

Diabetes and Antioxidants: Where are we Now?

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Editorial

Open access in our medical field is so important. In fact it exposes our work for all researches that may be able to review or extend such research. OMICS group has special feature in such contexts.

Research data accumulated during the last few decades, have initiated a question: Is Oxidative Stress (OxS) mediated by free radicals/Reactive Oxygen Species (ROS), a primary or secondary cause of many chronic diseases? Today, scientific community, have focused on the role of antioxidants in delay or prevent OxS and consequently the incidence of Diabetes Mellitus (DM).

Recently, our research on diabetic rats showed that that administration of antioxidants (vitamin E and C) may potentially ameliorate endothelial dysfunction occurring in DM. We also showed that that administration of vitamin C may have an effect in reducing thrombotic tendency in rats with STZ-induced DM associated with hypertension.

Evidence from human studies proved that an excess generation in OxS has pathological consequences including damage to DNA, proteins and lipids.

In DM, OxS can activate several damaging pathways among them and accelerated formation of AGEs, polyol pathway and hexosamine

pathway. All these pathways have shown to be involved in micro- and macrovascular complications of DM.

Despite that studies with antioxidants in experimental models as well as human studies highly suggest that antioxidants should confer beneficial effects in reducing cardiovascular complications in diabetes, clinical evidence for the use of antioxidants is not solid. It should be stressed out that most of clinical trials with antioxidants in diabetes are limited and majority of these trials focused on the use of vitamin E and C and lately α -lipoic acid. Although the clinical trials conducted to date failed to provide adequate support for the use of antioxidants in diabetes, it is still too early to reach a definitive conclusion on this issue.

In conclusion, future studies should focus on the mechanisms of OxS in DM and also on the strategies aimed to block the formation of ROS in order to develop antioxidant therapy and the prevention of DM complications. The negative results of the clinical trials with antioxidants prompted new studies focusing on the mechanisms of OxS in DM in order to develop causal antioxidant therapy. The use of anti-oxidants as a possible secondary preventive measures of DM complications in most of clinical trials are not encouraging suggesting that alternative strategies are need such as combination of different antioxidants, either enzymatic or non-enzymatic, or the use of drugs which also have an antioxidant effect.

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Received June 20, 2012; **Accepted** June 21, 2012; **Published** June 22, 2012

Citation: Haidara M (2012) Diabetes and Antioxidants: Where are we Now? Endocrinol Metab Synd 1:e108. doi:10.4172/2161-1017.1000e108

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