OP-0110 – The Therapeutic Potential of Heat Shock Protein 72 in Mice Model of Type 2 Diabetes

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Background

Methods

- 1) Animals: Hsp70.3 gene and the Hsp70.1 gene KO (HSP72 KO) mice were used.
 - 7 weeks old HSP 72 homo KO mice: n=10, control: littermate wild type mice: n=8
- 2) HSP72 KO and control mice were subjected to a high-fat diet (HFD) regimen for 10 weeks
 - Fasting blood glucose, random fed blood glucose, body weight, food intake, organ weight, glucose, insulin or pyruvate tolerance tests.
 - Histological analysis.
 - Evaluation of phosphorylation of Akt or JNK: total protein extraction, Western blot.
 - Evaluation of hepatic gluconeogenesis: mRNA expression by real time RT-PCR.
- 3) Lenti viral overexpression of HSP72 was achieved by tail vein injection.
 - i.p. GTT, ITT and Pyruvate tolerance test was performed.
 - Histological analysis.

[References]

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Metabolic phenotype in HSP72 KO

Metabolic improvements by hepatic HSP72 induction in HSP72 KO

Conclusion

- ✓ Deficiency of HSP72 leads to increased visceral adiposity, insulin resistance, chronic inflammation and hepatic steatosis.
- ✓ Insulin resistance and HSP72 reduction is closely related. Decrease of HSP72 may accelerate inflammatory milieu in type 2 diabetes.
- ✓ Because enhanced expression of HSP72 improved glucose metabolism in diabetic animals and humans, appropriate induction of HSP72 may become novel strategy for the treatment of type 2 diabetes.