

## IDD Pub#13

Carrington A, Orłowski L, Cannan S, Letsinger J, Haigh B, and Litchfield J, (1999) **Increased glycation and nerve dysfunction in experimental diabetes.** Peripheral Nerve Society Meeting

The impaired nerve function in diabetic neuropathy is associated with non-enzymatic glycation of nerve proteins. This study examined conduction velocity (CV) and detection of early glycation products in peripheral nerve from streptozocin (STZ)-induced diabetic rats. Study 1: a monoclonal mouse IgM primary antibody raised against glucose derived Amadori-modified lysine residues (1-deoxyfructosyl lysine) was used for Western blot (WB) analysis of sciatic nerve glycated proteins. Study 2: rats were anesthetized and motor nerve CV was measured in the sciatic nerve-interosseus muscle system. In addition, the sciatic nerves were processed for immunohistochemistry (IHC) of glycated proteins (5µm thick-paraffin sections) using the same Amadori antibody and avidin-biotin-peroxidase DAB-NiCo substrate. All diabetic rats were hyperglycemic (>300mg/dl). WB demonstrated a two fold increased glycation of protein bands in the 37kD to 90kD range, at 1, 2, 3 and 4 weeks post STZ. MNCV was significantly decreased at 1, 2 and 3 months of diabetes compared to controls,  $p < 0.001$ . IHC results complemented the WB data showing an apparent increase in glycation of diabetic nerve compared to controls. This is suggestive of a link between nerve dysfunction and glycation of nerve proteins and consistent with previous studies demonstrating increased glycation of nerve proteins in clinical and experimental diabetes.