

Antidiabetic effect of S-allylcysteine: Effect on Thyroid hormone and circulatory antioxidant system in experimental diabetic rats.

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Abstract

OBJECTIVE: It is considered that diabetes mellitus and thyroid disease are the two common endocrine disorders and also suggested that insulin and thyroid hormones influence each other actions. The present study was designed to investigate the effect of the administration of S-allylcysteine (SAC), a sulfur containing amino acid derived from garlic on blood glucose, insulin, HbA1C, total protein, albumin, Thyroid hormone (T3, T4), TSH, TBARS and circulatory antioxidant levels (SOD, CAT, GSH and GPx) in STZ-induced diabetic rats.

METHODS: SAC was administered orally for 45days to control and STZ induced diabetic rats. The effects of SAC on glucose, plasma insulin, HbA1C, total protein, albumin, Thyroid hormone, TSH and circulatory antioxidant levels were studied.

RESULTS: The levels of glucose, TBARS, hydroperoxide and HbA1C were increased significantly whereas the levels of plasma insulin, reduced glutathione, superoxide dismutase, catalase, GSH, GPx, total protein, albumin, Thyroid hormone and TSH were decreased in STZ induced diabetic rats. Administration of SAC to diabetic rats showed a decrease in plasma glucose, TBARS, hydroperoxide and HbA1C. In addition, the levels of plasma insulin, SOD, CAT, GPx, GSH, total protein, albumin, Thyroid hormone and TSH were increased in SAC treated diabetic rats. The effect of SAC was compared with gliclazide, a well-known antioxidant and antihyperglycemic drug.

CONCLUSION: From these findings, it is indicated that SAC might be acting through activation in the synthesis and/or secretion of circulating thyroid hormones which in turn stimulate the synthesis of insulin.

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