

Nutrition for Nurses

Nutrition and Human Welfare

by

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Fate of Food Stuffs in Digestion and Metabolism

During carbohydrate digestion, the carbohydrates of food are brought to the form of mono-saccharides—fructose, glucose and galatose. They are taken up to the liver by the portal vein. After a carbohydrate meal, the blood sugar will rise slightly above the normal level due to the increase in glucose. But this is immediately reduced by conversion in the liver to glycogen, animal starch, which is stored. The liver can store glycogen up to ten per cent of its weight. This formation is assisted by insulin, sent into the liver by the pancreas. In diabetes, there is a failure in the production of insulin, and therefore the concentration of glucose rises in the blood and is lost in the urine. Adrenalin from the adrenal glands exerts an opposite action. It causes a withdrawal of glucose from the liver and a consequent rise in the concentration of glucose in blood. Emotional outburst such as anger, fright etc. cause a flow of adrenalin, which increases the glucose in the blood and thus offers fuel for immediate physical actions like fighting. When glucose metabolism is deranged fats are burnt in excessive amounts to meet the fuel needs of the body. The body becomes flooded with intermediary products of fat metabolism resulting in ketosis and acidosis.

Glycogen which has been stored in the liver is subsequently split to yield glucose to the blood, which distributes it to the various tissues of the body, (for example, muscles take glucose up to 2 per cent of their weight) where it is burnt with the aid of oxygen from hemoglobin (oxidised) liberating energy. Thus the body is kept warm and the muscles are

able to contract. Water and carbon dioxide, the bye-products of the oxidation processes are excreted by the lungs and kidneys. The liver helps to maintain the level of glucose in the blood circulation. The liver can store enough glycogen to last for a day without food. Carbohydrates taken in excess of what is immediately stored or oxidised is converted into fat and stored in larger quantities. A well nourished individual carries in his body enough fat to serve him as fuel for a month or more.

Fats

Before absorption from the intestinal tract, fat in food must be split into its components, glycerol and fatty acids through the action of lipases from the stomach, the pancreas and the small intestine. Bile helps in the emulsification of fats.

The fatty acids and glycerol then recombine into fat in the process of being transferred through the cells lining the intestinal tract. This fat passes into lymph vessels and is finally poured with the lymph into the blood without going to the liver. Fat thus distributed through the body may be burnt in the muscles and other active tissues as a source of energy for muscular and other forms of work. The excess is deposited as a body fat.

A part of the fatty acids obtained from the fat of the diet is utilized in the formation of constituents of many of the active tissues of the body. Thus fats are also tissue building materials.

Proteins

When the food becomes mixed with pepsin and hydrochloric acid, the proteins are broken down to their simpler components—proteoses and peptones. Further action on these takes place in the small intestine by trypsin (pancreatin) and erepsin (intestinal mucra)—these complete the digestion of protein changing it into amino acids. They are absorbed into the blood stream and distributed to the various tissues of the body and used in many ways :

1. Reassembled as "building blocks" for new proteins characteristic of the tissue in question. In the growing child, there is extensive construction of new tissue and an important part of food proteins is needed for this need.
2. Assimilated to take the place of fragments of body proteins which are broken down in the wear and tear process in lining cells.
3. Used in the synthesis of enzymes,

hormones and similar body regulators.

4. The remainder are de-aminized into a nitrogenous fragment which is eliminated from the body as urea and a non-nitrogenous residue which is either burnt as fuel, or converted into carbohydrates or fat.

5. Detoxicating poisonous substances as anti-bodies.

Once the individual has achieved his full growth, there is no further accumulation of protein except in pregnancy and after wasting diseases.

All the three factors carbohydrates, fats and proteins are burnt in the body to yield energy for (1) external muscular work, (2) internal activity, and (3) for heat. The other end products are carbon dioxide and water. When in excess all the three are stored as body fat. The body has very great power to convert one food stuff into another or use it in the place of another.

(To be Continued)

TNAI Milestones — (Contd. from page 194)

staff with power to recruit candidates, and dismiss unsuitable ones.

(6) There should be an adequate proportion of trained nursing staff to untrained in all hospitals.

(7) The training of nurses should not be regarded simply as a means of providing probationers for ward work.

(8) No hospital should be without adequate night nursing staff in charge of a fully trained and experienced Sister on duty at night.

(9) The ratio of nurses to patients should be that laid down by the International Council of Nurses at Geneva.

(10) Suitably furnished nurses' quarters should be provided, with adequate accommodation sanitary, and messing arrangements, in charge of a Home-Sister or other competent management.

(11) No nurse should be expected to work more than a 60 hour week.

(12) The Sister Tutor system should

be encouraged. Every Training School, with over 150 beds should aim at employing a Sister Tutor and more Preliminary Training Schools should be founded.

A minimum standard of education should be established for probationers on entry.

There should be adequate facilities for the theoretical and practical side of the nurse's training. There should also be adequate nurse representation on the Examining Boards.

(13) There should be facilities for recreation when the nurses are off duty.

(14) It is inadvisable that married nurses should be allowed to retain their posts in hospital.

(15) The definition of a trained nurse shall be as stated in the bye-laws of the Trained Nurses Association of India :

"A Trained Nurse—A nurse who has had not less than three years' training in a recognised training school."