A THERAPEUTIC POTENTIAL EFFECT OF NICOTINAMIDE IN DIABETES PREVENTION

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ABSTRACT

The protective effect of nicotinamide (NA) on type II diabetes mellitus induced in rats by streptozotocin (STZ) (50 mg/kg I.P. single dose) was assessed. The degree of protection was determined biochemically by measuring pancreatic nitric oxide (NO) and fasting blood glucose level (FBG) and by histopathological examination of beta cells (β-cells). In addition, the study also extended to detect the effect of NA on liver & kidney functions.

In STZ induced diabetic rats, there were significant elevation (P<0.05) of pancreatic NO\textsubscript{2}\textsuperscript{−} and NO\textsubscript{3}\textsuperscript{−} and FBG levels, as well as reduction in number size, fibrosis and hydropic degeneration of β-cells.

In rats pretreated with NA (1% in drinking water 3 weeks before diabetes induction), pancreatic nitrite (NO\textsubscript{2}\textsuperscript{−}) and nitrate (NO\textsubscript{3}\textsuperscript{−}) levels were significantly (P<0.05) reduced in addition to more or less normal histopathological picture of β-cells, but alanine aminotransferase (ALT) and aspartate aminotransferase (AST) levels were significantly elevated (P<0.05).

Moreover, in NA post-treated diabetic rats, pancreatic NO\textsubscript{2}\textsuperscript{−} and NO\textsubscript{3}\textsuperscript{−} and fasting blood glucose (FBG) levels were non significantly changed (P≥0.05) compared with diabetic non-treated rats with persistent of the same histopathological picture of β-cells.

In conclusion, these findings support the suitability of NA for trials designed to delay or prevent the onset of diabetes mellitus.