



OxiDates

ZeptoMetrix Corporation

Oxidative Stress/Free Radical News

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TBARS and Dental Research

There are many published reviews that indicate TBARS is a valuable biomarker of increased oxidative stress (OS) for a number of disorders¹. In the past few years, papers have appeared in print showing that OS is linked to gingivitis and periodontal disease²⁻⁴. The TBARS assay has been effective in demonstrating a correlation between OS and periodontal disease⁵⁻⁹. During chronic inflammation, activation of oral polymorphonuclear leukocytes generate free radicals, especially superoxide ions⁴, which when released inactivates salivary antioxidant (AOX) enzymes and other components of the AOX defense system. This pathological event leads to tissue damage of the gums. For example, the total AOX capacity of crevicular fluid is significantly reduced with severity of disease and as a function of age¹⁰.

Progressive periodontal disease is commonly associated with type 2 diabetes mellitus and is a strong predictor ($p > 0.01$) of cardiorenal mortality¹¹. This 2005 study reported a 3.2 fold increase in the death rate due to ischemic heart disease and diabetic nephropathy in patients with severe periodontal disease i.e; 3.7 deaths in 0-mild disease versus 28.4 in severe disease. Other interesting findings included a lower AOX capacity in females than men regardless of disease

status¹². The mitochondrial AOX, coenzyme Q 10 is also deficient in periodontal disease¹³.

Certain studies report increase lipid peroxidation in gingivitis associated with periodontal disease^{5,6,8}. Treatment with supplemental AOX's effectively prevented progression of the disease process¹⁴.

Since TBARS is strongly correlated with lipid peroxide-induced OS, the OxiTek kit should prove useful in evaluating periodontal disease in serum, plasma, crevicular fluid, or gingival tissue as the biological source. Since the change in glutathione peroxidase i.e; increased¹⁵ or decrease^{5,8} is controversial, the ZeptoMetrix Total Glutathione Peroxidase kit for this lipid peroxide regulating enzyme is a good complimentary assay in conjunction with TBARS for confirmation of its role in OS associated with periodontal disease.

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TBARS Assay Kit

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