



## ESSENTIAL FATTY ACIDS

By Dr. Robin Bernhoft, MD, FACS, DABEM, FAAEM

Time was, the popular press told us “all fats are bad.” Then we began to distinguish saturated from unsaturated fats, and more recently trans fats from omega 3 and omega 6 fats. What’s a consumer to do? It’s very confusing.

But not that confusing. There are some simple principles. Much of the body is made up of fat, notably most of the brain and cell membranes throughout the body. The fats making up these structures include cholesterol, phosphatidylcholine (and its close relatives) and the essential fatty acids, especially omega 3s and 6s.

Cell membranes are very complicated structures, with very precisely-shaped pumps for various substances, and binding sites for hormones like insulin or other materials. They have to be shaped exactly right, and have exactly the right degree of flexibility in order to work properly.

When exactly the right blend of exactly the right type of fats is present, things work very well. But the wrong types of fat in the wrong place change the shape of binding sites, the flexibility of the surface, the efficiency of the pumps. That’s where one big difference between “good fats” and “bad fats” arises. A good fat is one which maximizes membrane function and flexibility. A bad fat is one which interferes with function or flexibility.

That’s why trans fats are especially bad. Trans fats are mirror images of good fats; they have exactly the wrong shape, and mess up the ability of the cell membrane to do its job. If the membrane gets messed up bad things happen: insulin doesn’t register when it hits the cell surface, and people get Type II diabetes. Mineral pumps bog down, affecting nerve function, even blood pressure. Some bad fats even can set off inflammatory cascades that can lead to heart or neurodegenerative disease.

Most Americans lack sufficient omega 3 fatty acids in their diet. That puts them at risk for many different diseases. But replacement by taking omega 3 supplements allows them to “change their oil” over time, and that seems to reverse the cellular process that can lead to Type II diabetes, heart or neurological disease. There is even evidence that intensive replacement of good fats, along with hyperbaric oxygen, can speed recovery from stroke.

This is a good time to be alive, because progress in biochemical knowledge has opened new vistas for clinical treatments.