

Sargassum polycystum reduces hyperglycaemia, dyslipidaemia and oxidative stress via increasing insulin sensitivity in a rat model of type 2 diabetes

Abstract

BACKGROUND

Sargassum polycystum, a brown seaweed, contains various nutrients and bioactive compounds that have antioxidant and healing properties. The research hypothesises that antioxidants and pigments in dietary *S. polycystum* extracts can improve insulin sensitivity, blood sugar levels and blood lipid levels in a rat model of type 2 diabetes. The diabetes was induced by a high-sugar, high-fat diet for 16 weeks to enhance insulin resistance, followed by a low-dose intraperitoneal injection of streptozotocin (35 mg kg⁻¹ body weight). The doses of *S. polycystum* tested on diabetic rats were 150 and 300 mg kg⁻¹ body weight for the ethanolic extract or 150 and 300 mg kg⁻¹ for the water extract. Normal rats, untreated diabetic and metformin-treated diabetic rats (n = 6) were used as control.

RESULTS

Both doses of the alcohol extract of *S. polycystum* and the 300 mg kg⁻¹ water extract, significantly reduced blood glucose and glycosylated haemoglobin (HbA1C) levels. Serum total cholesterol, triglyceride levels and plasma atherogenic index were significantly decreased after 22 days treatment in all seaweed groups. Unlike metformin, *S. polycystum* did not significantly change plasma insulin in the rats, but increased the response to insulin.

CONCLUSION

The consumption of either ethanolic or water extracts of *S. polycystum* dose dependently reduced dyslipidaemia in type 2 diabetic rats. *S. polycystum* is a potential insulin sensitiser, for a comestible complementary therapy in the management of type 2 diabetes which can help reduce atherogenic risk. © 2012 Society of Chemical Industry