



Proceeding

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Protective Effect of Honey-Bee Extract and Caffeic Acid Phenethyl Ester (CAPE) on Type 1 Diabetes: Impact of Metalloproteinase and Tissue Inhibitors of Metalloproteinase on Hyperglycemia *in-Vivo*

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Presentation

In type 1 diabetes, the immune system has an important role in beta cell destruction. In addition, free-radical damage is also implicated. Treatments which have protective effects against free radical damage may be beneficial in diabetes.

Method

Swiss mice were randomly assigned into four groups of 8 mice in each group. Group 1 were a non-diabetic control group. The other groups were induced to develop diabetes by administration of cyclosporine/streptozocin. Group 2 received no additional treatment. Group 3 received honey extract 4 µM/kg and Group 4 received CAPE 6 µM/kg as treatments.

Results

The diabetic mice showed a significant increase in blood glucose level, which reduced significantly in treated groups.

The hepatic glycogen content decreased significantly by 35.3% in diabetic group, whereas it decreased only by 2.2% and 1.5 % in treated groups. As a result, significant elevations in the SOD, GSH and CAT enzyme activity were seen in treated groups compared with the untreated diabetic group. In addition, serum MMP-9 reduced significantly and TIMP-1 appears significantly increased in treated groups compared with the untreated group. Histopathological examination showed marked regenerative changes and normal architecture of islet cell in treated groups compared with untreated.

Conclusion

Honey extract and CAPE have anti-diabetic properties in mice, related to their anti-inflammatory and angiogenic inhibitor activation effects and may be relevant in the future for human diabetes treatment.



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