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## **The Function and Roles of ADAMTS-7 in Experimental Diabetic Cardiomyopathy**

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### **Abstract**

**Background:** Diabetes is becoming an independent major risk for the development of cardiovascular complications. Research on the pathogenesis of diabetic cardiomyopathy has focused on myocardial insulin resistance, calcium overload, and metabolism disorders. Even though diabetic cardiomyopathy is increasingly get to know, the underlying mechanisms are still incompletely understood. This study aims to determine the function of ADAMTS-7 gene in diabetic cardiomyopathy.

**Materials and methods:** All rats aged 3-4 months divided into two groups with one group as a negative control and one positive control have induced cardiomyopathy with low-dose Streptozotocin for four months. At the end of experiment, cardiac tissues were evaluated by histopathology, western-blotting, rt-PCR and immunohistochemistry. Data of gene expression was analyzed by one-way ANOVA with the Kruskal Wallis tests. Values were considered significant at  $P < 0.05$ .

**Result:** Our main findings were the mean values of ADAMTS-7 expression show a significantly upregulation for the cardiac tissues in diabetic group ( $P < 0.05$ ). The level of expression with rt-qPCR in the group 1 was 2.94 and the expression levels in the groups 2 was 9.69. Protein expression ratio of ADAMTS-7 in group 1 was 1.93 and 8.28 was in group 2. Density of immunohistochemical staining in the diabetic group were more noticeable than control group ( $P < 0.05$ ). The comparison of the severity of histopathological changes were significantly higher in the diabetic group ( $P < 0.05$ ).

**Conclusion:** Alterations in ADAMTS-7 gene expression may play a role in diabetic cardiomyopathy in rats.

**Keywords:** ADAMTS-7, diabetic cardiomyopathy, gene expression

**Abbreviations:** A Disintegrin And Metalloprotease With Thrombospondin Motifs-7 (ADAMTS-7)

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None