

The potential therapeutic usefulness of single and concurrent administration of evening primrose oil and alpha lipoic acid in diabetic neuropathy

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Evening Primrose oil (EPO) is widely used in the folklore treatment of several disease conditions including diabetic polyneuropathy; the most frequent neuropathy worldwide. Alpha lipoic acid (ALPA) displays a protective effect against lipid peroxidation and helps in scavenging free radicals. In this study we evaluated the pharmacological activity of the single and combined administration of EPO, Alpha-Lipoic acid (ALPA) and insulin in treating STZ-induced diabetic neuropathy in rats. The effects of the tested drugs on the biochemical changes, manifestations associated with diabetic neuropathy and histopathological changes in sciatic nerve and pancreas were investigated. EPO and ALPA attenuated the hyperglycemia induced by STZ in rats. Insulin alone or in combination with EPO corrected the blood glucose to near normal level. EPO, ALPA and insulin were also effective in treatment of dyslipidemia associating STZ-induced diabetes in rats and corrected the deficient NO serum level in these animals. The tested drugs decreased lipid peroxidation, increased total antioxidant status, decreased thermal and mechanical hyperalgesia, improved the defect in motor nerve conduction velocity and the sensory ataxia in diabetic rats. EPO and ALPA treatment exerted some protective effect on the β -cells of diabetic rat's pancreas and improved the histopathological changes on the sciatic nerve of these animals.

This study reveals that EPO improves glycemic control, lipid abnormalities and antioxidant capacity; thus restores the impaired functional properties of peripheral nerves. The beneficial effects of EPO seemed to be remarkably augmented after its combined administration with ALPA or insulin.

Biography

Dr. Elkoussi is a professor of Pharmacology in Assiut University College of Medicine since 1984. He was the Department Chairman between 1996-1999 and 2005-2007. Prof. Elkoussi obtained his PhD in 1972 and in 1982 and 1984 was granted postdoctoral fellowships in the University of Florida College of Pharmacy. From 1990 to 1994 he worked as a Senior Research Scientist in the Center for Drug Design and Delivery and Center for Drug Discovery, University of Florida and in 2002 obtained a Hubert Humphrey Fellowship at Johns Hopkins University. Prof. Elkoussi has published over 50 manuscripts in international journals and presented several lectures and research work in more than 40 international scientific conferences.