BENFOTIAMINE IS PROMISING FOR THE INTEGRATED TREATMENT OF DIABETES MELLITUS

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Benfotiamine (Sbenzoylthiamine O-monophoshate) is a synthetic S-acyl derivative of thiamine. Once absorbed, benfotiamine is dephosphorylated by ecto-alkaline phosphatase to lipid-soluble S-benzoylthiamine. Transketolase is an enzyme that directs the precursors of advanced glycation end products (AGEs) to pentose phosphate pathway. Benfotiamine administration increases the levels of intracellular thiamine diphosphate, a cofactor necessary for the activation transketolase, resulting in the reduction of tissue level of AGEs. The elevated level of AGEs has been implicated in the induction and progression of diabetesassociated complications. Chronic hyperglycemia accelerates the reaction between glucose and proteins leading to the formation of AGEs, which form irreversible cross-links with many macromolecules such as collagen. In diabetes, AGEs accumulate in tissues at an accelerated rate. Experimental studies have elucidated that binding of AGEs to their specific receptors (RAGE) activates mainly monocytes and endothelial cells and consequently induces various inflammatory events. Moreover, AGEs exaggerate the status of oxidative stress in diabetes that may additionally contribute to functional changes in vascular tone control observed in diabetes. The anti-AGE property of benfotiamine certainly makes it effective for the treatment of diabetic neuropathy, nephropathy and retinopathy. Interestingly, few recent studies demonstrated additional non-AGE-dependent pharmacological actions of benfotiamine. The present review critically analyzed the multifaceted therapeutic potential of benfotiamine.

Benfotiamine has ability to halt the progression of many serious complications of prolonged hyperglycemia that certainly supports its therapeutic applications in diabetic patients. In fact, any bodily function improved by a therapeutic level of thiamine would most likely be enhanced by benfotiamine. The exaggerated benfotiamine consumption as a dietary supplement could over-stimulate the enzyme transketolase, whichmay account for some serious adverse drug reactions; however, the clear scientific data are missing in this regard. Growing body of evidence suggests that benfotiamine alleviates diabetes-associated neuropathy, kidney diseases, cardiac impairment, peripheral vascular diseases and retinopathy.

Hence, benfotiamine may be considered as an adjuvant nutritional therapeutic agent against the devastating consequences of hyperglycemia due to its inherent ability to confer functional support for blood vessel, nerve, kidney, eye and the heart.