

Why test MS vs Milk?

Multiple Sclerosis (MS) is an autoimmune disease. There are a **minimum** of 3 requirements for an autoimmune disease to occur:

1. A genetic susceptibility must exist.
2. The immune system has complex systems of self recognition to prevent the body from attacking itself. One or more of these systems must be disabled.
3. The immune system must detect a foreign protein in the body (an antigen) that very closely matches a body protein or proteins.

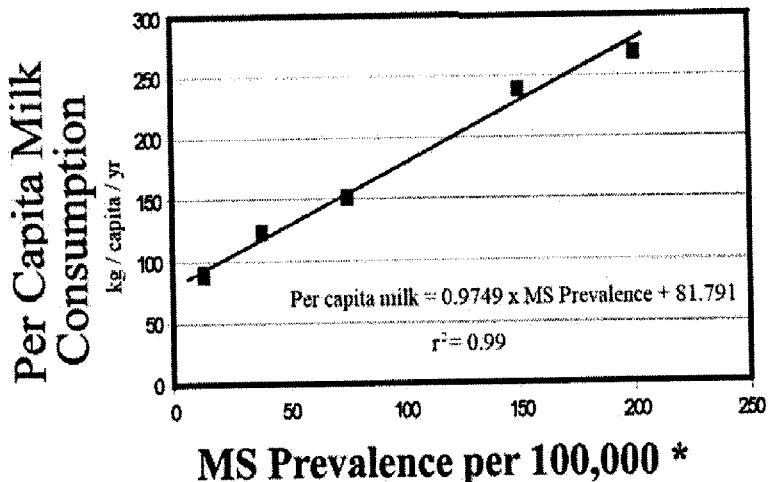
About 200 MS genetic markers (genetic structures that have a higher occurrence level for people with MS than the general population) have been identified¹. Some of these markers are known to be common to other autoimmune diseases. The probability that one identical twin will develop MS when the other twin has the disease is 25 to 30%¹. This implies that genetics only contribute 30% towards the initiation of MS and the other 70+% must result from environmental exposure. No direct correlation of any combination of MS genetic markers to the prevalence of MS has been identified¹. The fact that about 200 MS genetic markers are known implies that MS is actually multiple diseases that employ different metabolic pathways triggered by various environmental effects some of which interact with genetic markers to disable different immune system self recognition functions. This could explain why no combination of genetic markers has shown a direct correlation to MS prevalence, since only subsets of the MS population will have the same combination of genetic markers.

The milk protein butyrophilin has been identified as an MS antigen^{2,3,4} (butyrophilin has 46% similarity to the myelin sheath protein Myelin Oligodendrocyte Glycoprotein over a 128 amino acid chain length – i.e. it is an extremely close match to the protein structure of the myelin nerve sheath). There is a direct correlation to worldwide country by country per capita consumption of milk and the prevalence of MS (see graph). Other immune diseases (such as celiac) are known to be triggered by diet (gluten), so it is not a stretch to assume MS could be triggered by diet, especially since the two diseases share some common genetic markers. Milk (butyrophilin) and wheat (gluten) both became a significant portion of the human diet relatively recently with the advent of farming / herding which could help explain genetic susceptibility to these diseases (evolution has not had sufficient time to alter genetics to prevent the disease).

Of the above 3 minimum requirements to initiate MS, only milk proteins have a direct correlation to the prevalence of MS.

Worldwide MS Prevalence versus Per Capita Milk Consumption

Average milk consumption of countries with similar MS prevalence



* Data from "Rising prevalence of multiple sclerosis worldwide: Insights from the Atlas of MS, third edition"
 Mult Scler. 2020 Dec; 26(14): 1816–1821.
 Published online 2020 Nov 11. doi: 10.1177/1352458520970841
 ** Data from "List of countries by milk consumption per capita"
 Wikipedia
 Note that this is liquid milk and excludes butter

References

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