

Bioin

What is Bio Inorganic Chemistry

Interface

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Inorganic Chemistry---Biology

Role of metal ions in Biological System

Mechanistic Studies based on

Coordination Chemistry

Coordination number

Redox Chemistry electron transfer

Fe(II)-Fe(III), Cu(I)-Cu(II), Co(II)- Co(III);

Essential and trace metal ions in biological system.

H

Na

K

Mg

Ca

C

N

P

O

S

Cl

Trace Elements

Iron (Fe)

Zinc (Zn)

Manganese (Mn)

Copper (Cu)

Cobalt (Co)

Nickel (Ni)

Iodine (I)

Micro Elements

Fluorine (F)

Vanadium (V)

Chromium (Cr)

Molybdenum (Mo)

Selenium (Se)

Tin (Sn)

Silicon (Si)

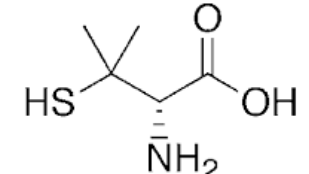
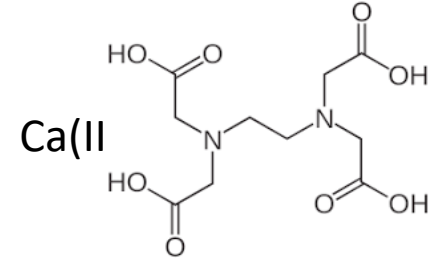
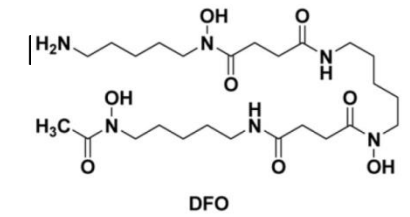
Daily requirements

Essential Elements

Metal Ions	In Adult (in mg)
K	2000-5000
Na	1100-3300
Ca	800-1200
Zn	300-400
Fe	15
Mn	10-20
Cu	2.0-5
Mo	1.5-3
Cr	0.075-0.250
Co	0.05-0.20
	0.2

Toxicity : Chelating ligands for detoxification

Removal of excess metal ions by chelation therapy
SHAB concept helps to select ligands .
 Soft bases(ligands) binds to soft acids (metal ions)and hard acids prefer to bind hard bases

Ligand's name	trade name	preferably coordinated metal ions	Structure
(a) 2,3- dimercapto-1-propanol	dimercaprol, BAL		$\text{HS}-\text{CH}_2-\overset{\text{SH}}{\underset{ }{\text{CH}}}-\text{CH}_2-\text{OH}$
D-2-amino-3-mercapto- -methylbutyric acid	D- penicillamine		
(c) Ethylene diamine tetra acetic acid	EDTA	Ca(II)	
(d) Deferrioxamine B	DFO,desferal		
(e) 3,4,3-LICAMC		Pu(IV)	