



## Meat as a Food

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### Abstract:

We must therefore arrive at the following conclusion. Diet must be essentially a mixed one in order to obtain the maximum benefit from it, and animal matter is richer in protein and fat than most other types of food, although it is correspondingly deficient in carbohydrates. Animal protein is the best builder of body-cells, and animal fats give greater staying power.

**Key words:** Meat, Common food, Vitamins, protein.

### اللحوم كغذاء

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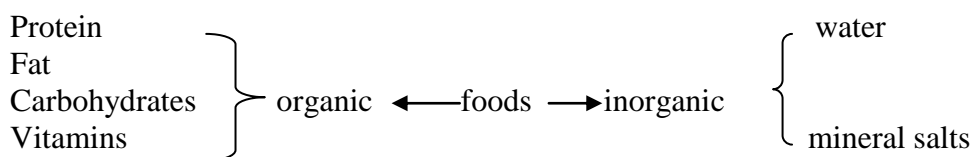
### الخلاصة:

في هذه الدراسة نصل الى الاستنتاج التالي ، النظام الغذائي يجب ان يكون اساسا من وحدة مختلطة لأجل الحصول على أقصى فائدة منه والمنتجات الحيوانية هي الأكثر ثراء في البروتين والدهون من معظم الأنواع الأخرى من الأطعمة على الرغم من انها تعاني نقص في الكربوهيدرات . البروتين الحيواني يعتبر أفضل باني لخلايا الجسم والدهون الحيوانية تعطي اكبر قدر في بقاء الطاقة.

### Introduction:

Food consist of all those substances which taken into the living organism produce energy, build tissue, or regulate the life process without any harm accruing to the organism. The animal body requires food in order to obtain the necessary

energy to repair wastage of tissue and to promote growth. This latter factor is of paramount importance in the case of childhood and the immature animal. Foodstuffs may be conveniently classified as follows.



It is sometimes found that one substance contains all five of these ingredients in varying proportions .The value of a

foodstuff may therefore be said to depend on the following:

A- The relative proportion in which the proteins, fat, carbohydrates, are present.

B- The quantity of heat it is able to supply.

C- The amount of tissue it can build or replace.

D- The ease with which the substance is absorbed by system.

For the supply of energy, and energy in the form of heat, we rely mainly on carbohydrates and fats. Heat and energy can be obtained from protein, but this is an expensive method which, if carried too far, can place additional strain on the system, as proper elimination of nitrogenous waste from the protein is essential.(1)

#### **Bodily fuel needs:**

The fuel needs of the body have been carefully estimated and are measured in great calories, this unit being the amount of heat necessary to raise the temperature of 1000 cubic centimeters of water through one degree centigrade. The calorific values of the food substances are obtained by completely burning one gram of substances in a calorimeter and measuring the heat

produced. This does not give the true calorific value, as the amount of heat evolved is greater than could be obtained in the actual process of metabolism. For purposes of calculating the calorific value of foodstuffs, the following factors are usually employed: protein 4; carbohydrates 4; and fats 9. It is evident that the heavy manual worker will require more energy than the sedentary worker, and that a child would require more calories per kilogram of weight than the average adult. Thus, at under one year 100 calories are required, dropping to about 50 calories at 12 years per kilogram of weight, The amounts of protein, carbohydrates, and fat necessary to supply these calories in the best way are apportioned in slightly different ratios by the experts, but as a good average basis the relative proportions of protein, fat, and carbohydrates can be calculated as 1:1:4 to 5 respectively, assuming that the protein amounts to 100 grams.

Two methods are given below (table1), the first being more suitable for the sedentary worker and the second for the manual worker.

**Table (1)** Bodily fuel needs for sedentary and manual workers(3)

	Sedentary (g)	Manual (g)
Protein	100	100
Fat	100	100
Carbohydrates	400	500
Calorific values	2900	3300

A man doing severe muscular work requires a greater amount of food than the above, enough to produce, say, 4000 or even 4500 calories per day. Calorimeter tests suggest that, when resting, 2500 calories per day should be ample, but size and weight must not be overlooked.

No one foodstuff can supply all the necessary ingredients in the correct proportions. This fact will be appreciated

from table (2), the amounts being given as a percentage.

The calorific value for meat is variable as the quantity of fat it contains materially affects the figures. For example, the fat in the brisket from a well-finished three year old beast may be as high as 40%, and this would give the brisket a calorific figure of over 400, per 100g.

**Table (2)** Composition of some common foods.(4)

Food	Water	Protein	Fat	Carbohydrate	Calories per 100 g
Bobby calf	74	18	6	-	126
Lamb	48	13	31	-	331
Fish	81	16	0.5	-	69
Milk	88	3.3	3.6	4.4	63
Butter	15	0.5	82.8	-	745
Egg	74	12.5	11.5	0.9	157
Potatoes	78	2.0	-	16.2	73
Cabbage	92	1.5	-	5.0	26
Apple	86	0.3	-	8.6	36
Bread	33	8.3	1.0	57.5	259

**Protein:**

Protein may be obtained from both animal and vegetable sources, but the quantity of available protein absorbed by the system is much higher in those of animal origin than in those obtained from vegetables. Whereas the system will absorb about 97% of animal protein, only about 84% of those from vegetable matter are utilized. Thus a diet consisting exclusively or mainly of vegetable must of necessity be more bulky.

