



Cell Technology, Inc

Fluoro MPO™

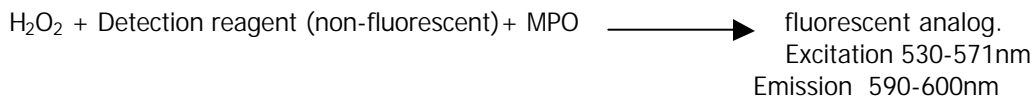
Fluorescent Myeloperoxidase Detection Kit

Key Benefits

- Readout: Fluorescence or absorbance.
- Can monitor multiple time points to follow kinetics.
- One-step, no wash assay.
- Adaptable for High Throughput format.
- Sensitive

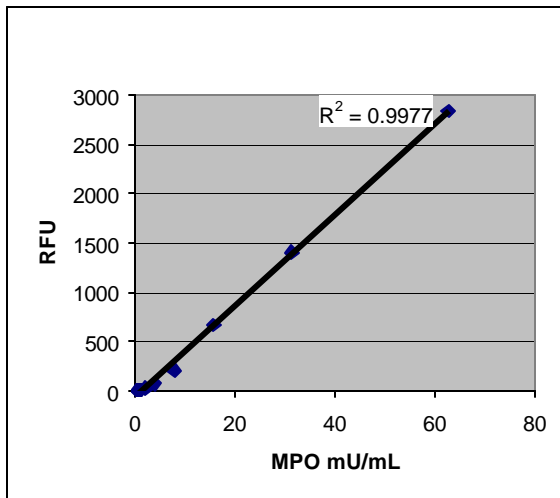
Assay Principle

Myeloperoxidase (MPO) is a highly cationic glycosylated hemoprotein that has a molecular weight of 144kD. The hemoprotein consists of two dimers linked via a disulfide bridge. Each dimer is composed of a heavy (53kD) and light (15kD) subunit. Each heavy chain contains an independently acting protoporphyrin group containing a central iron⁽¹⁻⁵⁾. MPO is present in the azurophilic granules of polymorphonuclear leukocytes (PMNs) and is unique to neutrophils and monocytes. However, monocytes contain only one third of the MPO found in PMN's. MPO utilizes H₂O₂ produced by the neutrophils to oxidize a variety of aromatic compounds to give substrate radicals for bactericidal activity^(4 review). This enzyme is unique however in that it can oxidize chloride ions to produce a strong nonradical oxidant, HOCl. HOCl is the most powerful bactericidal produced by neutrophils^(4 review). Excessive production of these radicals can cause oxidative stress leading to oxidative tissue injury.



Applications:

- Detection of MPO activity in neutrophils and macrophages.
- Detection of PMN infiltration in tissue samples (inflammation and innate host defense mechanisms).
- Acute and chronic inflammatory disorders due to oxidative tissue damage.
- MPO activity in acute and chronic manifestations of cardiovascular disease.



mU/mL	MPO RFU
62.5	2838
31.25	1401
15.625	668
7.8125	207
3.90625	71
1.953125	27
0.976563	14
0.488281	6
0.244141	4

Figure 1. MPO standard curve was serially diluted in 1X Reaction Buffer. Reaction cocktail (RC) was prepared as described (without EPO inhibitor). Next 50µL of MPO standard and 50µL of RC was added to individual well of a 96 well black plates. The plate was incubated at room and temperature in the dark. Data collected Ex:530nm Em:590nm

Ordering Information

Catalog #	Size	Price (US\$)
FLMPO 100-3	500	395

References:

1. Waldmeier PC (1987) Amine oxidases and their endogenous substrates. *J Neural Transm Suppl* **23**:55–72.
2. Bach, A. W. J., N. C. Lan, D. L. Johnson, C. W. Abell, M. E. Bembenck, S. W. Kwan, P. H. Seeburg & J. C. Shih: cDNA cloning of human liver monoamine oxidase A and B: molecular basis of differences in enzymatic properties. *Proc. Nat. Acad. Sci. U.S.A.* 1988, **85**, 4934–4938.
3. Johnston, J. P.: Some observations upon a new inhibitor of mono-amine oxidase in brain tissue. *Biochem. Pharmacol.* 1968, **17**, 1285–1297.
4. Suzuki, O., E. Noguchi & K. Yagi: A simple fluorometric assay for type B monoamine oxidase activity in rat tissues. *J. Biochem.* 1976, **79**, 1297–1299.
5. Fowler, C. J. & B. A. Callingham: Substrate-selective activation of rat liver mitochondrial monoamine oxidase by oxygen. *Biochem. Pharmacol.* 1978, **27**, 1995–2000.
6. Tipton, K. F.: Enzymology of monoamine oxidase. *Cell Biochem. Funct.* 1986, **4**, 79–87.
7. Youdim, M. B. H. & M. Tenne: Assay and purification of liver monoamine oxidase. *Methods Enzymol.* 1987, **142**, 617–626.
8. Trendelenburg U, Cassis L, Grohmann M and Langeloh A (1987) The functional coupling of neuronal and extraneuronal transport with intracellular monoamine oxidase. *J Neural Transm Suppl* **23**:91–101.
9. Yu PH, Davis BA and Boulton AA (1992) Neuronal and astroglial monoamine oxidase: Pharmacological implications of specific MAO-B inhibitors. *Prog Brain Res* **94**:309–315.
10. Strolin Benedetti M and Tipton KF (1998) Monoamine oxidases and related amine oxidases as phase I enzymes in the metabolism of xenobiotics. *J Neural Transm Suppl* **52**:149–171.
11. Hauptmann N, Grimsby J, Shih JC and Cadenas E (1996) The metabolism of tyramine by monoamine oxidase A/B causes oxidative damage to mitochondrial DNA. *Arch Biochem Biophys* **335**:295–304.
12. Methods Enzymology: Metabolism of Aromatic Amino Acids and Amines. Volume 142, page 617 (1997). Holt A. ; Sharman D.F. ; Baker G.B. ; Palcic M.M. A Continuous Spectrophotometric Assay for Monoamine Oxidase and Related Enzymes in Tissue Homogenates [Analytical Biochemistry](#), January 1997, vol. 244, no. 2, pp. 384-392(9).
14. D. W. R. Hall, Bridget W. Logan and G. H. Parsons. Further studies on the inhibition of monoamine oxidase by M & B 9302 (clorgyline)—I. Substrate specificity in various mammalian species. *Biochemical Pharma*

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