



OxiDates

ZeptoMetrix Corporation

Oxidative Stress/Free Radical News

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TBARS

The use of TBARS continues to be a popular method for determining conditions linked to oxidative stress. During 2003 for example, there were some 300 papers published using this assay in the following biochemical applications:

1. As an indicator of free radical content, lipid peroxidation and malondialdehyde.
2. As a measure of antioxidant status.
3. As a correlate to low glutathione (reduced).
4. Activation of nuclear factors and transcription of inflammatory cytokines.
5. Upregulation of antioxidant enzymes.

Clinically, elevated TBARS was used as an important biomarker in patients with cancer, ischemia-reperfusion injury, atherosclerosis, sepsis and multiple organ failure, diabetes, obesity, hypothermia, acromegaly, schizophrenia, post-surgical intervention, environmen-

tal toxicity, during excess physical activity and in smokers. It has been proposed in this and prior literature, that TBARS is an appropriate biomarker to evaluate the relative extent of apoptosis, tissue damage and prognosis for acute/chronic disorders. Recent examples include one study that found analysis of erythrocyte TBARS able to differentiate between 1, 2, 3 and more diseased vessels in patients with atherosclerosis better than decreased antioxidant enzymes (SOD and PON-1)¹. Plasma TBARS in hypertensive patients is also elevated and increased even more when glucose intolerance is present. TBARS correlates significantly with the size of cerebral infarct following a stroke. Another study², which evaluated 6 antioxidant-oxidant biomarkers, found that TBARS is the best single discriminatory assay ($r=0.699$), probably because it represents a good measure for overall oxidative stress. The discriminatory ability for coronary

heart disease status increases to 81.5% when TBARS is used in conjunction with the other biomarkers.

Hair is now reported to have measurable amounts of TBARS³. The *OxiTek* TBARS kit is a stable, highly reproducible, simple assay that provides consistent intra and inter-run results in a wide variety of applications. Please contact staff of the Oxidative Stress Program at ZeptoMetrix Corporation for assistance with analytical questions. We look forward to supporting your research endeavors.

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References

- 1 Azarsiz E, Kayikcioglu M, Payzin S, Yildirim Sozmen E. *Int J Cardiol.* 2003 Sep;91(1):43-51.
- 2 Schisterman EF, Faraggi D, Browne R, Freudenheim J, Dorn J, Muti P, Armstrong D, Reiser B, Trevisan M. *Nutr Metab Cardiovasc Dis.* 2002 Oct;12(5):259-66.
- 3 Sheu JY, Chen PH, Tseng WC, Chen CY, Tsai LY, Huang YL. *Anal Sci.* 2003 Jun;19(6):957-60.



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OXIDATIVE STRESS PRODUCTS AND SERVICES



Oxidative Stress Tests Services

Custom Laboratory Services

Oxidative Damage

- TBARS
- LHP Profile
- LDL/VLDL TBARS
- Oxidized Glutathione (GSSG)
- Oxidized DNA (8-Oxo-dG/8-Oxo-d/A)
- Nitric Oxide

Antioxidant Enzymes

- Erythrocyte Glutathione Peroxidase
- Erythrocyte Glutathione Reductase
- Erythrocyte Glutathione S-Transferase
- Plasma Glutathione Peroxidase
- Catalase
- Paraoxonase
- Paraoxonase (PON, Arylesterase Activity)
- Paraoxonase (PON, Paraoxonase Activity)
- PON1 Gln-Arg192 Phenotyping Assay
- Superoxide Dismutase (SOD) Isoforms
 - Mitochondrial Mn, SOD
 - Soluble Cu, Zn, SOD
- Glucose-6-Phosphate Dehydrogenase

Antioxidant Micronutrients

- Fat Soluble Vitamin Profile:
 - Vitamin E
 - Beta-Carotene
 - Lycopene
 - Lutein/Zeaxanthin
 - Beta-Cryptoxanthin
 - Vitamin A
- Vitamin C
- TEAC
- Reduced Glutathione
- Uric Acid

Routine Analytes

- Total Cholesterol
- HDL Cholesterol
- LDL Cholesterol
- Triglycerides
- Total Protein
- Hemoglobin



Products

- TBARS Assay cat. # 0801192
- DNA Isolation Kit cat. # 0805001
- Total Glutathione Peroxidase Assay Kit cat. # 0805002
- Nucleoside Standards Inquire
- Dinucleotide Standards Inquire

