Malondialdehyde Assay

The NWLSS Malondialdehyde assay utilizes an improved Thiobarbituric Acid (TBA) based technology, still the most widely published method for testing lipid peroxidation in biological samples. The NWLSS NWK-MDA01 assay is designed as a simple, affordable method for testing lipid peroxidation standardized as malondialdehyde (MDA). Unlike other TBA based assays, the NWLSS assay utilizes lower heating temperatures, antioxidants to prevent lipid peroxidation artifacts and an improved data reduction method to reduce non-specific TBARS related background interference.

Introduction

Lipid peroxidation has been established as a major mechanism of cellular injury in many biological systems of plant and animal origin. The mechanism involves a process whereby unsaturated lipids are oxidized to form additional radical species as well as toxic by-products that can be harmful to the host system. Polyunsaturated lipids are especially susceptible to this type of damage when in an oxidizing environment and they can react to form lipid peroxides. Lipid peroxides are themselves unstable, and undergo aditional decomposition to form a complex series of compounds including reactive carbonyl compounds.

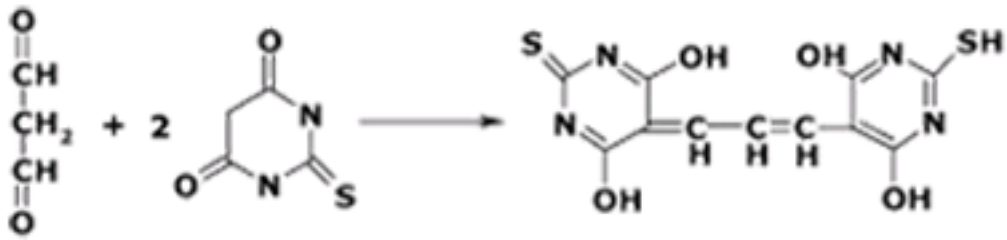
Polyunsaturated fatty acid peroxides further react to form malonaldehyde (MDA).

MDA can be found in most biological samples including foodstuffs, serum, plasma, tissues and urine, as a result of lipid peroxidation, and has become one of the most widely reported analytes for the purpose of estimating oxidative stress effects on lipids.

Method:

The NWLSS NWK-MDA01 assay is based on the reaction of malondialdehyde (MDA) with thiobarbituric acid (TBA); forming a MDA-TBA_2 adduct that absorbs strongly at 532 nm.

This reaction is the most popular method for estimating MDA in biological samples. However, interference can be a significant problem in some biological samples if not dealt with appropriately.



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Method Improvements:

The NWLSS method minimizes *Ex vivo* lipid peroxidation and maximizes recovery of MDA by carefully optimizing the reaction conditions.

- BHT and EDTA are added to the sample and reaction mixture to minimize artifact oxidation.
- Reaction temperature has also been reduced to minimize the decomposition of lipid hydroperoxides.
- Reaction pH has been optimized to facilitate hydrolysis of MDA-protein adducts for better recovery of MDA.
- Cleaner output through optimized data reduction using single wavelength ABS_{532} or 3rd derivative $SCAN_{400-700}$ analysis.

Catalog Number:	NWK-MDA01
Methodology:	TBA Based Colorimetric
Sample Requirements:	Tissue homogenates, cell lysates and plasma
Specificity:	Primary specificity is for malondialdehyde (MDA) when using advanced data reduction and/or back extraction techniques. Basic Thiobarbituric acid reactive substances (TBARS) are detected when making single wavelength 532nm measurements.
Sensitivity:	0.1 mM MDA in the sample
Standard Range:	1.0 - 4.0 mM
Tests per Kit:	200 tests

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