

Fats, Essential Oils and Health

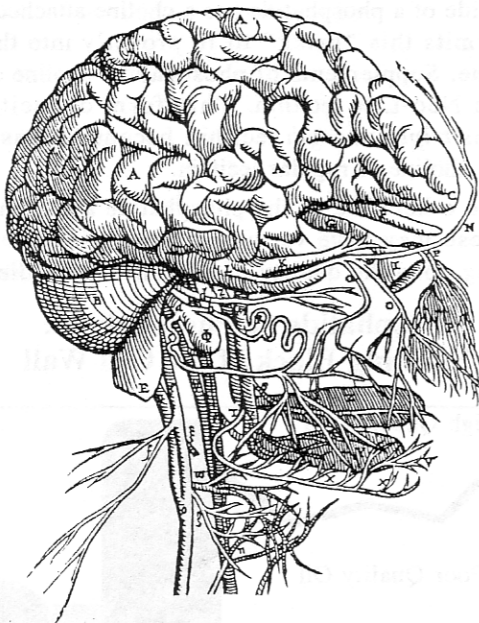
Nutrition at the Cellular Level

Fats are the most energy concentrated of the foods which are commonly consumed. A fat has over twice the calories of protein or carbohydrate. Don't turn and run from fats, however. Some fats are so important that you will die if you do not obtain an adequate supply. These are called *essential fatty acids*.

Fats can exist in two natural forms. *Saturated fats* are fats which can not react with other compounds. No saturated fat is considered essential. A look at the structure of a fat will help understand this point.

Fats are composed of hydrogen and carbon molecules. Carbon molecules can combine with four other molecules. When every carbon molecule in a fat is combined with a hydrogen or another carbon it is called a saturated fat. Because no further reactions can occur these fats are very stable.

A Saturated Fat	An Unsaturated Fat
$\begin{array}{cccc} H & H & H & H \\ H - C - C - C - C \\ H & H & H & H \end{array}$	$\begin{array}{ccccccc} H & H & H & & H & C \\ H - C - C - C = C - C \\ H & H & & & & C \end{array}$



Highly unsaturated fats are key building blocks of brain and nerve tissue consisting of as much as 80% of the structure of these cells. Little surprise that deficiency of these oils can affect learning and induce neuroses and psychoses.

Unsaturated Fatty Acids

Unsaturated fatty acids are missing hydrogens. This tends to force carbon molecules together much closer than they like. The carbon molecules search frantically for something to grab onto. Unsaturated fats are much more active than saturated fats. It is the unsaturated fatty acids which are essential to human health. These oils impart a dynamic and vitality to cells which makes life possible.

Unsaturated fats vary in the amount of activity they possess and can impart to tissues. One of the key factors in the activity of an unsaturated fat is the number of empty spots which exist along the carbon chain. Here is a list of fats with the number of open spots in the chain:

Spaces	Fat	Example
1	Oleic Acid	Olive
2	Linoleic	Sunflower
3	Linolenic	Flax, Primrose
4	Arachidonic	(Meat)
5	Eicosapentoenic (EPA)	Salmon
6	Docosahexaenoic (DHA)	Salmon

Fats with one open space are called monounsaturated. Olive oil is an example. Because olive oil is not saturated but not too unsaturated it is a fairly stable oil. People that consume large quantities of olive oil do not appear to have increased incidence of heart disease or cancer.

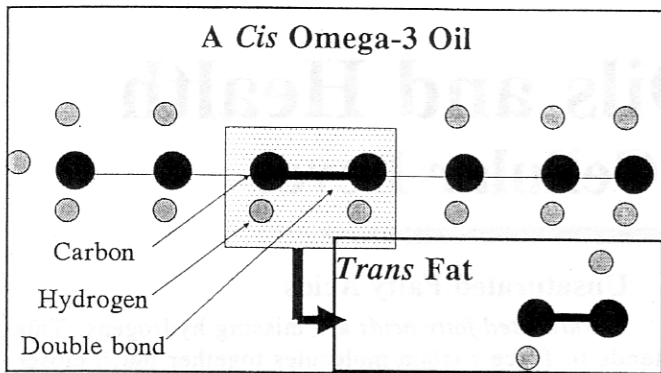
The oils with two and three spaces open shown above are referred to as the essential fatty acids. Life will end if these are not in the diet. The body has enzymes to desaturate these two fatty acids to make the more unsaturated ones.

