

Tissue Binding of drug $\Rightarrow$ Liver $>$ Kidney $>$ Lung $>$ ^{muscle}

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⊕ Factor Affecting Protein drug Binding.

1. Drug Related factor $\Rightarrow$

- Physicochemical Characteristics of drug $\rightarrow$ $\begin{cases} \text{Molecular Size} \\ \text{Lipophilicity} \end{cases}$
- Concentration of drug in body. DEPTH OF BIOLOGY
- Affinity of drug for a Particular Binding Component.

$\Rightarrow$ Lipophilicity $\uparrow$ $\propto$ More Protein drug Binding.

$\Rightarrow$ Conc. of drug is more in body, so it can easily bind with protein. (i.e. $\uparrow$ in Protein drug binding).

$\Rightarrow$ Affinity of drug $\rightarrow$ eg $\rightarrow$ Lidocaine having greater affinity of α -1 acid glycoprotein as compare to Human Serum Albumin.

$\downarrow$ DEPTH OF BIOLOGY
eg $\rightarrow$ Digoxin Have more affinity to bind with Cardiac Muscle as compare to skeletal Muscle.

2. Protein Tissue related factor $\Rightarrow$ DEPTH OF BIOLOGY

- Physicochemical Characteristics of Protein or Binding Agent.

Eg $\rightarrow$ Lipoprotein & Adipose Tissue having more affinity to get bound with Lipophilic drugs.

- Concentration of Protein or Binding Component.

$\rightarrow$ If more amount of Protein is present in blood then more will be the protein-drug Binding. DEPTH OF BIOLOGY

- Number of Binding Sites

$\rightarrow$ Number of Binding site can also affect the protein drug binding

$\rightarrow$ More the number of Binding site, more will be the drug binding. DEPTH OF BIOLOGY

3. Patient related factor $\Rightarrow$ DEPTH OF BIOLOGY

- Inter Subject Variation (due to Environmental & Genetic factor).
- Age (diff. in Neonates & in Adults).

↓

Albumin Content is Very low (So, drug-Protein Binding is Very low)

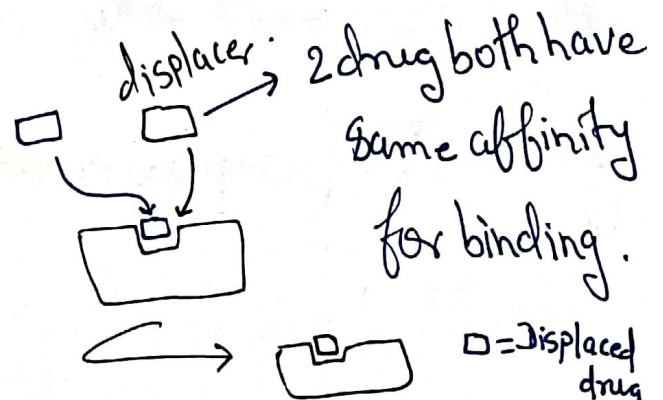
• Disease States $\rightarrow$ DEPTH OF BIOLOGY

- In some Condition (disease) there will be Hyperalbuminemia (Albumin $\uparrow$).

Or there will be Hypoalbuminemia. (Albumin $\downarrow$), So due to this deviation / Variation in protein concentration drug-Protein binding affected.

4. Drug-Interaction $\Rightarrow$ DEPTH OF BIOLOGY

• Displacement Interaction $\Rightarrow$

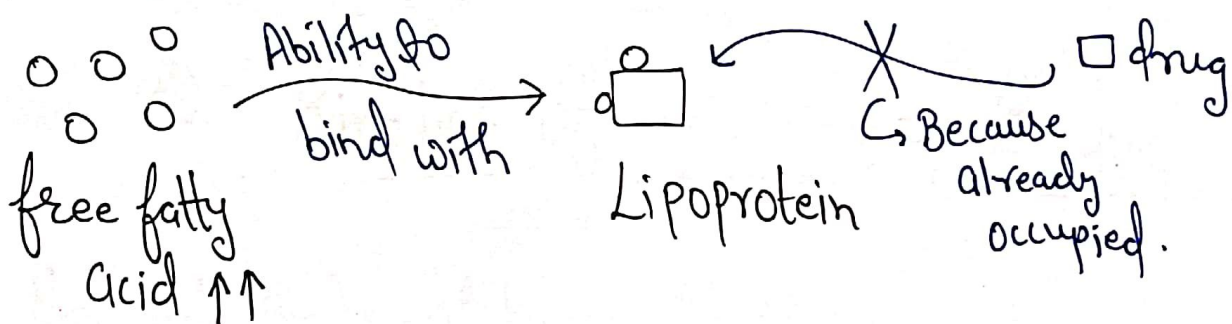


Eg → Warfarin & Phenylbutazone . DEPTH OF BIOLOGY

→ Warfarin bind with receptor but after administration of Phenylbutazone, this Phenylbutazone replace Warfarin & bind on receptor. This type of Interaction is known as Displacement Interaction . DEPTH OF BIOLOGY

⇒ Here phenyl butazone is displacer & Warfarin is displaced drug. (Leads to ↑ the Level of Warfarin in blood).

- Competition b/w the drug & the Normal body Constituent



- In this condition there is a Competition b/w free fatty acid & drug to bind with Lipoprotein. When free fatty acid bind with Lipoprotein (Protein site is occupied), so, drug-Protein binding is decrease. DEPTH OF BIOLOGY

• Allosteric Changes in Protein Molecule

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→ Related to some structural change in Protein Molecule.

- When drug is bind with protein Molecule it May alter the structure of protein (Modify the protein), Now after drug release drug show it's action (in free form), but Now that altered/modified protein Not bind with any drug so, drug-Protein binding (↓)se.

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