

## Evaluation of Antidiabetic Activity of a Combination Extract of *Nigella Sativa* & *Cinnamomum Cassia* in Streptozotocin Induced Type-I Diabetic Rats

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**Abstract :** Diabetes mellitus is a disease with a high global burden and results in significant morbidity and mortality. In India, the number of people suffering with diabetes is expected to rise from 19 to 57 million in 2025. At present, interest in herbal remedies is growing to reduce the side effects associated with conventional dosage form like oral hypoglycemic agents and insulin for the treatment of diabetes mellitus. Our aim was to investigate the antidiabetic activities of combinatorial extract of *N. sativa* & *C. cassia* in Streptozotocin induced type-I Diabetic Rats. Thus, the present study was undertaken to screen postprandial glucose excursion potential through  $\alpha$ -glucosidase inhibitory activity (In Vitro) and effect of combinatorial extract of *N. sativa* & *C. cassia* in Streptozotocin induced type-I Diabetic Rats (In Vivo). In addition changes in body weight, plasma glucose, lipid profile and kidney profile were also determined. The IC<sub>50</sub> values for both extract and Acarbose was calculated by extrapolation method. Combinatorial extract of *N. sativa* & *C. cassia* at different dosages (100 and 200 mg/kg orally) and Metformin (50 mg/kg orally) as the standard drug was administered for 28 days and then biochemical estimation, body weights and OGTT (Oral glucose tolerance test) were determined. Histopathological studies were also performed on kidney and pancreatic tissue. In In-Vitro the combinatorial extract shows much more inhibiting effect than the individual extracts. The results reveals that combinatorial extract of *N. sativa* & *C. cassia* has shown significant decrease in plasma glucose ( $p < 0.0001$ ), total cholesterol and LDL levels when compared with the STZ group. The decreasing level of BUN and creatinine revealed the protection of *N. sativa* & *C. cassia* extracts against nephropathy associated with diabetes. Combination of *N. sativa* & *C. cassia* significantly improved glucose tolerance to exogenously administered glucose (2 g/kg) after 60, 90 and 120 min interval on OGTT in high dose streptozotocin induced diabetic rats compared with the untreated control group. Histopathological studies shown that treatment with *N. sativa* & *C. cassia* extract alone and in combination restored pancreatic tissue integrity and was able to regenerate the STZ damaged pancreatic  $\beta$  cells. Thus, the present study reveals that combination of *N. sativa* & *C. cassia* extract has significant  $\alpha$ -glucosidase inhibitory activity and thus has great potential as a new source for diabetes treatment.

**Keywords :** lipid levels, OGTT, diabetes, herbs, glucosidase

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