Trans Fats

Unsaturated oils have a bend in them. Among other things this keeps them liquid. Food processors have discovered that unsaturated oils change their character when they are hydrogenated. This is a process for adding

Definitions:

Unsaturated fats are nicknamed by where the first unsaturated spot in the fat occurs. Thus olive oil is an Omega 9 because the first carbon atom missing hydrogens is the ninth. Omega 6 oils are unsaturated first at the sixth carbon. Omega 3 oils are unsaturated first at the third carbon.



hydrogen to the fats to fill in the "bends" in the oils that keep them liquid. A hydrogenated oil is not as liquid as a normal unsaturated oil. Unfortunately, when an oil is hydrogenated a new kind of fat is formed called a *trans* fat.

Trans fats contribute to poor health in many ways. The important point about them here is that they block the ability of the body to unsaturate the essential fatty acids. By doing this they in effect create a deficiency of EPA and DHA. This is why most people benefit when they supplement with these oils. About a third of the fats Americans eat contain trans fats.

The effect of processed oils on Americans has been devastating. Almost everyone carries a load of trans fats in the tissue. Dr. Leo Galland found that general depression of all components of the Omega 3 family (found in cold water fish oils) was the most common characteristic when fats were analyzed in his patients. Two thirds of the patients also had problems with the Omega 6 family (quality grain and vegetable oils).¹

Other nutritional factors such as lack of vitamin B6 can hinder the process of conversion from one type of unsaturated fat to another. In degenerative conditions the halting production of EPA and DHA can come to a virtual standstill.

EPA and DHA are normal constituents of brain cells, nerve relay stations called synapses, the retina, inner ear, adrenals and sex glands. These are among the most active tissues of the human body.²

These oils are very readily destroyed by oxygen and light. It takes about eight weeks to build up tissue levels where deficiency exists and the oils retain beneficial effects upon the circulatory system for two weeks after one stops eating them.²

Dynamic of High Quality Oils

The dynamic activity of high quality oils in the body is difficult to describe. Perhaps the best description comes in one researcher's description of the cell membrane as it actually exists compared to textbook diagrams:

The real biological membrane, containing millions of fatty acid tails vibrating at millions of times per second, with deletions and substitutions in constant progress and biochemical doors opening and closing selectively permitting the passage of

food and waste, is a dynamic, an action more than a structure and literally beyond comprehension. It can be described with words, like infinity can be, but not rationally fully grasped.³

Nutrition and the Cell Wall

A prominent nutritional researcher wrote a number of years ago, "Human beings are more dependent upon their food supply system than *any other organism*, plant or animal."⁴ Some molds require only a few minerals to synthesize their own vitamins, amino acids and essential fatty acids. Human beings are far from this position of independence in regard to their food supply.

This researcher continues, "This dependency of humans upon essential nutrients makes them more vulnerable to nutritional inadequacies and to chronic nutritional deficiency syndromes. The recognition of this concept is exposing the vulnerability of humans to malnutrition and is revealing how undernutrition can result in chronic states of dysfunction."⁴

Only as researchers look at the cells of the body can they really grasp the nature of human malnutrition. This researcher writes, "Cellular nutrition is the basic underlying concept of human nutrition. The study of biochemically and physiologically oriented concepts related to cellular nutrition is essential."⁴

