

## Tissue Specific Alteration of IGF System in Diabetic Rats

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**Background :** Insulin like growth factor (IGF) systems have been reported to be associated with the onset of diabetic mellitus. However, the effect of diabetes on IGF system was not elucidated. This study is to investigate the effect of diabetes on the regulation of IGF system in liver and kidney, which are the important organs in the pathogenesis of diabetes.

**Methods :** Experimental groups are subdivided into three groups: 1) control, 2) streptozotocin (STZ) -induced untreated diabetic group, 3) insulin treated group (plus diabetic rats). Radioimmunoassay (RIA), reverse transcription polymerization chain reaction (RT-PCR), western ligand blotting, and western immunoblotting analysis were conducted.

**Results :** Over 1 day after the treatment of STZ, diabetic group exhibited hyperglycemia, polyuria, and polydipsia, which are characteristic of diabetes mellitus. In diabetic group, liver and kidney weights were increased. Serum levels of IGF-I were decreased but those of IGF-II were increased in diabetic groups, compared to control. The expression of IGFBP-3 in serum was lower and that of IGFBP-1 and IGFBP-2 was higher in untreated diabetic rats. The expression levels of IGF-I, IGF-II, IGFBP-1, IGFBP-2, and IGFBP-3 in the liver of diabetic group have same pattern like serum. However, IGF-I and IGF-II levels of kidney were increased in untreated diabetic groups. The levels of IGFBP-1 and -2 are increased in the kidney of diabetic group. Insulin treatment recovered the changes of IGF system in serum, liver, and kidney.

**Conclusion :** Diabetes induces alteration of IGF system tissue-specifically.