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Ameliorative potential of S-allyl cysteine on oxidative stress in STZ induced diabetic rats.

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Abstract

Increased oxidative stress and impaired antioxidant defense mechanism are important factors in the pathogenesis and progression of diabetes mellitus and other oxidant-related diseases. The present study was undertaken to evaluate the possible protective effects of S-allyl cysteine (SAC) against oxidative stress in streptozotocin (STZ) induced diabetic rats. SAC was administered orally for 45 days to control and STZ induced diabetic rats. The effects of SAC on glucose, plasma insulin, thiobarbituric acid reactive substances (TBARS), hydroperoxide, superoxide dismutase (SOD), catalase (CAT), glutathione peroxidase (GPx), reduced glutathione (GSH), oxidized glutathione (GSSG) and GSH/GSSG ratio were studied. The levels of glucose, TBARS, hydroperoxide, and GSSG were increased significantly whereas the levels of plasma insulin, reduced glutathione, GSH/GSSG ratio, superoxide dismutase, catalase and GPx were decreased in STZ induced diabetic rats. Administration of SAC to diabetic rats showed a decrease in plasma glucose, TBARS, hydroperoxide and GSSG. In addition, the levels of plasma insulin, superoxide dismutase, catalase, GPx and reduced glutathione (GSH) were increased in SAC treated diabetic rats. The above findings were supported by histological observations of the liver and kidney. The antioxidant effect of SAC was compared with glyclazide, a well-known antioxidant and antihyperglycemic drug. The present study indicates that the SAC possesses a significant favorable effect on antioxidant defense system in addition to its antidiabetic effect.

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