

# DMSO Reductase



## Dimethyl sulphoxide reductase from *Rhodobacter capsulatus*

EC 1.7.2.3

Synonyms: DMSO reductase, DMSOR, trimethylamine N-oxide reductase, TMAO reductase

Product description: supplied in a solution containing 50 mM Tris/HCl pH 8.0.

Purity: >90 % (SDS-PAGE)

Specific activity; 40 units / mg protein (Bradford)

Storage conditions: -20 °C

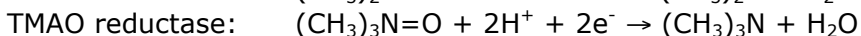
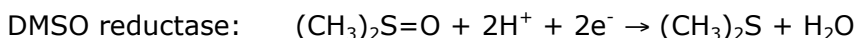
Unit definition: One unit will cause the reduction of 1.0 mmole of methyl viologen per minute at 25 °C.

### **Description**

This protein is isolated from the periplasm of the purple bacterium *Rhodobacter capsulatus* and purified chromatographically[1]. The molecular mass is approximately 82 kda.

DMSO reductase is the final enzyme in the respiration chain of the *Rhodobacter capsulatus* and closely related species. The enzyme belongs to the prokaryote molybdopterin-containing oxidoreductase family. The enzyme transfers two electrons from a cytochrome to highly oxidised substrates, e.g. dimethyl sulphoxide, or trimethylamine N-oxide. A molybdenum ion, bound to a pterin guanine dinucleotide plays a major role in this redox process, changing between MoIV and MoVI oxidation states. In all other molybdopterin containing enzymes additional cofactors are involved in electron transport[2]. In this respect, DMSO reductase is of special interest.

Reaction:



### **Applications**

Enzymology / protein biochemistry / structural biology research.

Highly specific determination of DMSO at nanomolar levels in aqueous solution[3].

### **References**

1. McEwan, A.G., S.J. Ferguson, and J.B. Jackson, *Purification and properties of dimethyl sulphoxide reductase from Rhodobacter capsulatus. A periplasmic molybdoenzyme*. Biochem J, 1991. **274 (Pt 1)**: p. 305-7.
2. Kisker, C., H. Schindelin, and D.C. Rees, *Molybdenum-cofactor-containing enzymes: structure and mechanism*. Annu Rev Biochem, 1997. **66**: p. 233-67.
3. Hatton, A.D., et al., *Determination of dimethyl sulfoxide in aqueous solution by an enzyme-linked method*. Analytical Chemistry, 1994. **66**(22): p. 4093-4096.