BIOMOLECULES

DYNAMIC STATE OF BODY CONSTITUENTS - CONCEPT OF METABOLISM

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- Basically, living organisms, like a simple bacterial cell, a protozoan, a plant or an animal, contain thousands of organic compounds.
- These compounds or biomolecules are present in certain concentrations (expressed as mole/cell or mole/Iitre etc.).
- All these biomolecules have a **turn over**.
- This means that they are constantly being changed into some other biomolecules and also made from some other biomolecules.
- This breaking and making is through chemical reactions constantly occuring in living organisms.
- Together all these chemical reactions are called metabolism.
- Each of the metabolic reactions result in the transformation of biomolecules.
- A few examples for such metabolic transformations are: removal of CO_2 from amino acids making an amino acid into an amine, removal of amino group in a nucleotide base; hydrolysis of a glycosidic bond in a disaccharide, etc.
- In other words, metabolites are converted into each other in a series of linked reactions called metabolic pathways.
- These metabolic pathways are similar to the automobile traffic in a city. These pathways are either linear or circular.
- These pathways criss- cross each other, i.e., there are traffic junctions.
- Flow of metabolites through metabolic pathway has a definite rate and direction like automobile traffic.

- This metabolite flow is called the dynamic state of body constituents. Most important is that this interlinked metabolic traffic is very smooth and without a single reported mishap for healthy conditions.
- Another feature of these metabolic reactions is that every chemical reaction is a **catalysed reaction**.
- There is no uncatalysed metabolic conversion in living systems. Even CO_2 dissolving in water, a physical process, is a catalysed reaction in living systems.

The catalysts which hasten the rate of a given metabolic conversion are also proteins. These proteins with catalytic power are named enzymes.