

Crystal structure of alkyl hydroperoxide-reductase (AhpC) from *Helicobacter pylori*

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The AhpC protein from *H. pylori*, a thioredoxin (Trx)-dependent alkyl hydroperoxide-reductase, is a member of the ubiquitous 2-Cys peroxiredoxins family (2-Cys Prxs), a group of thiol-specific antioxidant enzymes. Prxs exert the protective antioxidant role in cells through their peroxidase activity, whereby hydrogen peroxide, peroxynitrite and a wide range of organic hydroperoxides (ROOH) are reduced and detoxified ($\text{ROOH} + 2\text{e}^- \rightarrow \text{ROH} + \text{H}_2\text{O}$).

In this study AhpC has been cloned and overexpressed in *E. coli*. After purification to homogeneity, crystals of the recombinant protein have been grown by hanging-drop vapour diffusion technique. A native data set from a frozen crystal has been collected to 2.95 Å resolution using synchrotron radiation. The crystal structure of AhpC, in the oxidized state, has been determined using the molecular replacement method ($R = 23.6\%$, $R_{\text{free}} = 25.9\%$). The model, similar to other members of the 2-Cys Prx family crystallized as toroid-shaped complexes [1], consists of a pentameric arrangement of homodimers. Oligomerization properties of AhpC have been also characterized. The molecule aggregates giving several oligomeric states in function of salt concentration and redox state, with high ionic strength and oxidized state clearly favouring the decameric assembly.

[1] Wood Z.A., Schroder E., Harris J.R., Poole L.B., *TRENDS in Biochemical Sciences*, 2003, **28**, 32-40.

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