



Assessment of Genetic Damage in Diabetic Rats Treated with Insulin Glargine

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Abstract:

Changes in insulin structure may alter the way it interacts with insulin and insulin-like growth factor-1 receptors. Possible associations between the use of the long-acting insulin analog, glargine, and an increased risk of cancer have been widely examined. Strong evidence indicates a role for exogenous insulin or analogs in promoting cancer growth in diabetic patients. The clinical relevance of this pro-cancer effect of insulin in diabetic patients, however, is still unclear. In this study, the genotoxic and cytotoxic potential of insulin glargine (5, 12.5 and 25I.U/kg, S.C. daily for 2 weeks) was evaluated against the nicotinamide (NA-230mg/kg) and streptozotocin (STZ-65mg/kg) induced somatic and germinal cells defect using a battery of in vivo cytogenetic assays such as the micronucleus, chromosome aberration, mitotic index and sperm abnormality test in male Wistar rats. The obtained results demonstrated that insulin glargine significantly reduced the diabetes-induced genetic damage and cell proliferation changes in somatic cells. Moreover, the administration of insulin glargine reduced the diabetes-induced genetic damage in germinal cells. The results suggest that insulin glargine is not genotoxic or cytotoxic compound and its use does not present a carcinogenic risk.

Keywords:

Keywords: Diabetes, Insulin glargine, Chromosomal aberrations, Micronuclei, Carcinogenicity, sperm abnormalities.

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