

Amyloid Antagonists: The Future of Type 2 Diabetes As Well As Several Neurodegenerative Diseases Treatments

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Editorial

Volume 1 Issue 1

Received Date: June 08, 2016

Published Date: June 21, 2016

DOI: 10.23880/doi-16000106

Editorial

Type 2 diabetes (T2D) is a growing public health concern that accounts for approximately 90% of all the cases of diabetes. Besides insulin resistance, T2D is characterized by a deficit in beta-cell mass. Increasing evidence points to the cytotoxicity of islet amyloid polypeptide (IAPP) aggregates showing them not just an insignificant phenomenon derived from the disease progression but as agents which directly induce processes that impair the functionality and the viability of beta-cells eventually leading to the loss of beta-cell mass in T2D patients [1-4].

Amyloid deposits are also linked to many other neurodegenerative diseases such as Alzheimer's (AD), Parkinson's, and Huntington's. Inhibition of amyloid fibril formation using natural products e.g. polyphenols is one of the main therapeutic strategies to prevent the progression of these diseases [5]. A simple polyphenol, Gallic acid, one of the main components in plant tissues, especially in tea leaves, inhibited insulin amyloid fibril formation in vitro and phenolic compounds and hormones (cytokinins) found in coconut have been shown to assist in preventing the aggregation of amyloid-beta peptide, potentially inhibiting a key step in the pathogenesis of AD [5-6].

Further, prevention of IAPP formation by using IAPP inhibitory peptide, D-ANFLVH represented a potential treatment to increase beta-cell survival and function [4]. Additionally, both ascorbic acid and alpha-Tocopherol induced significant anti-inflammatory effects by decreasing the level of inflammatory factors such as serum amyloid A in T2D patients [7] and from extracts of 27 vegetables, spices and herbs that were screened for

their functional ability to inhibit the aggregation IAPP into toxic amyloid aggregates; mint, peppermint, red bell pepper and thyme emerged as possessing the greatest anti-amyloid activity [8].

Potential amyloid antagonists include, among others, the aged garlic extract that was proposed to help preventing cardiovascular and cerebrovascular diseases and lowering the risk of dementia and AD [9] and the Korean red ginseng extract which was suggested to be beneficial for the prevention and/or treatment of neurodegenerative disorders including AD [10].

I strongly believe that keeping a close eye on amyloid and spending more time, effort and of course money in its research may eventually result in a new generation of treatments that will play a crucial role in the future of T2D and several neurodegenerative diseases management.

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