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Editorial
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Apelinergic System Defects with Relevance to Mental Disorders in Diabetes

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Editorial

Mental illness in Western communities has increased with the global depression crisis a major disorder in managing psychiatric disturbances. The association between diabetes and depression indicate that psychiatric disturbances such as schizophrenia and bipolar disorders are far greater in diabetic individuals than individuals in the general population. Stress and anxiety are closely associated with mental illness, behaviour and cognition disorders and these psychiatric disorders may be involved in the induction of neurodegeneration, organ disease and diabetes [1].

Interests in diet, lifestyle, stress and sleep factors have been the focus of many communities as factors that influence specific genes involved in the onset of depression and neurodegeneration and may be the primary cause of psychiatric disturbances in diabetic individuals. Epigenetic alterations in diabetes [2-5] induced by the environment [6] have become important to diabetes with post-transcriptional changes linked to various disease processes in diabetes. Diabetics have appetite dysregulation and therole of genes such as the anti-aging gene Sirtuin 1 (Sirt 1) regulated by magnesium [7] and unhealthy diets [8] has escalated that links depression and appetite control to be of major importance in the treatment of various psychiatric disturbances. Sirt 1 is connected to food intake, depression, schizophrenia, cognition, memory and learning [9-15] with research directed to maintain brain Sirt 1 activity such as magnesium therapy [7] to prevent neurodegeneration in diabetes (Figure 1).

Recent interests in Type 3 diabetes [16,17] implicate Sirt 1 as the defective gene with relevance to appetite control and chronic disease. The hypothalamic-pituitary axis implicates the peptide apelinto be involved in the neuroendocrine system with central co-ordination between the brain and peripheral tissues (intestine, liver, kidney, heart). The interference of apelin by stress related disorders generates angiotensin II and inactivates nitric oxide (NO) metabolism with interference of Sirt 1 regulation of Nitric Oxide (NO) balance [18] relevant to appetite control, stroke and dementia [19] (Figure 1). Apelinergic system and appetite control are now important to diabetic treatment with close connection of the defective apelinergic system involved in brain NO production with relevance to NO induced post-transcriptional alterations [20]. Inactivation of NO metabolism (Figure 1) interferes with Sirt 1 role in epigenetic changes [6] associated with the induction of circadian rhythm abnormalities, mental illness, endocrine disease and appetite dysregulation [21-25].

Magnesium is involved in the release of NO [26,27] with magnesium deficiency connected to neurodegeneration, mental illness and cardiovascular disease [7]. NO is an intercellular messenger involved in signal transduction [28] in the brain and is intimately involved in synaptic plasticity with relevance to programmed cell death. Its role as a hormone [29] has become important and is closely associated with the neuroendocrine system [30-32]. The nature of low calorie diets that regulate Sirt 1 indicate its critical role in brain NO homeostasis important to hypothalamic function with relevance to appetite regulation and circadian rhythm disorders [22,23,25] in diabetes and various chronic diseases. Nutrigenomic diets [8] and the prevention of stress maintain Sirt 1 and brain NO balance that activate the neuroendocrine system [18] linked to appetite control and psychiatric conditions in diabetes and associated organ diseases. Drug therapy is essential for the maintenance of NO metabolism [33,34] in mental health disorders and an intact apelinergic system [19] is required to prevent psychiatric disturbances and peripheral organ disease. The use of nutrition and drug therapy is now connected to magnesium with magnesium signaling important in the prevention of NO toxicity and programmed cell death. The effects of magnesium therapy [35,36]

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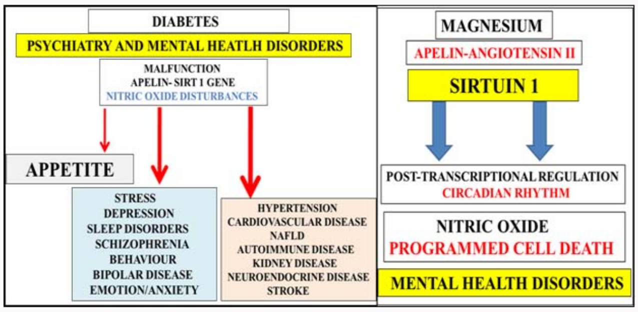

Figure 1: Psychiatric disturbances and neurodegeneration is associated with mental illness, behavioral and cognition disorders in diabetes. The Sirt 1 gene and the peptide apelin is important to nitric oxide homeostasis and post-transcriptional induction of various organ diseases. Angiotensin II generated from apelin interferes with Sirt 1 regulation of epigenetic alterations and NO balance with relevance to mental illness and organ disease. Magnesium interacts with Sirt 1 and its involvement with NO stabilizes psychiatric disturbances that are connected to mental health disorders.

in various communities involve an intact apelingergic pathway that is central to mental health disorders and organ disease. Communities with excessive dietary NO, dietary bacterial lipopolysaccharide and xenobiotic contents may override the beneficial magnesium/NO homeostasis. In these developing communities inactivation of drug therapy for brain NO homeostasis by these lipophilic components may be relevant to competition with lipophilic NO diffusion within/between cells [37] with inactivation of magnesium therapy in neuroendocrine disease, appetite dysregulation and depression in various communities.

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