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In Vitro Characterization of the Efficacy and Safety Profile of a Proprietary Ajuga Turkestanica Extract

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ABSTRACT

Ajuga Turkestanica, an herbaceous flowering species in the mint family, has been traditionally used in Turkey and Uzbekistan for heart disease, muscle aches and stomach problems. Due to its high levels of phytoecdysteroids (particularly the characteristic C-11-hydroxylated Turkesterone), anabolic properties have also been reported. The aim of our study was to screen for early signs of efficacy and safety of a proprietary Ajuga turkestanica extract (ATE) using *in vitro* models. C₂C₁₂ mouse myotube cell line was used to study potential effects on viability and gene modulation. Cell viability was evaluated with different concentrations [0.2 - 200 ppm (mg/L)] of ATE. Gene modulation was assessed by quantitative polymerase chain reaction (qRT-PCR) after 6h incubation (ATE vs. the androgenic anabolic steroid methandrostenolone). Total androgenic activity was measured using the A-SCREEN bioassay. Ultra-high performance liquid chromatography analysis showed good correlation between the phytochemical profile of the native plant and our ATE. C₂C₁₂ mouse myotube cells treated with ATE experienced no significant loss of viability (concentrations 0.2 - 200 ppm, 1 - 24 hs, p > 0.05). qRT-PCR array analysis showed significant (p < 0.05) down regulation of Caspase-3 (2-fold) and Myostatin (4-fold). The extract showed no androgenic activity within the dose range used. Our results indicate the potential for an ATE to support muscle mass without typical androgenic side effects of synthetic anabolic drugs.

KEYWORDS

Ecdysteroids; Ajuga Turkestanica; Turkesterone; Caspase 3; Myostatin; Androgenic Activity; Sarcopenia

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