# Alpha Lipoic Acid and Diabetes Mellitus: Potential Effects on Peripheral Neuropathy and Different Metabolic Parameters

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## ABSTRACT

### BACKGROUND:

Alpha lipoic acid (ALA) is an antioxidant used in the treatment of neuroinflammation, diabetes and diabetic nephropathy. The current study aiming to gauge the effect of oral ALA on diabetic peripheral neuropathy, glycemic control, LDL-C, and HDL-C.

### METHODS:

This is a prospective, interventional study carried out on patients with type 2 diabetes mellitus (DM) who were following at the outpatient internal medicine & diabetes clinics at Benha University Hospital. Treatment with ALA for 3 months was given to patient with diabetic peripheral neuropathy. Data in the form of age, sex, body mass index (BMI), duration & treatment of DM, manifestations of peripheral neuropathy were collected. LDL-C, HDL-C, HbA1c, TSH, ALT, AST were measured before and after intervention. Peripheral neuropathy symptoms, nerve conduction velocities, cardiovascular (CV) tests of autonomic neuropathy, and cross-section area of the posterior tibial nerve were performed before and after treatment intervention.

### RESULTS:

90 adult diabetic patients were recruited in the study, 42.2% were females and 57.8% were males with a median age of 50–60.3 years (IQR = 52). A statistically significant improvements of neuropathic symptoms, nerve conduction velocity, and cardiovascular autonomic neuropathy were noted after 3 months of administration of ALA ($p < 0.001$). However, the cross-section area of the posterior tibial nerve at baseline and after treatment did not change significantly (p value of 0.84). There was a significant improvement in the BMI, HDLC, LDL-C, HbA1c ($p < 0.001$).

### CONCLUSION:

Oral treatment with ALA might cause ameliorations of peripheral neuropathy, HbA1c, and LDL-C & HDL-C levels in diabetic patients. Our result failed to proof effect of ALA on nerve cross-section area. The global data encourage further studies with this medication as an ancillary treatment of DM2.

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