Liver and kidney, in particular, have a very high biological protein value that is; they are very valuable in replacing and maintaining the body protein. Meat and milk also rank high in this respect, as they contain the correct constituents (amino-acids) which are necessary in building up the body cells.(2)

**Fats:**

Fat give heat and staying power and are, in the main, absorbed into the system from 5 to 6 hours after ingestion. If fats are omitted from the diet, one is liable to feel the need for additional food before the next meal. Animal fats are more absorbable than the vegetable variety, the ratio being 95% to 90%. Meat generally contains a larger proportion of fat than is commonly supposed and marbling e.g. the infiltration of fat into the muscle, materially increases this quantity and incidentally improves the flavor. Even the heart muscle in fat beast

may contain over 15% of fat. In theory it should be possible for man to live without including fat in his diet, as these substances could be elaborated from the starches and sugars of a carbohydrate diet. This method would not appear to be economical, as the fats have twice the energy concentration of carbohydrates, and therefore double the quantity would be necessary. As the human digestive system is relatively small this question of bulk is important. The human alimentary canal has been developed so as to cope with a diet in which 20-25% of the energy is presented in the form of fat.

**Carbohydrates:**

Carbohydrates are obtained mainly from cereals and potatoes in the form of starch; they are usually absorbed into the system about 3 hours after ingestion. Muscular energy should be obtained mainly from this source. Carbohydrates in food metabolism are mainly simple sugars, such as may be found in the grape and other fruits, and complex sugars, such as lactose and sucrose. The simple sugars are absorbed and stored as glycogen in the liver, while the complex ones must be broken down by the process of digestion before they can be boiled out in the cooking water.

**Vital constituents:**

At one time it was considered that an adequate quantity of protein, fat,

carbohydrate, water, and certain mineral elements would provide a complete diet and maintain health. In 1910, the polish scientist Funk established the fact that a certain constituent of diet, to which he gave the name **Vitamin**, was vitally essential and that only infinitesimal amounts were necessary. Their presence in the diet is essential, as the body is unable to synthesize them from other nutrients and various "deficiency" diseases are associated with a shortage or absence of specific vitamins. The Hungarian biochemist, who first isolated vitamin C, defined the vitamin as "a substance which makes you ill, if you don't eat it"

Vitamins are complex organic substances, and as they were discovered they were distinguished by letters (A, B, C, D, etc.). For scientific purposes, these letters have been replaced by names, as chemical nature became defined.

Although only minute quantities are necessary, vitamins are widely distributed in many different types of food and consequently, to ensure an adequate supply of all the vitamins, a mixed diet is desirable.

The vitamins which are most commonly referred to are designated A, B, C, D, less important are E and K, for which there are no recommended intake standards.

#### **Vitamin A:**

This is a fat- soluble vitamin. It promotes growth and resistance to infection and promotes a healthy skin. Its absence from diet leads to a disease of the eyes, exophthalmia, and even a mild deficiency will cause night blindness. Any excess of this vitamin is stored in the liver, consequently animal liver, particularly that of the sheep, is particularly valuable in this respect. Other foods containing this

vitamin are milk, egg, and green and yellow vegetables, whilst kidney also possesses a considerable quantity.

#### **Vitamin B:**

This food accessory, which was originally known as purely vitamin B, is now referred to as vitamin B complex, as it has been found to possess many factors of importance in human nutrition. Standards have now been established for three of these, thiamine, riboflavin, and nicotinic acid, the latter being referred to in America as niacin. A deficiency of vitamin B causes beriberi, a disease of the nervous system, as well as digestive derangements and the malfunctioning of certain endocrine glands. It is sometimes termed the anti-neurotic vitamin. Meat, which was formerly thought to contain little of the B vitamins, is now known to be one of the richest sources.

#### **Vitamin C (Ascorbic Acid):**

Prevent scurvy. It is present to a certain extent in all fresh raw foodstuffs. It is very sensitive to heat, and cabbage cooked at 80-90% of its vitamin C. These three vitamins must enter into any proper diet, and the table (3) shows their presence in some of the foodstuffs previously mentioned.

#### **Vitamin D (Anti-Rachitic):**

Regulate the mineral metabolism of the bones and teeth. This vitamin can be built up in the body by exposing the skin to ultra-violet rays. It can be produced artificially and introduced into foods deficient in this factor.

#### **Vitamin E (Anti- Sterility):**

This sex vitamin is abundant in oil obtained from wheat, etc, and persists in lard, although other factors are lost in the rendering process.

**Table (3)** Foods containing vitamins A, B, and C

Vitamins	Vitamin A	Vitamin B	Vitamin C
Meat	1	1	0
Liver	2	2	0
Eggs	2	1	0
Milk	3	1	1
Potatoes	0	1	2
Meat extract	0	0	0

**Inorganic foods:****Water:**

It's necessary to life as it maintains the essential dilution by which foods is absorbed by the tissues and for carrying off waste products. Approximately 75% of lean meat and 90% of vegetable tissue consists of water.

**Mineral Matter:**

The mineral salts may be considered as regulating foods and they are of great importance in tissue building. The greater portion of mineral matter is utilized in bone formation. Very minute quantities of other substances such as iron, potassium, phosphorus, iodine, etc., are necessary in a complete diet.

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