ($p < 0.05$), but due to the small amounts of fusion, the biological relevance is in question (e.g. differences in small numbers). These data suggest that a few of the ergogenic compounds examined by this laboratory do influence satellite cell activity in vitro. However, additional studies are vital in order to define the biological relevance of our observations.

Keywords: muscle stem cells; dietary compounds; nutraceuticals; cell culture