Commonly Consumed Oral Herbal Supplements Do Not Influence Satellite Cell Activity

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Abstract

This study evaluated the ability of common herbal components in ergogenic dietary supplements to alter satellite cell activity in vitro. Herbal compounds studied were banaba leaf extract (1μg· ml^{-1}, 10μg· ml^{-1}, 100μg· ml^{-1}, 1mg· ml^{-1}), foenugreek seed extract (1μg· ml^{-1}, 10μg· ml^{-1}, 100μg· ml^{-1}, 1mg· ml^{-1}), and Cystoseira canariensis extract (10pg· ml^{-1}, 1ng· ml^{-1}, 100ng· ml^{-1}, 10μg· ml^{-1}, 100μg· ml^{-1}, 1mg· ml^{-1}, 10mg· ml^{-1}). Additionally, Ephedra sinenis extract and Citrus aurantium extract were reevaluated at lower levels (0.0000001%, 0.00001%, 0.001%). The effects of selected concentrations of these components were studied in combination with 0.1% creatine monohydrate, which we had previously determined possessed some capability to induce satellite cell differentiation. Ovine satellite cells were exposed to the four treatment levels of the herbal compounds for a specified amount of time and analyzed by counting mononucleated and multinucleated cells. None of the studied compounds, either alone or in combination with creatine monohydrate, altered satellite cell proliferation or differentiation over that of control cultures ($p > 0.05$). These results suggest that the ergogenic compounds examined do not directly influence satellite cell activity in vitro.

Keywords: muscle stem cells; dietary supplements; nutriceuticals; herbs