

How does HOCl induce the expression of *msrP* in *Escherichia coli* ?

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Hypochlorous acid, HOCl, is a powerful oxidant synthesized by neutrophils to eliminate invading pathogens. This molecule is highly reactive and can oxidize a large number of biomolecules leading to cytotoxic effects. Of these, Methionine is the most susceptible residue to oxidation by HOCl. This reaction will yield a stable product, Methionine sulfoxide MetSO, which impairs proteins' function. The enzymatic system Msr, Methionine sulfoxide reductase, renders this oxidation reversible by catalyzing the reduction of MetSO thus repairing the damaged protein. In 2015, our team discovered a periplasmic Msr system, MsrPQ, that is induced in response to HOCl by the two component system YedVW in gram negative bacteria. Our work aim to underline the molecular mechanism that enables YedV, the histidine kinase sensor, to detect HOCl in the environment.