VIDU2-1-4

Men, Women, Children and Proteins

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MEN, women and children cannot live without proteins. They can, if need be, live almost without carbohydrates. The Arctic explorer, Stefansson, and a colleague lived in good health for a whole year on a diet composed solely of meat and therefore almost devoid of carbohydrate.

Men, women and children also can, if they so desire, do without almost any fat. Thus, the Hos, an aboriginal tribe living in the Bihar Province of India, do not use any kind of fat or oil in their cooking. Nor do they consume any meat or milk. Their intake of fats and oils therefore must be precious small. Nevertheless, they do not show any disorder which could be attributed to fat deficiency.

As to alcohol, the only other source of energy in human nutrition, most women and all children seem to be able to stay well and happy without it. From a strictly nutritional point of view, alcohol is certainly entirely dispensable. Many men, however, would argue that life without alcohol is not worth living but that is another story.

Why, it may be asked, cannot we live without proteins? As it happens, every single cell in the body is composed partly of protein. Without protein young cells cannot grow and mature cells cannot maintain their structure. Whereas fat in the body can be derived from carbohydrates and carbohydrates can be derived from proteins, proteins cannot be derived from either. It follows that proteins have necessarily to be taken in the diet.

Proteins are large molecules made up of nitrogen-containing amino acids. For many years it was believed that all proteins were similar in composition. At the turn of this century, however, Emil Fisher showed that proteins are composed of amino acids which are differently arranged in different proteins. There are some 22 amino acids which are known to enter into the composition of body proteins. The body can make some of these if a supply of nitrogen is made available. The amino acids which the body makes under proper conditions are called non-essential amino acids. Those that cannot be synthesized by the body must be supplied in the diet. These are the so-called essential amino acids of which there are eight.

What functions do proteins perform in the body? They are essential to growth for they provide the essential amino acids which are the building blocks for tissue synthesis. Also, proteins supply the raw material necessary for the synthesis of digestive juices, plasma proteins, haemoglobin, enzymes, and certain hormones and vitamins. Proteins can also be used to obtain energy, although it is a waste to use it for that purpose.

Protein deficiency in childhood results in a disease called Kwashiorkor characterized by failure to thrive, muscular wasting, mental apathy, swelling of the body and a liability to liver damage. Kwashiorkor is the name given to this disease by the Ga tribe living in Ghana. In the Ga language, Kwashiorkor means "the sickness the older child gets when the next baby is born". The older child who has been taken off the mother's breast to make room for the newborn baby, develops Kwashiorkor because its principal source of good quality protein, namely its mother's milk, has now been diverted to the newcomer. Kwashiorkor or protein malnutrition can occur at any age but it is most common in toddlers who have been weaned from the breast on to diets deficient in protein. In the adult, protein malnutrition leads to loss of strength, impairment of working capacity and a greater susceptibility to various diseases. It is no exaggeration to say that sooner or later protein deficiency kills men, women and children.

The stark truth is that in many countries today, including Sri Lanka, people are facing a "protein crisis." This means that in these countries either because demand exceeds supply or because of unfair distribution or both, many men, women and children are not receiving enough protein to keep them healthy. In Sri Lanka it has been variously estimated that over a **million** children may be suffering from protein — calorie malnutrition today. Many of them will probably perish from complications of this condition.

Since proteins are essential for human health and they are in short supply in this country, it becomes important to distribute the available proteins equitably. To say this is immediately to raise a question : how much protein does a man need daily to remain healthy? Since men have stopped growing, they need protein only for maintenance purposes. The Joint FAO/WHO Expert group which met in 1971 arrived at the figure of 0.57g per day for each kilogram of body weight as the "safe level" of protein intake in terms of cow's milk or egg protein for an adult man. For an adult woman the figure is 0.52g per kilogram. This means that the average Ceylonese man who weighs about 55kg (120 lb.) needs about 30g. protein per day and the average Ceylonese woman who weights about 45kg (100 lb.) requires about 23g protein per day — provided the protein is taken in the form of milk or egg protein. But few people in this country can afford milk and eggs. Most of our people take a mixture of vegetable and animal proteins, the nutritive value of which is lower than that of milk or egg protein. Therefore more such protein is required to satisfy needs. In general, therefore, it is a safe estimate to say that the average Ceylonese man needs about 1½ oz. of protein a day. The average Ceylonese woman, because she weighs less, needs

