

# *Bioinorganic Chemistry*

(Chemistry-DSE-1002E1: **Physical and Inorganic Chemistry**, Section-II)

BY

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# Metalloporphyrins

- ❑ Complex between metal ion & porphyrin ligands
- ❑ Porphyrin: It is substituted porphines at pyrrole position
- ❑ **Porphine or Porphin:** It is an organic chemical compound with formula  $C_{20}H_{14}N_4$ . The molecule consists of four pyrrole-like rings joined by four methine ( $=CH-$ ) groups to form a larger macrocycle ring.

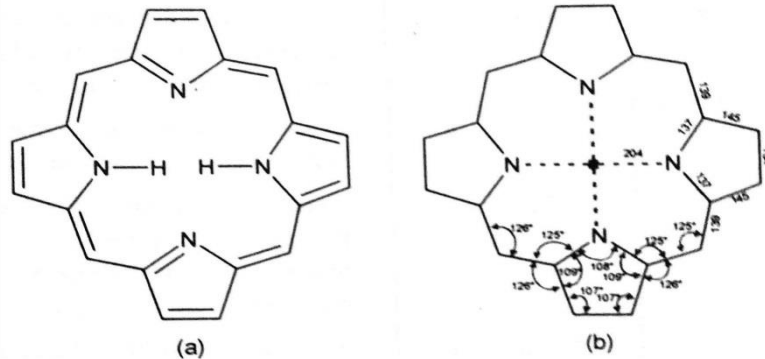


Fig. 5.1 (a) and (b) The porphyrin molecule

Important  
compound in  
biological  
process

- Uses-1) *In Chlorophyll*: Captures solar energy & uses for life processes  
2) *Haemoglobin*: Transport of oxygen from lungs to cells.  
3) *Myoglobin*: Storage of Oxygen



## *Flexibility or Adaptability of Porphyrin Ring*

*Hole Size of Porphyrin ring is most ideal for accommodating first Transition Series*

*But, if M-ion has smaller size then ring itself rearranges so as to have closer approach of N to metal*

*If M is large that can't fit into hole then it may form bridge out of the plane.*

*Porphyrin can accept two H ions at N or donate two protons & form anion having -2 charge.*

*Porphyrin shows different properties & functions differently by changing central metal ion & its oxidation state.*



**::::Thank You::::**

**::::Keep Learning::::**