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## Antihyperglycemic Activities of Purified Protein Containing Adiponectin from Abdominal Adipose Tissues of Halal Meat on the Streptozotocin-Induced Diabetic Rats

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### Abstract

**Objectives/Research Problem:** hite adipose tissue is not just an energy storage depot but now it is recognized to be an active organ in energy homeostasis and physiological functions. It is known to secrete a variety of bioactive proteins known as adipokines. Among these adipokines, adiponectin is reported to have antidiabetic properties which functions as an insulin sensitizer. The present study was performed to evaluate the effects of purified protein containing adiponectin or insulin alone on blood glucose, blood lipid and histopathological changes in the pancreas of streptozotocin-induced diabetic rats. **Materials and Method:** In this study, thirty male adult Sprague Dawley rats (*Rattus norvegicus*) weighing 150-250 grams (8-10 weeks) were randomly divided into six experimental groups A, B, C, D, E and F. Hyperglycemia was induced by a single intraperitoneal injection of streptozotocin (STZ) at rate of 70 mg/kg body weight. Seven days after, the confirmation of hyperglycemia by using a glucometer (Accu-Chek Active) and compatible glucose test strips, Groups A, B and C were treated with 30 mg/kg body weight of purified protein containing adiponectin from chicken, beef and lamb adipose tissues, respectively. Group E was treated with 2 I U/kg body weight insulin. Groups A, B, and C served as hyperglycemia and group F was a normal control and received 1 ml/kg body weight citrate buffer. After 14 days of treatment, the animals were sacrificed, the blood was analysed and the pancreas was processed for histological staining. Data obtained were expressed as means of four replicates. **Results and Discussion:** Findings showed that STZ-induced diabetes induced hyperglycemia and histopathological changes in the pancreas of rats. **Conclusion:** Treatment with the purified protein

containing adiponectin from abdominal adipose tissues of halal meat resulted in reduction in hyperglycemia and regeneration of beta cells.

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ABSTRACT

*Objectives/Research Problem:* White adipose tissue is not just an energy storage depot but now it is recognized to be an active organ in energy homeostasis and physiological functions. It is known to secrete a variety of bioactive proteins known as adipokines. Among these adipokines, adiponectin is reported to have antidiabetic properties which functions as an insulin sensitizer. The present study was performed to evaluate the effects of purified protein containing adiponectin or insulin alone on blood glucose, blood lipid and histopathological changes in the pancreas of streptozotocin-induced diabetic rats.

*Materials and Method:* In this study, thirty male adult Sprague Dawley rats (*Rattus norvegicus*) weighing 150-250 grams (8-10 weeks) were randomly divided into six experimental groups A, B, C, D, E and F. Hyperglycemia was induced by a single intraperitoneal injection of streptozotocin (STZ) at rate of 70 mg/kg body weight. Seven days after, the confirmation of hyperglycemia by using a glucometer (Accu-Chek Active) and compatible glucose test strips, Groups A, B and C were treated with 30 mg/kg body weight of purified protein containing adiponectin from chicken, beef and lamb adipose tissues, respectively. Group E was treated with 2 I U/kg body weight insulin. Groups A, B, and C served as hyperglycemia and group F was a normal control and received 1 ml/kg body weight citrate buffer. After 14 days of treatment, the animals were sacrificed, the blood was analysed and the pancreas was processed for histological staining. Data obtained were expressed as means of four replicates.

*Results and Discussion:* Findings showed that STZ-induced diabetes induced hyperglycemia and histopathological changes in the pancreas of rats.

*Conclusion:* Treatment with the purified protein containing adiponectin from abdominal adipose tissues of halal meat resulted in reduction in hyperglycemia and regeneration of beta cells.

KEYWORDS: Adiponectin Protein, Hyperglycemia, Streptozotocin, Diabetes Mellitus

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