FERRIDOXINS

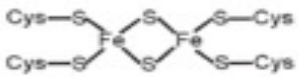
- Ferridoxins transfer electrons through their Fe(III)/Fe(II) couples.
- In the active site of Fe-S proteins.each iron is co-ordinated by atleast one cystein-S from the protein chain and the remaining positions are co-ordinated by acid labile inorganic sulphur (S2-) atom.
- Ferridoxins are biological electron transfer non heme Fe-S protein.
- Depending upon the no. of Iron and acid labile Sulphur (S2-) atoms per molecule, Ferridoxins are classified as 2Fe-2S, 4Fe-4S, and 8Fe-8S proteins.

2Fe-2S PROTEIN

- It contains two H.S Fe atoms and two acid labile Sulphur (S2-) atoms .
- it is one electron carrier protein and abbreviated as Fe2S2 protein.
- Formula of it is Fe2(S-cys)4(u-S)2.
- Oxidised and reduced form of it is a distorted td geometry.
- Oxidised form of it is diamagnetic due to anti ferromagnetic coupling.

2Fe-2S PROTEIN

- Reduced form of it is paramagnetic due to presence of unpaired electron.
- In oxidised form Fe (III) centres are equivalent and in reduced form Fe(II)/Fe(III) centres are non-equivalent .
- It is known as Reiske protein or Reiske centre.
- It is known as plant ferridoxin.
- Structure of Fe2S2 is



2Fe2S

4Fe-4S PROTEIN

- It contains four H.S Fe atoms and four acid labile Sulphur (S2-) atoms .
- it is one electron carrier protein and abbreviated as Fe4S4 protein.
- Formula of it is Fe4(S-cys)4(u-S)4.
- Oxidised and reduced form of it is a distorted cubic geometry.
- Oxidised form of it is diamagnetic due to anti ferromagnetic coupling.

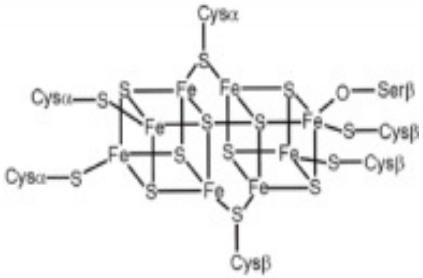
4Fe-4S PROTEIN

- Reduced form of it is paramagnetic due to presence of unpaired electron.
- In oxidised form two Fe (III) centres and two Fe(II) centres are in H.S state and in reduced form three Fe(II) and one Fe(III) centres are in H.S state.
- It is known as HiPIP(High Potential Iron Protein).
- It is also known as clostridial ferridoxin.
- Structure of Fe4S4 is

4Fe4S

8Fe-8S PROTEIN

- 8Fe-8S protein consist of two 4Fe-4S proteins at 12 Angstrom apart link by the protein chain.
- Each Fe4S4 unit can transfer one electron,this makes the 8Fe-8S ferridoxin to functions as two electron carrier.
- Structure of 8Fe-8S protein is



8Fe8S