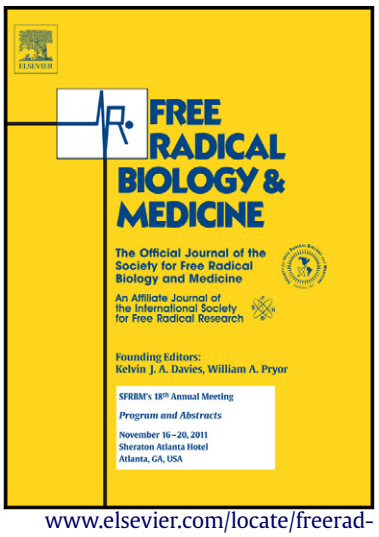

Stereospecific Oxidation of Calmodulin by Methionine Sulfoxide Reductase A

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Stereospecific Oxidation of Calmodulin by Methionine Sulfoxide Reductase A

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KEYWORDS: Calmodulin, methionine oxidation, methionine reduction, methionine sulfoxide reductase, signaling

ABBREVIATIONS: DTPA, diethylene triamine pentaacetic acid; metO, methionine sulfoxide; MLCK, myosin light chain kinase; MsrA, methionine sulfoxide reductase A; PDE1, phosphodiesterase 1.

ABSTRACT: Methionine sulfoxide reductase A has long been known to reduce S-methionine sulfoxide, both as a free amino acid and within proteins. Recently the enzyme was shown to be bidirectional, capable of oxidizing free methionine and methionine in proteins to S-methionine sulfoxide. A feasible mechanism for controlling the directionality has been proposed, raising the possibility that reversible oxidation and reduction of methionine residues within proteins is a