The Role of Molybdenum in Dimethyl Sulfoxide (DMSO) Reductase

Abstract: The DMSO reductase family consists of proteins that catalyze oxygen atom transfer reactions. These proteins are characterized by a mononuclear Mo center that is ligated by one or two molybdopterin cofactors (through the two thiolates). DMSO reductase itself is ligated by two molybdopterin cofactors and catalyzes the reduction of dimethyl sulfoxide to dimethyl sulfide. This reaction is important in the overall environmental cycle of sulfur. Using techniques such as x-ray crystallography, x-ray absorption, resonance raman, and EPR, the structure and mechanism of the protein have been probed and characterized.