

FOOD — A FRIEND OR A FOE? (2)

MRS J. MAUD KORDYLAS
Food Research Institute, Accra.

PROTEIN FOODS

HIGH protein foods have higher friendly aspects than foods high in the other nutrients. Mainly because protein rich foods are useful in the diet for three main purposes:

1. After digestion, proteins furnish mixtures of amino acids suitable for and essential to the building and maintenance of body tissues.
2. Proteins can furnish fuel or provide energy for body needs.
3. Most protein-rich foods also carry certain valuable minerals and vitamins.

Unlike the other nutrients, a wide range of protein intake which may be compatible with health, is considerably higher than it is in the case of carbohydrates or fats. This is because proteins must supply materials vital for the building and upkeep of tissue cells and the mixtures of protein consumed must supply all the necessary amino acids in adequate amounts. On the whole animals including man, cannot survive on a diet consisting solely of carbohydrates and fats (no matter, how much energy they supply) because the tissues would waste away for lack of amino acids necessary for maintenance and life processes. In short, protein foods are necessities of life.

For growing children, higher proportions of proteins of high biological value (animal protein) favour more vigorous growth and greater stature. Moreover, since all the essential amino acids need to be in the blood immediately after a meal in order to have maximum amounts of tissue protein built, some food that carries complete proteins should be included in each meal or children must be given mixtures of vegetable proteins where animal proteins are lacking. Let me illustrate this very important point. If "legume" is fed alone as a vegetable protein in a diet, this will provide us with the

letters L - E - G - U - M - E. But one cannot form the protein MUSCLE from the letters provided by LEGUME when broken down, because letters S and C are missing. If on the other hand, one were to mix the protein Casein (protein from milk) which provides the letters C - A - S - E - I - N and legume together and feed them in the same meal, one would be able to break down both words and obtain M-U-L-E from **Legume** and the missing letters S and C from **Casein** thus being able to form protein **Muscle** and making maximum use of the two proteins fed together. This factor is very important when new tissues are being built in children than it is in adults.

There are many areas of the world in under developed and over populated countries where protein rich foods, especially those of animal origin, are either scarce or practically unavailable. In certain areas, eggs, milk and meats are so rare and costly as to be out of reach of the common people, and people in these areas have to depend mainly on vegetable proteins such as beans, peas, agushie and other protein mixtures to provide the necessary amino acids.

In addition to the scarcity of these animal protein foods in these areas, ignorance and cultural practices also add to aggravate the situation. There is ignorance as to what vegetable proteins to mix to obtain maximum benefits. There are cultural practices such as pertains in Ghana where we allow the best part of a meal to go to the bread winner, to the grown ups before the children who critically need protein, are served, thus creating a situation where, in poor homes, children are given diets consisting mainly of foods high in carbohydrates with little fat and vegetable foods that carry some plant protein but very little fat protein. In most of these diets, especially those given to infants of weaning age, both calories and protein are supplied in insufficient amounts and deaths from malnutrition are all too common.

Factors such as size, age, completeness of digestion, absorption and nature of protein, influence protein requirement, and must, therefore, be taken into account when deciding on protein requirement. Although muscular work is the largest single factor in determining energy needs, it has no appreciable effect on the protein requirement. The popular notion that a man requires extra protein rich foods such as meats if he is doing muscular work has no scientific basis.

When a person achieves adulthood, there is no special advantage in the consumption of protein greatly in excess of body needs. Whether the body can build up any protein reserves on liberal protein intake is a question on which experts disagree. Persons who take little or no exercise and eat liberally of meats and other protein rich foods (especially if carbohydrate rich foods are also consumed in considerable amounts) show a tendency to become overweight owing to excess food intake.

It must not be forgotten that proteins are one of the three great classes of energy nutrients. After the amino acids reach the tissues, the amounts in excess of those needed for building and for maintenance of body tissues have the nitrogen containing protein split off and excreted through the kidneys. The remaining parts of the molecules are burnt as energy. Any excess is built into fat which is stored in the adipose tissues. One would, therefore, see that the habit of adults indulging in large helpings of protein rich foods, not only lead to wastage of the ingested amino acids, which otherwise would have been utilized to a good advantage by a growing child, but also lead to an unnecessary storage of body fat. A proper balance, therefore, between the intake of protein, carbohydrate and fat is advantageous if not imperative.

Fats: their friendly and unfriendly aspects

The third nutrient that has had a lot of unfriendly publicity and states of ill health associated with its intake in the diet is fat. Before we start hammering nails into the coffin of fat, let us examine fat as a nutrient. Are there any friendly aspects of fat and is fat necessary in the diet?

Fats incorporated in foods give a flavour which is prized. It also has a satiety value. This satiety value depends on the fact that fats slow down digestion and therefore the emptying

time of the stomach. Meals that contain considerable fat remain longer in the stomach and so prevent the early occurrence of the 'hunger prangs' that occur when the stomach is empty.

Weight for weight, fat has a high energy value, more than twice that of carbohydrate or protein. This means that relatively, small quantities of fat rich foods decidedly raise the energy value of the diet when food is scarce, or when one is on a weight reduction programme of diet, small or moderate amounts of fat in the diet help in preventing hunger. Fats are also useful when it is desirable to have a higher intake of food energy without adding unduly to the bulk of the diet.