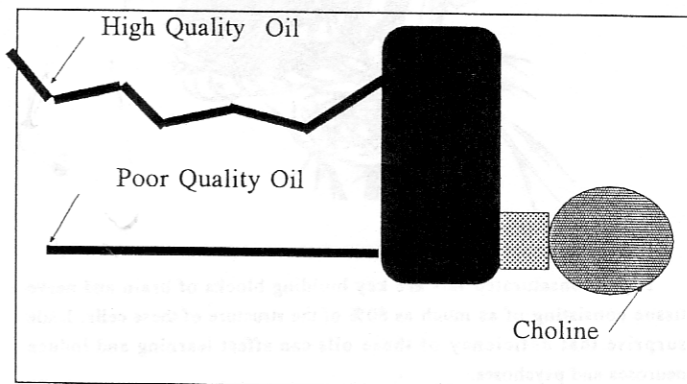
Phosphatide or Phospholipid

Recent research has greatly augmented our understanding of the structure of the cell wall. The basic building block of the cell wall is known as a phosphatide or phospholipid. It is crucial to realize the the composition of a phosphatide varies with the diet a person consumes.

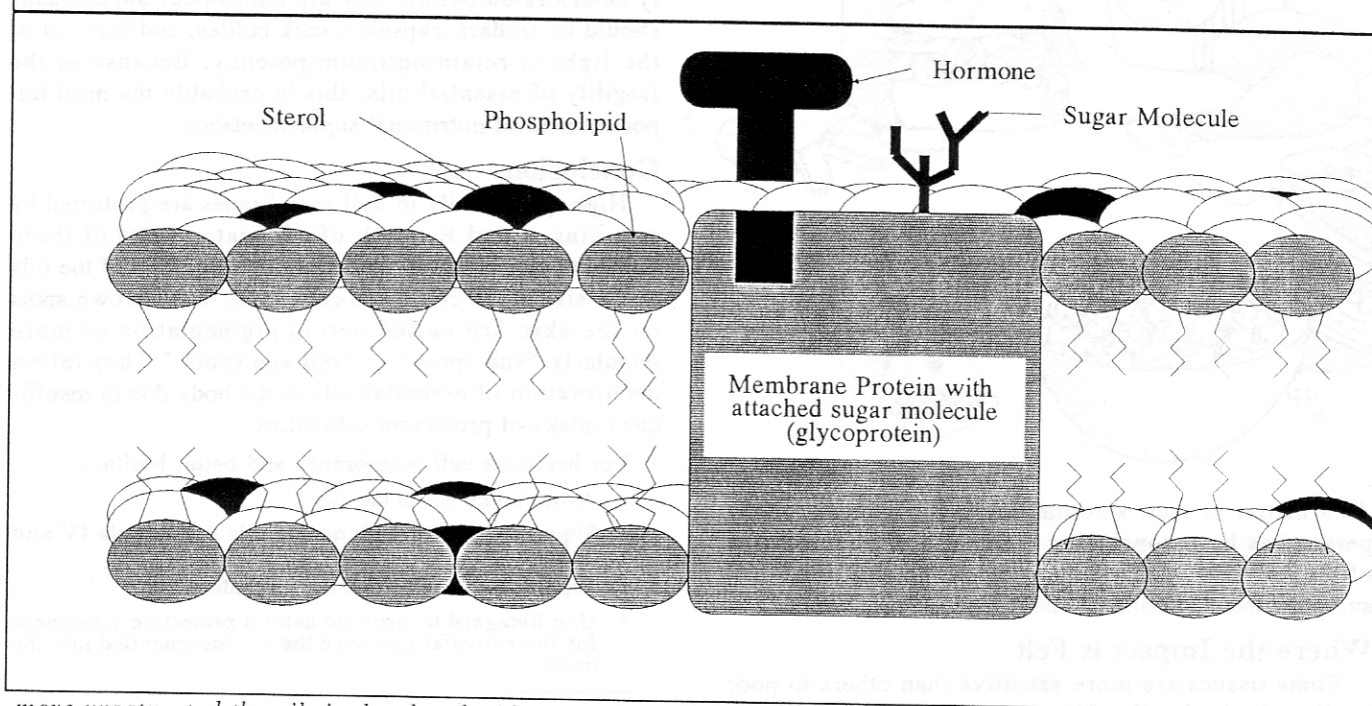
One side of a phosphatide has a choline attached to it. This permits this "brick" to fit properly into the cell membrane. Supplements of phosphatidal choline can be found in Neo-Life *lecithin*. This form of lecithin is known as *triple strength* lecithin because it has three times the choline of regular lecithin.

