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# Acute assessment of an aspalathin-enriched green rooibos (Aspalathus linearis) extract with hypoglycemic potential.

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Abstract

Rooibos, an endemic South African plant, known for its use as herbal tea, has potential as an antidiabetic herbal product, following recent demonstration of the glucose lowering effect of its major flavonoid, the dihydrochalcone C-glucoside aspalathin. The purpose of this study was to confirm antidiabetic activity for rooibos extract high in aspalathin content. An extract (SB1) was selected after screening for high aspalathin content and α-glucosidase inhibition activity. On-line HPLC-biochemical detection confirmed α-glucosidase inhibitory activity for aspalathin. In vitro the extract induced a dose response increase in glucose uptake ($5 \times 10^{-5}$ to 5 μg/ml) on C2C12 myotubules. Aspalathin was effective at 1, 10 and 100 μM, while rutin was effective at 100 μM. In the Chang cells only the extract was effective. In vivo the extract sustained a glucose lowering effect comparable to metformin over a 6h period after administration (25mg/kg body weight (BW)) to STZ-induced diabetic rats. In an oral glucose tolerance test the extract (30 mg/kg BW) was more effective than vildagliptin (10mg/kg BW), a dipeptidyl peptidase-4 inhibitor. An aspalathin-rutin mixture (1:1; m/m) dosed at 1.4 mg/kg BW, but not the single compounds separately, reduced blood glucose concentrations of STZ-induced diabetic rats over a 6h monitoring period. The improved hypoglycemic activity of the aspalathin-rutin mixture and the extract illustrated synergistic interactions of polyphenols in complex mixtures.

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