

MS and Fats – A Balancing Act

By Ashton Embry

The Swank Research & Diet

The role of fats in MS has been passionately debated for over 50 years. It all began over 50 years ago when Dr. Roy Swank published a paper in 1950 claiming that saturated fat was an important factor in MS. Saturated fat is one of four main types of fat which also include monounsaturated fat, omega 3 polyunsaturated fatty acids (PUFA) and omega 6 PUFA. Swank supported his thesis with observations that populations that consumed high amounts of saturated fat had the highest rates of MS. He documented that farm-dwelling, meat-eating Norwegians had two to three times the rate of MS compared to their coastal, fish-eating cousins. Swank hypothesized that saturated fat caused MS by forming micro-emboli in capillaries in the brain and these resulted in CNS tissue degeneration.

Swank conducted a 40-year clinical trial to test the effectiveness of a “low fat” diet for MS. Swank uses the term “fat” only for saturated fat and he refers to the three unsaturated fat types as “oils”. He advised trial participants to eat less than 20 g of saturated fat a day and to increase their oil consumption, including the use of a cod liver oil supplement. Some of the participants did not follow the advice and consumed much more saturated fat. They became the “controls” for the study. The persons eating the low saturated fat/increased oils diet did much better than those who did not. They had much less disease progression and much longer life spans. Based on these results, a low saturated fat diet has been recommended for persons for MS in many self help books and even a few neurologists quietly suggest such a regimen.

The Role of Polyunsaturated Fats in MS

In the 1970s there was great interest in the possible value of increased polyunsaturated fats for MS and a few small clinical trials were done using either omega 6 PUFA (mainly sunflower oil) or omega 3 PUFA (mainly fish oil). These trials were inconclusive and the medical community lost interest in the role of fats in MS and their potential use as therapeutic agents. Over the past 30 years there have been a few epidemiological studies that suggest that fats may indeed play a role in MS, although an analysis of the huge Nurses database by Harvard scientists did not indicate any relationship between fat intake and MS occurrence.

Types of Fat & Immune Response

So do one or more fat types play a role in MS? MS is an inflammatory, autoimmune disease in which myelin-sensitive immune cells are inappropriately activated and are not sufficiently suppressed to prevent damage to myelin. Importantly, it has been demonstrated that the various types of fat have different influences on immune cells by either promoting or suppressing inflammatory immune reactions. This indicates that fats certainly have the potential to be involved in MS. The research shows that both omega 6 and omega 3 PUFA regulate the immune system and affect both the inflammatory side and the suppressor side.

Omega 6 PUFA (found in mainly in vegetable oils) tend to have more effect on the inflammatory side than do omega 3 PUFA. However one omega 6 fatty acid found in evening primrose oil and

some other oils such as borage and blackcurrant – gamma linolenic acid – gets around this problem by starting later on in the conversion process of fatty acids and is therefore not pro-inflammatory.

Omega 3 PUFA found mainly in fish oil and a few other sources (flax, canola) have much more anti-inflammatory capability than do omega 6 PUFA. Thus the ratio of omega 6 to omega 3 consumed influences one's anti-inflammatory response. Curiously there are no data to indicate that saturated fats have any noticeable effect on the immune system. Finally, monounsaturated fats (e.g. olive oil) are mildly anti-inflammatory.

Proportions of Fats Eaten Today

As discussed in my last column, the nutritional factors involved in MS are those that have been introduced into the human environment through the agricultural, industrial and technological revolutions. Although the overall amount of fat consumed has not changed very much, the proportions of the four main fat types being consumed in the developed Western world today are very different from those consumed by our Paleolithic ancestors. These societies eat much more omega 6 PUFA and saturated fat and much less omega 3 and monounsaturated fat. Notably some of the omega 6 PUFA in many baked products has been chemically changed to trans fatty acids that may also contribute to inflammation. Such a significant change in fat intake decreases a person's anti-inflammatory responses and this contributes to the promotion of inflammatory diseases such as MS.

Ratios of Types of Fats

Given the above, it is very likely that fats play a role in MS onset and progression by decreasing anti-inflammatory capacity. Persons with MS or anyone wanting to lower their risk of MS would be wise to adopt the fat intake ratios of the Paleolithic. The most important ratio seems to be omega 6 / omega 3 which is currently estimated to be 10 –20. This starkly contrasts with the much lower Paleolithic ratio of 1-2. The Paleolithic ratio for monounsaturated/ saturated was 2-3 which is higher than that of today (>1).

Given these ratios, more omega 3 PUFA and monounsaturated fat and less omega 6 and saturated fat are required. 70 to 80 grams of total fat (720 kilocalories/ 35% total energy) is a reasonable daily intake. To achieve a proper balance of fat types the suggested amounts of the four fat types are

- 40g of monounsaturated fat
- 18 g of saturated fat
- 14 g of omega 6 PUFA
- 8g of omega 3 PUFA (mainly from fish oil)
- Trans fats, a product of the recent technological revolution, should be completely avoided.

With this understanding, it appears the main problem with a high intake of saturated fat for MS is that it tends to preclude an adequate intake of omega 3 PUFA and monounsaturated fat. Also, PUFAs compete and lose against saturated fat in the metabolic process. Swank's recommendations of reducing saturated fat and increasing the oils had a beneficial effect because they led to a reasonable approximation of a Paleolithic balance of fat types and this in turn decreased inflammatory reactions. He was right for the wrong reason.