about 1 oz. per day. If she is pregnant or lactating she needs more. The nutrition of the pregnant woman has an important influence on the course of the pregnancy and the health of the infant. Human milk contains about 1.2g of protein per 100 ml and since a lactating woman may produce as much as 850 ml of milk per day the protein content of the daily secretion is about 10g. At least this amount should be added to her diet, over and above her normal requirements. The amount of protein required to support growth is much greater than that required to maintain the structure of tissues. The weight of an infant doubles during the first six months of life and trebles during the first twelve months. After the first year the growth rate declines until adolescence at which time there is another spurt of growth.

Accordingly, growing children require much more protein per unit of body weight than adults. Roughly speaking, a newborn baby requires about 5 grams of protein per kilogram of body weight; a toddler requires about 3½ grams per kilogram and an adolescent about 1½ grams per kilogram. Thus an adolescent son (or daughter for that matter) requires more protein than his father, and should get it. A pregnant or lactating wife needs — and deserves to receive — more protein than her husband, no matter how hard-working he may be. In many families, however, the men demand — and get — the major share of the available supply of meat and eggs even at the expense of the young children. This is based on the belief that people who do hard physical work require plenty of meat and fish and eggs in their diet. The great German chemist Liebig was the originator of the idea that the energy for muscular work is derived exclusively from protein breakdown. We now know that this is nothing but a misconception. There is no evidence at all that muscular activity increases protein breakdown. In 1889 two physiologists, Fick and Wislicenus, climbed a Swiss mountain 6,000 ft. high and showed that the amount of protein broken down during the climb was no greater than that broken down during an ordinary working day. There is thus no physiological justification for men to arrogate for themselves the lion's share of protein from the family ration. If protein were distributed according to physio-logical need, men would receive much less than they traditionally get and women and children much more.

On the basis of their capacity to support growth and maintain the structure of tissues, proteins have been classified as biologically complete or as biologically incomplete. A biologically complete protein contains all the essential amino acids in adequate amounts to meet human requirements. A biologically incomplete protein is deficient in one or more of the essential amino acids. Animal proteins (meat, fish, eggs and milk) are biologically complete. Not all vegetable proteins though, are biologically incomplete. Rice protein, for example is nearly biologically complete in quality. Moreover, suitable mixtures of vegetable protein could be as good as the best animal proteins. In order that the deficiences of one might be compensated for by another it is always desirable to eat proteins in combinations such as the traditional ones like "rice and dhal", "bread and cheese" and so on. It is recommended that for adequate nutrition, at least ¼ of a person's daily protein requirements should come from animal sources.

Finally, what are the common foods which are good sources of protein? Meat, fish, eggs, milk, beans and peas are good sources. Rice, bread, potatoes and maize are fair sources. Something like 8% of rice is protein and rice is one of the principal sources of protein for poor men, women and children in our country.

Some 20% of meat is protein. All meats have about the same nutritive value although they differ so much in flavour. People are very choosy indeed in their taste for meats. Most of us would not dream of eating frogs and snails which the French love to eat. Muslims would, starve to death than eat pork; South Americans relish guinea-pigs. In times of famine people have eaten horses dogs, cats and even rats. Men are still living who regularly eat the flesh of locusts, lizards, snakes and monkeys; nor are they yet dead who find human flesh delicious. Beef is a widely consumed meat but Hindus will not touch it. If Robert Knox is to be believed, Kandyans of old regarded beef-eating as disgusting a habit as not washing after having been at stool—"which thing" Knox wrote in 1681, "are reckoned with this people an abomination."

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Malnutrition increases the vulnerability of a child to infectious diseases. Of all the deaths recorded of infants and young children, 50 to 75 per cent are attributed to a combination of malnutrition and infection.

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