On the other side of the phosphatide are found two fats. These may have varying degrees of unsaturation depending upon the quality of an individual's diet. *The*

Phosphatide or Phospholipid: Building Block of the Cell Wall



Structure of the Cell Wall



more unsaturated the oils in the phosphatides of the cell wall, the better the health of the cell will be.

Here is why. Empty spaces in fats keep cell membranes fluid, anchor protein structures within the cell wall, and also hold oxygen within the cell membrane. Oxygen in the membrane of a cell hinders the penetration of the cell by viruses, reducing the chances that they will get a strong foothold in the body.

For years people have told us that when they start to use **Formula IV**, with its high quality oils designed for incorporation into cell membranes, their incidence of illness was reduced. This improved ability to saturate the cell membrane with oxygen by adding high quality oils to the diet was one possible explanation which escaped our notice.

Udo Erasmus summarizes this aspect of cellular nutrition, "The highly unsaturated fatty acid molecules attract oxygen, in the presence of which infectious organisms such as bacteria and viruses can't thrive. In this way, the phosphatides protect the cell from invasion by foreign organisms."⁵

When the diet is poor, the cell membrane will not have the unsaturated characteristics essential for optimal health. Intake of hydrogenated and commercially processed oils contribute to this problem by filling the diet with *trans* fats which interfere with the ability of the body to use highly unsaturated oils.

A *trans* fat is the food equivalent of refined white sugar in the carbohydrate realm. It does nothing to promote health and everything to destroy it. *Trans* fats are found in margarines, shortenings, vegetable salad oils,

candies, baked goods, french fries and many other foods. These substances greatly increase the need for essential oils and can hinder the benefits of quality supplements like **Formula IV** and **Salmon Oil**. Efforts should be made to keep intake to a minimum.

The Importance of Cellular Nutrition

It is difficult to communicate just how important the essential oils are for overall health and vitality. Because they are a key building block of phospholipids, and because these are key components of every cell membrane, they are crucial. Adequate highly unsaturated fatty acids determine the fluidity, the flexibility, permeability, and functioning of cell membranes.

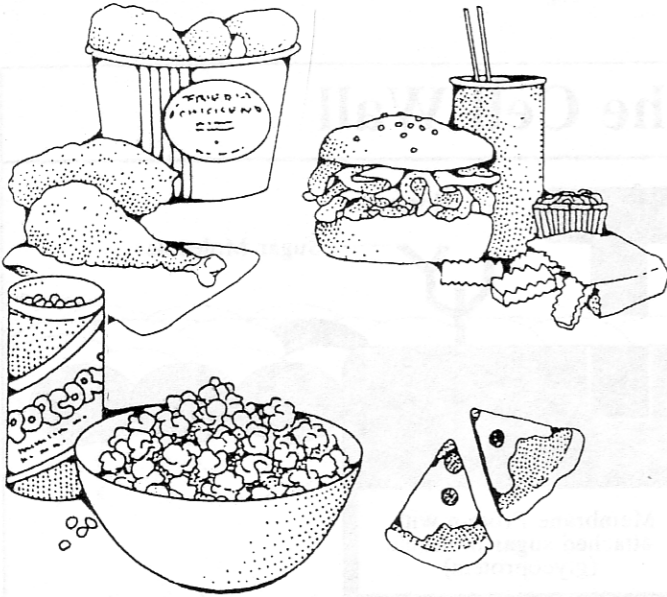
Fluidity

The red blood cell provides an excellent illustration of the importance of the fluidity of a cell membrane. The diameter of a red blood cell is *seven* microns. These red blood cells must pass through openings in capillaries about *two* microns in diameter and spleen passages only *one* micron in diameter.

