

Nutraceuticals in balancing redox status in ageing and age-related diseases

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Book of Abstracts

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O1. BENEFICIAL EFFECTS OF *Centaurium erythraea* EXTRACT ON GLYCEMIC CONTROL AND INSULIN LEVEL IN DIABETIC RATS

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Centaurium erythraea (CE) is traditionally used for diabetes treatment due to its anti-diabetic properties. Previously we have reported that the major constituents of CE methanol extract (CEE) are secoiridoids and polyphenols. Here we analyzed the protective effect of CEE on pancreatic β -cells in streptozotocin (STZ)-induced diabetic rats. CEE (100 mg/kg) was administered daily and orally to control or diabetic rats for two weeks before diabetes induction, during five days of STZ treatment (40 mg/kg/day), and for four weeks after last STZ injection (pre-treated group), or for four weeks after diabetes induction (post-treated group). Histological and immunohistochemical examination of the pancreas revealed disturbed morphology of pancreatic islets, a decrease in their number and size which was accompanied by the reduction of insulin-positive β -cells in diabetic rats when compared to control or control/CEE-treated rats. Islet morphology and mass, as well as the number of insulin-positive β -cells, were improved in CEE-treated diabetic rats, particularly in a pre-treated group. In pre- and post-treated groups we observed the increase of GLUT-2 transporter and p-Akt kinase, that were absent in diabetic pancreas pointing to impaired glucose-stimulated insulin secretion in remnant β -cells. CEE-mediated increase of β -cell mass, GLUT-2 and p-Akt levels in diabetic rats contributed to the elevation of serum insulin level and reduction of glucose level which was more prominent in pre- than in a post-treated group. The results of this study suggest that improved insulin production and glycemic control in CEE-treated diabetic rats may result from the structural/functional preservation of pancreatic islets.

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