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Anti-hyperglycaemic effects of herbal porridge made of *Scoparia dulcis* leaf extract in diabetics – a randomized crossover clinical trial

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Abstract

Background: Leaf extracts of *Scoparia dulcis*, is used as a herbal remedy by diabetics worldwide. Fresh *Scoparia dulcis* porridge elicited a low glycaemic index (GI) and anti-hyperglycaemic effects when fed to diabetic Wistar rats. Commercially produced *Scoparia dulcis* porridge (SDC) elicited medium GI. Present study was aimed at studying the anti-diabetic effects of consumption of commercially produced *S. dulcis* porridge.

Method: A randomized crossover clinical trial with type 2 diabetic patients ($n = 35$) on medication, with mild and moderate diabetes [fasting blood glucose (FBG) 126–300 mg/dL, age 35–70 years] was conducted. Within the first three months (study period 1) group 1 was the test and group 2 was the control. Following a wash-out period, the two groups were crossed over (study period 2: group 1 – control; group 2 - test). Test group consumed commercially produced SDC for 3 days/week for three months and the control group any other food. At the onset and end of each study period glucose measurements [Fasting Blood Glucose (FBG), HbA1c], lipid measurements (total cholesterol, HDL-C, LDL-C, triglycerides, cholesterol ratios), toxicity parameters (liver enzymes, creatinine, CRP, eGFR) were analyzed by enzyme assay kit methods using a KONELAB 20XT auto analyzer. Significances between groups were analyzed by one way ANOVA (normal distribution) and Mann Whitney test (if the values were not normally distributed). Within group comparisons were carried out by Bonferroni post hoc test.

Results: During the crossover clinical trial HbA1c of group 1 decreased from 7.9 ± 0.5 to 6.5 ± 0.3 ($p = 0.003$) while HbA1c of group 2 decreased from 7.0 ± 0.3 to 6.7 ± 0.3 while in the test group. Therefore, both test groups (1 and 2) elicited a decrease in HbA1c compared to respective control groups. Both test groups elicited a non significant decrease in FBG following the intervention (group 1 - from 174 ± 14 to 160 ± 10 mg/dL; group 2 - from 183 ± 13 to 160 ± 7 mg/dL). No significant differences ($p > 0.05$) in insulin, cholesterol measurements (total cholesterol, LDL-C, HDL-C, triglycerides and cholesterol ratios) and atherogenic index between or within groups were observed. All other measurements (AST, ALT, ALP, creatinine, CRP, eGFR) were normal and not significantly different between or within groups.

Conclusion: Porridge made with SDC leaf extract decreased FBG and HbA1c ($p > 0.05$) of type 2 diabetic patients. The porridge had no effect on cholesterol measurements and no toxicity was observed at the dose tested. Therefore, the SDC porridge can be recommended as a suitable meal for diabetic patients.

Keywords: *Scoparia dulcis*, Leafy porridge, Anti-hyperglycaemic, Cholesterol

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