

DIETETICS

THE PROTEIN FOOD FACTOR

In considering the protein factor as related to a balanced nutrition we find ourselves faced with two distinct problems in India as represented by the European and the Indian diets.

For the introductory consideration of this subject I will quote several paragraphs from my book "Healthful Diet for India". The following two articles will deal with each diet separately. Protein is the essential tissue-constructing material, as, from it, the body builds up its living structure of muscle, nerve, glands, etc.

PROTEINS DIFFER

It is now known that there are two kinds of proteins "complete" and "incomplete", a classification based upon the composition, and consequent food value, of the protein molecule. This molecule is very complex, and may consist of various combinations of amino-acids, or what may be termed "building stones", of which eighteen are known. The particular protein foods which contain all eighteen of these amino-acids in their composition are known as "complete" for they contain exactly the elements needed to construct nerves, muscles, glands and other nitrogen tissues. In consequence of their compatibility to the body requirements they are wholly utilized in tissue-building. The only known foods containing in themselves complete protein are milk, eggs, meat, nuts and soya beans.

Other articles used as foods are found to be lacking in one or more amino-acids and are therefore "incomplete" to the extent of this lack, which ranges from 10 to 90 per cent. Under this second head of "incomplete" protein foods are included all cereal foods, pulses, vegetables and fruits.

It is apparent, therefore, that the first list suggest a ready source for securing the daily protein requirement. Any one of the five foods mentioned in that list is sufficient to provide perfectly all the protein needed for growth and tissue reconstruction.

This knowledge has added new interest to certain observations of practical experience. It is well known that for various reasons many persons prefer to abstain altogether from flesh foods. Under these circumstances, where meats have been replaced in correct quantity by some such complete protein food as eggs, milk, nuts or soya beans, all has gone well. Others have chosen rather to secure their food entirely from the vegetable kingdom, the diet then consisting of some combinations of cereals, pulses, vegetables, fruits and nuts. Here one meets with varying results. In some cases, the combination used has given evidence of supplying complete nutrition, while in others there are distinct signs of deficiency. The recent more exact knowledge regarding all foodstuffs has explained this difference in results, and has indicated that the way to obviate any such deficiency is by combining at each meal protein foods which are complementary to each other in their amino-acid content.

We may illustrate this as follows: If we have the word Print in blocks, and with the available letters attempt to make the word Protein, we find the O and E missing, and we can only make prtin. If then we secure another word in block, Poem, we can with the O and E now available complete our word protein. Allowing each letter to represent an amino-acid, we have an illustration of the fact that with an incomplete protein it is impossible to build up a complete tissue protein, and also of the fact that one incomplete protein may be used to supplement the lack of another, the two together supplying the amino-acids required for constructing a complete tissue protein. It may readily be understood that it will take a greater variety of the incomplete protein foods to satisfy the body's need for amino-acids, than of complete protein, for the reason that the former are complete only to the extent of 40 per cent, 25 per cent, or even as low as 10 per cent of their total protein content.

Nearly all proteins of vegetable origin are incomplete in themselves, but may be so combined as to complete each other and provide an efficient ration. The protein of the peanut (China Badam), the almond (Kabuli Badam), and other nuts, has been shown to be of high quality, practically equal to that of flesh. It is to be noted also that the protein of milk, cheese or eggs is fully equal to that of meat in quality. When meat is discarded, it is evidently necessary that care should be taken to supply in its place an adequate amount of protein derived from one of the above sources.

Any of the following combinations provide an efficient protein complement:

- Cereals (seed foods) with pulses and green leaves of food plants.
- Cereals (seed foods) with either milk or eggs.
- Cereals (seed foods) with gelatin.
- Cereals (seed foods) with nuts or soya beans.
- Oats with gelatin, or peas, or milk.
- Pulses with nuts, or milk, or cheese (milk curd) or eggs.

AMOUNT OF PROTEIN REQUIRED

On account of the importance of the protein element in human nutrition some have concluded that man's daily food supply should consist largely of highly nitrogenous food-stuffs. This has proved to be a very serious mistake. Excessive use of protein foods is the active cause responsible for a high percentage of early physical failures and deaths.

The actual amount of tissue requiring to be replaced each day is very small, therefore the need for a large supply of this element is not apparent. According to the best authorities, not more than ten to fifteen per cent of the total daily food taken should consist of protein.

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Fire from lamp oil—Don't use water, it will spread the flames. Dirt, sand or flour are the best extinguishers, or smother with a woollen rug, table-cloth or carpet.