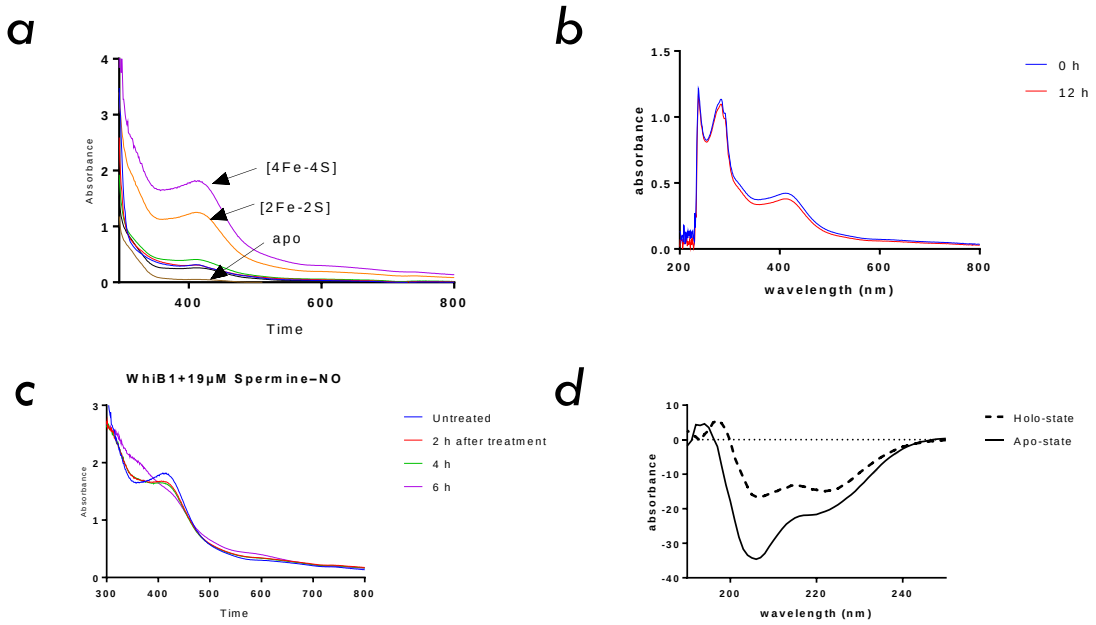
Structure-function properties of *Kytococcus sedentarius* WhiB1

Kytococcus sedentarius (Ks) is an opportunistic bacterium involved in pitted keratolysis, cerebral cyst infections, endocarditis and bacteraemia (1-4). WhiB-like (Wbl) proteins are a family of proteins that are only located in actinomycetes and play important role in developmental processes. The C-terminal regoins are rich in positively charged amino acids, suggesting a role in DNA-binding. The N-terminal regions possess four conserved cysteine residues that act as anchors for iron-sulfur clusters, which respond to redox stress (5, 6). This study shows that: (i) the cluster can be isolated in three forms. (ii) The cluster is important to structure the protein. (iii) The cluster is sensitive to spermine nitric oxide (NO) but not oxygen (O_2). Significence: the iron-sulfure cluster of WhiB1 is a key factor in the protein function. The cluster modulates the conformation of the protein, changes the DNA-binding properties and allows the protein to respond to NO but not O_2 (5). These facts suggest that WhiB1 has a role as an NO-responsive gene regulator that could be important for survival and persistence in human macrophages.



The study figure. Isolation and effect of [4Fe-4S] cluster on the oligomeric state of *K. sedentarius* WhiB1. (*a*) Isolation of WhiB1 in three forms (indicated in black arrows). (*b*) UV-visible spectra were obtained before and after exposing the WhiB1 [4Fe-4S] cluster to air, the absorbance at 420 nm indicates that the iron-sulfur cluster did not degrade under aerobic conditions. (*c*) UV-visible spectral changes upon reaction of holo-WhiB1 with NO. (*d*) Far-UV circular dichroism (CD) spectroscopy analysis of apo- and holo-WhiB1, indicating that apo forms a feature at 204 nm, while holo forms two features at 218-222 nm.

Biography



Mr Meshari has received his BSs and MSs in Molecular biology from Qassim and Bangor universities in Saudi Arabia and United kingdom in 2007 and 2013 respectively. Then he joined the molecular biology and biotechnology department at the University of Sheffield as a PhD candidate in 2015, to study the structure and biochemistry of protein. Since then his studies focus on the characterisation and role of WhiB proteins of *Kytococcus sedentarius*.

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