

DII (H)

Paper III

TRANSPORT OF SUBSTANCE ACROSS MEMBRANE
(Contd.)

(b) Passive transport (diffusion and facilitated transport).

In passive transport, movement of molecules or ions is from high to low concentration in a chemical gradient or in an electrochemical gradient. However it is different than simple diffusion, since membranes are selectively permeable and allow diffusion of some molecules or ions more readily than others. For instance, glucose passes into cells at a rate of some 100,000 times greater than expected. Although it is also a passive process involving transport in the direction of concentration gradient, it is called facilitated transport. In simple diffusion, the rate of transport increases linearly with concentration, but in facilitated transport, the linear effects are observed only at lower concentration while at higher concentration the rate reaches a saturation maximum. There

however, two important criteria are describing a particular transport to be passive - ① that energy for transport

MARCH 2019						
Su	Mo	Tu	We	Th	Fr	Sa
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

Monday is derived from kinetic energy of particles themselves and \oplus particles passing through the membrane do not interact with particles present in the membrane.

ⓐ Active transport and ATP linked systems.

Active transport, when molecules move from a region of lower concentration to region of higher concentration, i.e. against concentration gradient, the process is known as active transport. The energy is required for the movement of molecules or ions in opposite direction i.e. against concentration gradient. The enzymes involved for the pumping of compounds into or out of cells, are believed to be the components of the membrane. This is true in case of (Na⁺) Sodium ions present in higher concentration outside the cell and (K⁺) potassium ions present concentration inside the cell, to achieve an equilibrium. But concentration difference is maintained. The movement of Na⁺ ions from the outside to inside of the cell takes place against concentration gradient because concentration of Na⁺ is more on outside. The energy required is obtained

from ATP by enzyme ATPase present in the plasma membrane.

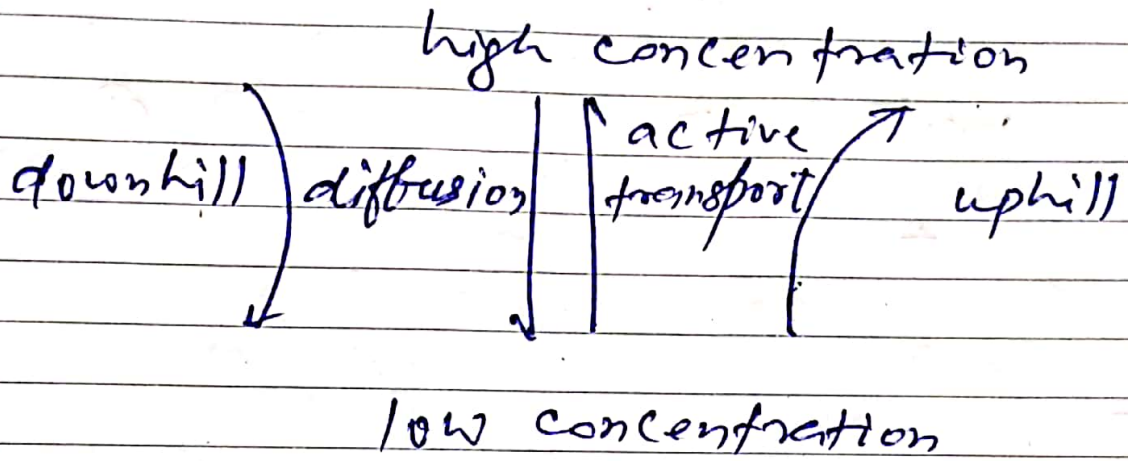


Fig: Active transport against concentration gradient analogous to work done in uphill movement.

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31					1	2
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