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The incredible costs of chronic diseases: Why they occur and possible preventions and/or treatments

Chronic diseases consume about 2.5 trillion dollars from the USA government every year. They are linked to 70% of the deaths that occur each year. After the age of 50, at least 50% of the people have one or more chronic diseases. The difference between acute and chronic diseases is that in acute diseases smaller amounts of unusual peroxide called peroxynitrite (OONO-) are produced while in chronic diseases excessive amounts of peroxynitrite are produced which damages vital biochemical components necessary for life. In addition OONO- causes death of crucial energy producing mitochondria, which kills cells and tissues. However, a key step in chronic diseases was discovered by Dr. Peter Barnes of England when he found that excessive peroxynitrite that is made continuously in chronic disease states, damages an epigenetic control system that allows anti-inflammatory steroids to deacetylate the acetylated histones which keep inflammation constantly turned on. In other words steroids do not work to shut off chronic inflammatory diseases. This is a huge problem because very few effective compounds have been found which inhibit chronic inflammation caused by excessive peroxynitrite. The substances that have been found, which are partially effective also causes major side effects so the treatment is worse than the disease. Peroxynitrite causes oxidation and nitration/nitrosylation/nitrosation (3N's) creating damage. Therefore, we must find antioxidant/anti 3N substances which act in a continuous manner to thwart the damage from OONO-. We have found a variety of effective substances that control excessive peroxynitrite and if used early could prevent or treat these diseases.

Biography

Knox Van Dyke has completed his PhD at Saint Louis University in the Department of Biochemistry in 1966. He did Post-doctorate work at West Virginia University, Department of Pharmacology, where he developed the first effective in vitro screening systems for antimalarials still used today. He became an authority on bio and chemiluminescence and the development of drugs. He has made great strides in understanding diabetes and other chronic diseases. He has published more than 400 papers and holds several hundred patents.

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