Loss of cell membrane fluidity can be disastrous in these situations. Loss of red blood cells decreases the ability of the body to carry oxygen. The lower oxygen delivery to the tissues, the lower the energy production.

The brain is particularly sensitive to decreased oxygen. Slight reductions of oxygen can be manifested by *short term memory* problems.

Red blood cells live for only three or four months. The composition of their cell membrane reflects the diet consumed at the time they are manufactured by the body.



As a matter of fact, a common test for the type of fat a person has been consuming is analysis of the membrane of the red blood cells. This provides an idea of fat consumption over a period of about four months.⁶

Where the Impact is Felt

Some tissues are more sensitive than others to poor quality oils in the diet. Nerve, muscle and immune cells are most sensitive to improper fats.

Membranes of nerve and brain tissue consist of about 80% lipids. Poor quality oils can be expected to result in neuroses and psychoses. Donald Rudin has indeed found this to be the case. Our society is filled with people on the edge of insanity due to the poor quality diets they consume.

The function of the entire immune system is dependent upon the activity of the cell membrane of immune cells. Any alteration of the composition of the membrane of these cells will alter the way in which they work. This can take the form of either inactivity (immune collapse) or excess activity (autoimmune disease where the body attacks itself).

The activity of muscle cells depends upon membrane characteristics. Altering the fat composition of cell membranes can have an effect upon endurance, fatigue, and tendency to experience cramping.⁶

Hormones

Many ill people manifest an inability of tissues to respond to hormones. An example is the frequent situation of a diabetic who produces plenty of insulin, but whose tissues do not respond to the hormone.

When tissues do not possess high quality oils in their membranes there is a loss of response to different hormones. This can lead to chronic illness.

Diet and Oils

Few foods consumed today contain high quality essential oils. To increase quantities of these oils consume fresh fish (cold water), raw nuts, whole grains and

seeds. Remember that these oils are readily destroyed by oxygen, light and heat. Processed oil products are usually deteriorated before they are consumed. Supplements should be in dark capsules, dark bottles, and kept out of the light to retain optimum potency. Because of the fragility of essential oils, this is probably the most important area of nutritional supplementation.

Conclusions

High quality oils in cell membranes are protected by vitamins A and E. Lack of adequate intake of these nutrients can result in damaging deterioration of the oils at the site of the cell membrane itself. Dark brown spots on the skin are called ceroid pigmentation or more popularly "sun spots" or "old age spots." They reflect deterioration of essential oils in the body due to insufficient intake of protective substances.

For healthier cell membranes and better health:

- Avoid junky fats in the diet
- Supplement with high quality oils in **Formula IV** and **Salmon Oil**.
- Supplement with **lecithin** for its choline.
- Use **Betagard** to provide natural protective substances for the essential oils once they are incorporated into the tissue.

References:

1. Crook, William, *The Yeast Connection*, Jackson, Tenn.: Professional Books, 1989, p. 363.
2. Erasmus, Udo, *Fats and Oils*, Vancouver, Canada: Alive Books, 1986, p. 244.
3. Wysong, Randy, *Lipid Nutrition*, Midland, Michigan: Inquiry Press, 1990, p. 27.
4. Bland, Jeffrey, editor, *Medical Applications of Clinical Nutrition*, New Canaan, Conn.: Keats Publishing, 1983, p. 8, 18.
5. Erasmus, Udo, *Fats and Oils*, Vancouver, Canada: Alive Books, 1986, p. 52.
6. Clark, Daniel, "Chronic Candidiasis: Candida Related Complex," in *Clinical Chemistry & Nutrition Guidebook: A Physician's Desk Reference, Volume One*, ed. Yanick, Paul and Jaffe, Russell, T & H Publishing, pp. 226-253.

