राजस्थान रत्नाकर
Date :
Page No :

204 - Diet & Nutrition

Food and Metabolism

Food Metabolism : whatever we eat, whether it contains proteins, carbohydrates or lipids all these are digested and converted into their simpler form in our body. Proteins are converted into Amino Acids, Simpler Starch Converted into sugars and lipids are Converted into Fatty acids. Now during this process the energy is released in the form of ATP and other energy rich molecules like $NadH_2$, $FedH_2$ they are also formed and which can be used for different purposes. So waste Material like Nitrogen Compound, CO_2, Phosphates and sulphates they are also produce during this process. Such waste material excreted outside the body by different ways.

Protein → Amino Acid

Carbohydrate → Sugars

Lipids → Fatty Acids

Now, these simpler Molecules (Amino Acids, Sugars, Fatty Acids) can be use again produce different complex and large molecules, which can play different Role in our body.

For example Enzymes, Hormones, Receptors

and even the Hairs & Nails.
So as you can see whatever we eat it changes from one form to the other and in Greek Language this change is called Metabolysmos and from this Greek word the new term into the existence in Science is called Metabolism.

(Metabolysmos)

Definition:- So, Metabolism is the Sum of all Biochemical reactions occuring in a Cell.

Network of
And these interconnecting reactions are called as Metabolic Pathways.

Metabolism
↙ ↘
Catabolism Anabolism
Catabolic Reaction Anabolic Reaction

Catabolic Reactions: Catabolic Reactions are those in which Larger and Complex Molecules are degraded into smaller and Simple Molecules. During this reactions energy is released in the form of ATP.
For example Conversion of Protein into Amino

Acids. And Conversion of Lipids into Fatty Acids. A classic example of Catabolism is the Degradation of Glucose molecule into Pyruvate

Glucose is Hexo sugar that it is made up of 6 Carbon and Pyruvate is made up of 3 Carbon. This degradation occur in Step wise reactions which is known as glycolysis and during this Conversion 2 ATP molecules are Produced.

Anabolic Reactions: Anabolism is exactly reverse of Catabolism. In anabolism or Anabolic Reactions, Small or Simpler Molecules are Converted into Large and Complex Molecule. And During this Kind of Reactions Energy is Consumed.

In catabolism Energy is released and in Anabolism Energy is Consumed.

For Example Conversion of Amino Acid to Keratin in Hairs and Nails.

Another Example is Synthesis of Glycogen or Starch into Glucose Molecules.

Thanks.