



OxiDates[®]

ZeptoMetrix Corporation

Oxidative Stress/Free Radical News

Issue 4, November 2004

TBARS

In the majority of clinical studies, the TBARS assay is used primarily for evaluating oxidative stress in plasma. However, urine is definitely an alternative body fluid (Draper, 1984:2000) and 107 citations can be found in the literature to date. One report indicates a correlation between TBARS and conventional markers for kidney stones (Huang,2004). There are several advantages to using urine samples ie; it is non-invasive, it can be collected by the participant in the convenience and privacy of their home, it can be collected from participant where venipuncture is difficult or impossible such as in low birth weight infants, diabetics with significant peripheral vascular disease, the emaciated elderly, or any participant with collapsed veins. In some instances, urine has been proposed for risk assessment (Weinberger, 2004; Siczarz, 2001) of oxygen radical disorders (ORD). Urine may also be a valuable source because it contains end-products of generalized oxidative stress metabolism not present in plasma which have already been cleared from the circulation (Draper,2000) and it can be used to monitor antioxidant levels before and after supplementation (Elmedfa, 2004).

By employing HPLC technology, free malondialdehyde (MDA) can be isolated from the total TBARS reaction (Lee, 1992) and from other TBARS aldehyde adducts not related to lipid peroxidation (Draper, 1993); Kosugi, 1993). Within-run (2.4-4.5%) and between run (6.7-7.1%) coefficients of variation have been published (Knight,1988). One paper separated 8 compounds, another reported 13 TBARS products and a third paper listed 30 (Esterbauer, 1989). These compounds were identified as MDA, alk-2-enals, alka-2, 4-dienals and hydroperoxides in humans, rabbits, rats and dogs.

The TBARS generated by oxidative stress depends on the aldehyde/thiobarbituric acid ratio, the amount of water and dissolved oxygen in the reaction mixture, the incubation temperature used during heating of the reaction, and whether these compounds have synergistic effects (Kosugi and Kikugawa(1989). Replacing the conventional thiobarbituric acid with diethyl thiobarbituric acid may increase sensitivity down to picomole levels (Guichardant, 1994).

The literature emphasizes the importance of using TBARS for investigations on urine in health and disease. The OXI-tek TBARS kit has the desired sensitivity and reproducibility necessary for urinary applications.

Donald Armstrong, Ed.D., Ph.D., D.Sc.
Scientific Advisor

References

1. Draper, H., et.al, (1984), Lipids 19: 836-843
2. Draper, H.,et.al,(2000), Ree Radic.Biol Med.29: 1071-1077
3. Huang,H. et.al..(2004), Urology 62:1123-1128
4. Elmedfa.I.,et.al.(2004),Int.J. Vitam.Nutr.Res.74:147-152.
5. Weinberger,B, et.al..(2004), Biol.Neonate 85: 121-127
6. Siczarz,A.,et.al. (2001),Arch Pediatr.Adolesc.Med. 155: 718-722.
7. Lee, H-S.et.al. (1992), Lipids 27: 124-128
8. Draper,H., et.al.(1993), Free Radic. Biol.Med. 15: 353-363
9. Kosugi, H.,et.al. (1993), Lipids 28: 337-343
10. Knight,J., et.al. (1988), Clin. Chem. 35: 1107-1110
11. Esterbauer, H. & Zollner, H. (1989), Free Radic.Biol.Med
12. Kosugi, H. & Kikugawa, K. (1989), Free Radic. Biol. Med. &:197-203
13. Guichardant, M., et.al. (1994), Chromatogr. B Biomed. Appl. 655: 112-116



872 Main Street
Buffalo, New York 14202

www.zeptometrix.com
1-800-274-5487

OXIDATIVE STRESS PRODUCTS AND SERVICES



Oxidative Stress Tests Services Custom Laboratory Services

Oxidative Damage

- TBARS
- LHP Profile
- LDL/VLDL TBARS
- Oxidized Glutathione (GSSG)
- Protein Carbonyls
- Oxidized DNA (8-Oxo-dG/8-Oxo-dA)
- Nitric Oxide
- 8-Isoprostane

Antioxidant Enzymes

- RBC Glutathione Peroxidase
- RBC Glutathione Reductase
- RBC Glutathione S-Transferase
- Plasma Glutathione Peroxidase
- RBC Catalase
- Superoxide Dismutase (SOD) Isoforms
 - Mitochondrial Mn, SOD
 - Soluble Cu, Zn, SOD
- Paraoxonase (PON, Arylesterase Activity)
- Paraoxonase (PON, Paraoxonase Activity)
- PON1 Gln-Arg192 Phenotyping Assay
- G6PDH

Antioxidant Micronutrients

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

Routine Analytes

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



Products

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

