**Overview**

**Product name**
Lipid Peroxidation (MDA) Assay Kit (Colorimetric/Fluorometric)

**Detection method**
Colorimetric/Fluorometric

**Sample type**
Plasma, Cell culture extracts, Tissue Extracts

**Assay type**
Quantitative

**Sensitivity**
> 0.1 nmol/well

**Assay time**
1h 20m

**Product overview**
Lipid Peroxidation (MDA) Assay Kit (Colorimetric/Fluorometric) (ab118970) provides a convenient tool for sensitive detection of malondialdehyde (MDA). MDA, together with 4-hydroxynonenal (4-HNE), is a natural bi-product of lipid peroxidation and its quantification is generally used as a marker for lipid peroxidation.

In the lipid peroxidation assay protocol, the MDA in the sample reacts with thiobarbituric acid (TBA) to generate a MDA-TBA adduct. The MDA-TBA adduct can be easily quantified colorimetrically (OD = 532 nm) or fluorometrically (Ex/Em = 532/553 nm). This assay detects MDA levels as low as 1 nmol/well colorimetrically and 0.1 nmol/well fluorometrically.

The MDA assay is also referred to as a TBARS assay.

Lipid peroxidation assay protocol summary:
- add TBA solution to samples and standards, incubate at 95°C for 60 min, cool in ice bath for 10 min
- transfer to wells of microplate
- analyze with microplate reader
For higher sensitivity, precipitate with n-butanol, centrifuge, dry and resuspend pellet before analysis.

For an alternative MDA assay, without the heating steps required in the TBARS assay, try MDA assay ab233471.

**Notes**
Lipid peroxidation refers to the oxidative degradation of lipids. In this process free radicals take electrons from the lipids (generally in cell membranes), resulting in cell damage. Quantification of lipid peroxidation is essential to assess oxidative stress. Lipid peroxidation forms reactive aldehydes such as malondialdehyde (MDA) and 4-hydroxynonenal (4-HNE) as natural bi-
products. Measuring the end products of lipid peroxidation is one of the most widely accepted assays for oxidative damage.

**Related products**

Review the oxidative stress marker and assay guide, or the full metabolism assay guide to learn about more assays for metabolites, metabolic enzymes, mitochondrial function, and oxidative stress, and also how to assay metabolic function in live cells using your plate reader.

**Platform**

Microplate reader

**Properties**

**Storage instructions**

Store at -20°C. Please refer to protocols.

<table>
<thead>
<tr>
<th>Components</th>
<th>Identifier</th>
<th>100 tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>BHT (100X)</td>
<td>Purple</td>
<td>1 x 1ml</td>
</tr>
<tr>
<td>MDA Lysis Buffer</td>
<td>WM</td>
<td>1 x 25ml</td>
</tr>
<tr>
<td>MDA Standard (4.17M)</td>
<td>Yellow</td>
<td>1 x 100µl</td>
</tr>
<tr>
<td>Phosphotungstic Acid Solution</td>
<td>NM</td>
<td>1 x 12.5ml</td>
</tr>
<tr>
<td>TBA</td>
<td>NM</td>
<td>4 vials</td>
</tr>
</tbody>
</table>

**Relevance**

Lipid peroxidation refers to the oxidative degradation of lipids and is a well-defined mechanism of cellular damage. The formation of lipid peroxidation products leads to spread of free radical reactions leading to cell damage.

**Images**

10 mg of tissue were homogenized on ice in 300 µL of MDA lysis buffer, then centrifuged (13,000 × g, 10 min) to remove insoluble materials. 10 µL of plasma were mixed with 500 µL of 42 mM H₂SO₄ and 125 µL of phosphotungstic acid solution at room temperature for 5 min. After centrifuging (13,000 × g, 3 min), the pellet was re-suspended on ice with 100 µL of double-distilled H₂O. Then, 200 µL of solution and 600 µL of 2-thiobarbituric acid solution were incubated at 95°C for 60 min, before cooling to room temperature in the ice bath for 10 min. The intensity of absorbance at 532 nm was proportional to the MDA level.

Park J et al., PLoS One, 12(2). Fig 4a. doi: 10.1371/journal.pone.0172751

Lipid peroxidation (malondialdehyde [MDA]) levels were measured in cavernosal tissue using ab118970 Park J et al., PLoS One, 12(2). Fig 4a. doi: 10.1371/journal.pone.0172751
Typical MDA standard calibration curve using colorimetric reading.

Typical MDA standard calibration curve using fluorometric reading.
Measurement of MDA in human plasma (20 µl) and rat liver lysate (10 mg).

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