Besides the usefulness of fat rich foods as a concentrated source of body fuel, fat also acts as carriers of fat soluble vitamins and the source of essential fatty acids, which for some reason or other, the body does not seem able to make. Vegetable fats such as corn oil and groundnut oil are good sources of these essential fatty acids. If one overeats in regard to fat, as with the other two energy nutrients we have talked about, the diet very likely provides food energy in excess of body needs which is also stored in the fatty tissues in various parts of the body.

Fat deposits in the human body may be either advantageous or disadvantageous, depending on the amount whether they are moderate or excessive. Some deposition of fat usually under the skin or about the abdominal organs, serves a useful purpose as a reserve store of fuel to be drawn on in time of need. Moderate deposits of fatty tissue also serve to support organs and protect them from injury and to prevent undue loss of heat from the body surface. Fat is therefore useful and friendly nutrient to have in the diet.

How and when does fat become a foe?

Fat becomes a foe when too much of it is eaten. When too much of fat is intimately mixed with starch or protein, the meal may stay so long in the stomach as to cause discomfort. The fact that any excess energy value of the diet be it in the form of carbohydrate, protein or fat is converted into fat, may lead to a continuous storage of fat. Such deposition of stored fat in turn may lead to undesirable weight gains, which could place undue strain on the heart and other vital organs. Insurance figures in the United States have showed that

overweight persons have a much lower life expectancy than those who maintain normal weight for their height and age.

One cannot discuss fat intake without mentioning obesity. Obesity can be defined as the accumulation of excess fat in the body. It invites disability, disease and premature death. Excess fat is as much a hinderance as carrying a load of the same weight and gives rise to breathlessness on moderate exertion, for example, climbing stairs. Obesity predisposes to diseases like heart pains, blocking of the heart vessels, high blood pressure stroke, diabetes, gall bladder disease and joint pains.

Don't get fat because it is difficult to shed fat

After an adult has attained full growth, it is advantageous to maintain body weight at about a certain norm for the height. Either overweight or underweight represents disadvantages which usually make for lesser efficiency or poorer health. If the body weight is persistently, even though slowly, increasing, there certainly is an excess fuel value of food intake which is greater than the energy needs of the body. Take for example an excess intake of as little as 200 calories in food per day, (this may be equivalent to two slices of bread and butter or two large bananas or two bottles of carbonated drink plus two small biscuits or two boiled eggs) if persistently indulged in, will mean the storage of seventeen pounds of body fat in a year's time.

Frying is one of the ways whereby the energy value of foods can be increased. A boiled plantain weighing 100 grams and supplying 132 calories would supply twice that much when fried. Foods such as butter, margarine, salad oil, cooking fats and mayonaise are visible fats and we are usually conscious of how much we use. However, we often fail to recognise that cream, cheese, nuts and nut soups, (groundnut and palm soups), pastries, cakes, avocado pear, chocolates, etc., contain a good deal of so called hidden fat. Thus, even though all visible fat is trimmed off meats, the separated lean meat, when cooked, still contains 6 to 15 per cent of hidden fat. It may even contain more in the case of choice cuts, in which the flesh is marbled with fat. Over indulgence in such foods would certainly cause excessive deposition of body fat.

All of you will agree with me that no amount of good will or mere wishful thinking has ever

helped any one to shed a gram of weight off a bulky back-side. To lose weight is surely a difficult proposition so don't get yourself in a position where you would have to lose undesirable weight.

Before I conclude I would like to mention that apart from these basic energy nutrients, Carbohydrate, Protein and Fat, a word of caution must be levelled against excessive intake of some of the vitamins. We do not usually have problems of ill health when we indulge in excessive intake of the water soluble vitamins because any excess is usually excreted out of the body in the urine. Our problem in Ghana as far as those are concerned is managing to get enough in the diet.

The fat soluble vitamins, however, are stored in the body, chiefly in the liver, to a much greater extent than most water-soluble vitamins. Hence deficiency symptoms may be slow in developing and low grade storages may be hard to detect.

Also because of this ability to be stored in the body, toxicity can develop if too great an amount of fat soluble vitamin A and D in partucular is ingested, for the excess cannot be excreted in the urine. Enough is better than too much as far as these vitamins are concernd, and mothers should be warned of this fact in case they are giving high potency D and A preparation e.g. Cod liver oil to their children.

We as Ghanaians must also be given a word of caution as far as vitamin A is concerned due to our high intake of palm-oil, since palm-oil is rich source of vitamin A precursor, carotenoids and would therefore lead to vitamin A intoxication if indulged in excessively.

To conclude, I would like to stress again that foods are sources of nutrients which our bodies need. These nutrients have a lot of useful, essential and friendly contribution which we need for good health, longevity, physical prowess good looks, charm and buoyant health. Through intelligent selection, combination and wise moderation in our food intake, we can make these foods yield their friendly aspects abundantly to us for our beneficial usage. However, if we follow our desires and allow ourselves to be taken in by false advertisements, over indulgence and rampant over-eating, certainly, foods will turn into foes and help to bring us ill health, obesity, and pre-mature death. **Are we going to allow food to become our friend or foe?**