





Abstract

Rooibos Tea Extract May Help to Reduce Incretin Demand in Healthier Prediabetes Subgroup[†]

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Abstract: Rooibos tea (*Apalathus linearis*) extract, rich in glycosylated polyphenols (aspalathin and nothofagin), has been shown to improve glycaemic responses in individuals with prediabetes, a high-risk state for developing type 2 diabetes (T2D). However, evidence is scarce regarding its impact on Glucagon-like-peptide-1 (GLP-1). GLP-1 stimulates 50–70% of insulin production during a meal, also known as the incretin effect. Individuals with prediabetes may therefore benefit from an increase in GLP-1 concentration. On the other hand, a decrease in GLP-1 may indicate heightened incretin sensitivity, resulting in a reduced demand for GLP-1 secretion needed to improve glycaemic responses. We conducted an acute, single-blind, placebo-controlled, non-randomised, crossover study (GLARE study; ACTRN12617000837325) examining the impact of rooibos tea extract on GLP-1_{total} and GLP-1_{active} concentrations in participants with prediabetes. Nineteen participants (aged 65.0 ± 1.6 years, BMI 27.3 ± 1.1 kg/m², and HbA1c 42 ± 1 mmol/mol) were given a placebo or rooibos tea extract on separate occasions before an oral glucose tolerance test (OGTT). Blood samples were collected at 0, 30, 60, 90 and 120 min. Data were analysed using a linear mixed model for repeated measures. Secondary analysis was conducted by stratifying participants into either a healthier or less healthy prediabetes subgroup, with the less healthy group experiencing delayed postprandial glucose and/or insulin peaks. The study outcomes demonstrated that although prior to stratification there were no significant changes in the overall total incremental area under the curve (iAUC_{total}) of GLP-1_{total} and GLP-1_{active} in participants ($p > 0.05$), the healthier prediabetes subgroup exhibited a significant reduction in GLP-1_{active} compared to the control group (479.4 vs. 1046.7 pM.min, $p = 0.038$, effect size Cohen's $d = 0.6$). This suggests that rooibos tea extract may reduce postprandial incretin demand in people with prediabetes. More study is warranted to confirm this observation.

Keywords: functional food; polyphenol; hyperglycaemia; impaired glycaemic control; impaired glucose tolerance; impaired fasting glucose; glucagon-like-peptide-1



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