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Luminescence reveals the cause of diabetes 1, 2 and 3 (Alzheimer's disease)

The fundamental basis of diabetes continues unrecognized and mostly untreated. Depending on the type of diabetes 1 or 2-treatment generally consists of insulin injections or anti-diabetic drugs that lower excessive blood glucose and/or hemoglobin A1C. Often patients are asked to lose weight and exercise more frequently. Blood glucose can be tightly controlled and still diabetic pathologies continue. Using a diabetic Streptozotocin (STZ) rat model, we demonstrated that diabetes and cataracts could be completely prevented with carboxy-PTIO which oxidizes nitric oxide and a nitration target Acetaminophen (Tylenol). This indicated that the action of STZ could be destroyed without harm to the animals. How does STZ cause diabetes in the first place? STZ is a molecule of 2-deoxyglucose (2-DG) linked to methyl nitrosourea (MNU). STZ enters the blood stream and to the pancreatic-Beta cells where it enters Glut-2 receptors. Once inside the cell, the molecule splits into its two pieces i.e., 2DG and MNU. MNU begins generating a peroxide known as peroxyxynitrite (OON=O-). The peroxyxynitrite attacks DNA, protein and lipids of the cell and damages mitochondria which kill the cell via apoptosis or necrosis. When beta cells die, alpha cells replaced them, producing excessive glucagon and increasing blood glucose thereby creating a diabetic state. When STZ is injected intra-articularly in the brain of normal mice, they develop decreased brain glucose metabolism and insulin resistance in a few days and in a few months Alzheimer's disease with plaques and tangles. We have developed a reaction with peroxyxynitrite and L-012 to produce blue luminescence via oxidation. Now we demonstrate that STZ generates peroxyxynitrite based luminescence which is inhibited by the same substances that inhibit peroxyxynitrite-based luminescence itself. We show that STZ nicks plasmid DNA similarly to peroxyxynitrite, which we believe initiates both Alzheimer's disease and diabetes.

Biography

Knox Van Dyke is a Professor of Biochemistry and Molecular Pharmacology at West Virginia University Medical School with 50 years of research experience. He completed his PhD in Biochemistry in the Edward A Doisy–Nobel Prize Department at Saint Louis University in 1966. He did Post-doctoral studies in the Department of Pharmacology at West Virginia University Medical School. During this time, he developed the first effective drug screening system for antimalarial drugs while screening over 10,000 drugs. Mefloquine and halofantrine were recognized by this screening system and were further developed by Walter Reed and various companies as patented drugs. He first solved the problem of black lung disease and silicosis by demonstrating that coal dust per se is not particularly toxic to human cells compared to silica and that silica is not particularly toxic alone but it is contaminated with calcium. He recognized that urate in the blood protects against peroxyxynitrite generating chronic diseases. He has recognized that many chronic diseases like cancer, arthritis, diabetes and heart diseases etc., are caused by excessive peroxyxynitrite or its derivatives. He has over 300 publications and 150 patents.

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