Physico-chemical fundamentals of pharmacokinetics

Absorption , distribution i elimination drugs large measure they influence just his physical-chemical properties .

Solubility in water and in fat

Substances hydrophilic do well absorb in GIT. Usually too _ does not weigh on plasmatic proteins and are mostly excreted kidneys . On the contrary substances lipophilic are bad they absorb in the GIT, but well skin or mucous membranes . Usually more _ weighs on proteins . For excretion must be increased their hydrophilicity metabolism .

Acidobasic properties

Most medicines they are faintly base or acid . So they occur in ionized and non-ionized form . Membranes better they penetrate non-ionized (lipophilic) substances , of which the reason is absorption , excretion and transfer between compartments **dependent at pH**. For example, in the acidic pH of the stomach they will faintly acid more in non-ionized form , which allows their easier absorption . On the same principle you can acidification of urine _ _ increase ionized share basic substances in the urine , and reduce so their return resorption , that is increase excretion .

Share ionized faction faintly acid describes Henderson-Hasselbalch equation :

$$pH = pK_A - \ frac[A^-]AH$$

🔎 *For more information see Acido -base balance .*

Molecular weight and shape molecules

What the smaller and lighter the molecule , the easier diffuses . Dimensions and shape molecules they are decisive even for permeation non-specific pores , e.g. _ at glomerular filtration .

Binding on protein

Custody on protein refers to especially **lipophilic substances** , but they can bind and e.g. _ **molecules with suitable electric charge** . Custody it happens reversible . The problem is that pharmacologically is only effective free faction . For critical circumstances can be amount available binding places reduced and effect medicines unexpectedly will grow .

If there is a bond drugs *L* on proteins *P* reversible , can express dissociative constant K_D returnable reaction drugs and proteins :

$$K_D = \ frac[P][L][PL]$$

For the practical needs is more advantageous operate with time off fractions drugs f_U which you can express the following way :

$$f_U = \ frac[L][L] + [P] = \ fracK_D + [L]N + K_D + [L]$$

N is a number binding places on one molecule proteins .