Seminar 1

Mechanism of diabetic peripheral neuropathy, causative factors and the role of BMP5 in its treatment

Maryam Karimi

Department of Biochemistry, Institute of Biochemistry and Biophysics, University of Tehran.

Abstract

Diabetic peripheral neuropathy is regarded as one of the most debilitating outcomes of diabetes mellitus and can cause pain, decreased motility, and even amputation. It includes multiple symptoms, ranging from discomfort to death. Prognosis of diabetic peripheral neuropathy is an uphill task as it remains silent for several years after the onset of diabetes. Hyperglycemia, apart from inducing oxidative stress in neurons, also activates multiple biochemical pathways which constitute the major source of damage and are potential therapeutic targets in diabetic neuropathy. A vast array of molecular pathways, including the polyol pathway, hexosamine pathway, PKCs signaling, oxidative stress, and AGEs pathway, may be responsible for the pathogenesis and progression of diabetic neuropathy. Although symptomatic treatment is available for diabetic neuropathy, few treatment options are available to eliminate the root cause. The

immense physical, psychological, and economic burden of diabetic peripheral neuropathy highlights the need for cost-effective and targeted therapies. Bone morphogenetic protein 5 (BMP5) is a multifunctional protein involved in the nervous system, but its effect on diabetic peripheral neuropathy has not been characterized. In this seminar, the mechanisms that cause diabetic peripheral neuropathy, as well as the role of BMP5 protein in its treatment are discussed..

Keywords: Diabetes, Hyperglycemia, Bone morphogenetic protein 5, Neuropathy.