

IN DEFENSE OF FAT

Elimination of all fat from the diet, as far as is practicable, as well as a rigidly restricted animal fat intake, are a current medical trend. Like all dietary restrictions, such as protein, carbohydrates, or salt, the basic concepts have been developed by capable experimental workers. The pitfalls in the theories occur when the physiological problem is not looked at as a whole.

The purpose of this discussion is to present a case for the use of animal fat in the dietary. Let us first examine the purposes of one's fat as a protective role in the body.

Fats are present in every living cell, and are essential to its life. The human body varies in fat content, but as an average figure, the 150 pound standard man is estimated to be composed of:

Body weight	70K	100%
Fat	7K	10%
Protein	6.4K	9%
Carbohydrate	5.6K	8%
Mineral	2K	3%
Water	50K	70%

Intracellular fat is present in tissues such as muscle, brain, pancreas, and skin, as an important constituent. It is stored in the subcutaneous tissues as so-called depot fat for metabolic purposes and as bodily protection.

The fat pads of the infant protect him from breaking his bones when he falls, or impairing other parts of the body by acting as a cushion. As people grow older, they frequently lose such pads, either by design or by altered metabolism, making them more susceptible to mechanical injury of broken blood vessels, bones, or injuries to joints. Fat pads also serve as a cushion and a support for the viscera. Visceroptosis, common in young women on self-prescribed reducing diets, results from fat loss and may become very crippling. The pressure pads of the hands, especially over the metacarpal heads, are of utmost importance to comfort while working. A painful hand

results from the loss of these pads, making any work requiring pressure of a tool or other object almost impossible to perform, such as the opening of a jar with a screw-top cap. Similarly, the loss of the pads on the feet, especially those over the metatarsal heads and over the heels, can make walking painful. The loss of orbital fat and sucking pads detracts from the beauty of modern women. In older persons, diminished ischial pads make sitting very uncomfortable. Age plays an important part in whether a realignment of pressure pads can be obtained. Even in the younger person, the reestablishment of normal fat pads may be very difficult.

Muscular people who may appear to be thin, generally have good pressure pads.

Another function of subcutaneous fat is to aid an individual to resist excessive environmental temperature changes. In case of frost-bite or an accident from burning, a reasonably distributed subcutaneous adipose tissue may save a life or protect a vital structure.

Healthy skin, a mark of beauty in women and vitality in men, requires an adequate amount of unsaturated fatty acids in the diet. Adequate fat intake of the proper kind not only provides the elastic surface covering for the skin, but it provides it with bacteriacidal properties that prevent infection from the myriad of pathological organisms in the environment. It also prevents dirt and grime from penetrating the layers of the skin, as occurs to one continually immersing the hands in solvents or to one whose fat metabolism is awry.

Briefly, the difference between saturated and unsaturated fatty acids can be explained as follows: The double bond chain is one in which one or more carbon linkages are unstable (unsaturated, or essential fatty acids) and are represented chemically by $\text{HC} : \text{CH}$, in comparison with the stable (saturated) compound $\begin{array}{c} \text{H} \quad \text{H} \\ \cdot \quad \cdot \\ \text{C} \quad \text{C} \\ \cdot \quad \cdot \\ \text{H} \quad \text{H} \end{array}$. The unsaturated fatty acids are unstable and

are capable of reacting at the double bond and entering into innumerable chemical reactions. Among the commonest of these

is the taking up of hydrogen and producing a saturated compound. The measurement of the degree of unsaturation is the so-called iodine number of the fat, which represents the amount of iodine that can be absorbed by the double bonds for a measured amount of fat. It is this same property that enables linseed oil to polymerize in the process of drying.

Fats differ in each specie within recognizable limits. Some of the lower forms of life produce fats that are composed of single fatty acids. Most natural fats are a mixture of triglycerides, some with saturated radicals and some with unsaturated radicals. The emulsifying property of fat is found in the triglyceride, lecithin.

Now let us consider some of the basic facts of fat metabolism as they apply to the animal produced for food. First, the animal does not possess the power to raise the unsaturated level of ingested fats more than a single double bond, and it cannot produce the so-called essential fatty acids. Second, animals tend to store within specie limitation the fat ingested. Third, fat stores are highly active. Fourth, the higher the metabolic drive of the animal, the less fat he stores. Fifth, all fat is stored with a certain amount of water. Sixth, The lower the unsaturated fatty acid content of the fat, the greater the water storage. Seventh, processes that will lessen the metabolic drive increase fat storage, such as lack of exercise, castration and drugs. Last, sex and age affect the fat storage of the animal.

Methods of processing the fats of meat and milk affect the utilization of these foods by the body. Rancidity of fat due to overheating or exposure to air make them toxic.

Emotional appeals have been directed against the consumption of fat. The vegetable contains phyto-steroids only recently shown to possess important nutritional qualities. The small amount of steroids contained in animal fats are represented by the hormones of the various endocrine glands and a small amount of cholesterol. The biochemist, however, has shown that

the so-called C₂ fragments which represent the utilization of depot fats in the animal polymerized in the process of metabolism to make cholesterol within the body and that the small amounts ingested in our foods are relatively unimportant.

To summarize, modern medical thought has made a particular taboo of animal fat in the diet. Let us recognize, however, that it is possible to alter ingested fats according to the needs of the body. A close liaison between the physiologist, the clinician, and the meat and the milk industry is needed to provide fat of adequate properties for human consumption.
