

α -Glucosidase- and α -amylase-inhibitory activities of phlorotannins from *Eisenia bicyclis*.

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Abstract

BACKGROUND:

In an effort to develop alternative therapeutic agents, strong inhibitory activity against α -glucosidase and α -amylase was detected in *Eisenia bicyclis* methanolic extract.

RESULTS:

In this study, two phlorotannins were isolated from *E. bicyclis* and characterised by chromatography and nuclear magnetic resonance. The active substances were identified as fucofuroeckol A (FF) and dioxinodehydroeckol (DD). To the authors' knowledge, this is the first report of the identification of these substances in *E. bicyclis*. However, to date, no antidiabetic activity of FF and DD has been reported. Both phlorotannins demonstrated significant inhibitory activity against α -glucosidase and α -amylase. FF showed potent antidiabetic activity, with IC(50) values of 131.34 nmol L(-1) against α -glucosidase and 42.91 μ mol L(-1) against α -amylase. The corresponding IC(50) values of DD were 93.33 nmol L(-1) and 472.7 μ mol L(-1) . Furthermore, kinetic analysis revealed that FF and DD exhibited non-competitive inhibitory activity against α -glucosidase.

CONCLUSION:

These results suggest that FF and DD may be candidates for the development of an antidiabetic pharmaceutical agent or food additive.