Correspondence

Alzheimer's Disease, Altitude, Goiter and Iodine in the United States

In the 1999 Second Quarter issue of the Journal of Orthomolecular Medicine, Hoffer[1] and Hagberg[2] suggest a nutritional orientation to the prevention and treatment of Alzheimer's disease. This orientation is supported by a little study based on the impression of the present authors that Alzheimer's disease has a higher prevalence in the mountainous regions of the U.S.A. Therefore, a correlation between the highest elevation of states and age adjusted death rate for white persons for 1989-1991, U.S. Department of Human Health and Human Sciences,[3] was calculated, $r(47)=.50$, $p<.001$. Alaska was not included because its Alzheimer's death rates were not located.

Since goiter and cretinism were more common in mountainous states, and a reason for these disorders having been more common in mountainous regions is the low iodine concentration in the soils, it was decided to correlate Alzheimer's disease death rate with goiter rate, cretinism rate and iodine soil concentration.

Cretinism rates could not be found for the U.S.A. However, prevalence rates for goiter were located for men examined for military service in World War I.[4] Rates for this era are appropriate since shortly after World War I, goiter was drastically reduced in the U.S.A. by the addition of iodine to salt and by other means. The correlation between goiter rate and Alzheimer's disease death rate is .52, $p < .001$.

Unfortunately, iodine for the various states' soil concentrations could not be located. However, it should be noted that Foster,[5] after saying that there is strong evidence that various diseases are in the iodine "disease family tree," additionally stated "although the evidence is weaker, iodine may also be implicated in Alzheimer's and Parkinson's disease." It should further be noted that the Japanese have a low prevalence of Alzheimer's disease, (although they have a high prevalence of vascular dementia). The Japanese eat considerable amounts of iodine-rich seaweed and have a high iodine concentration in the soil.

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Cholesterol and Space

Some years ago[1] I suggested that cholesterol might be a prebiotic molecule originally formed in Space.

While cholesterol still has not been found away from the Earth, there is increasing evidence, both experimental and observational (as reviewed in the reference below), that cholesterol and other important chemicals for life are, or might be, synthesized in both interplanetary and interstellar Space.

The sites where such synthesis takes place are the nuclei of comets, the dust grains which accompany comets and the dust granules of which dark interstellar clouds are formed.

The experiments consist of duplicating those environments in the laboratory,

specifically observing what happens when, in a vacuum, simple gas molecules are blown on to a salt disk covered with grains of ice. Ultraviolet light bathes the point at which the gas comes in contact with the ice partially breaking down the bonds of the simple molecules and allowing them to recombine as more complex molecules. The results are observed by the changes in the spectrum of infrared light which also bathes the active site.

Over seventy amino acids have been found, of which only twenty are used by terrestrial life. But by far the commonest chemicals found consist of polycyclic hydrocarbons with as many as fifteen carbon bonds, short as yet of the twenty five in cholesterol. In water such substances either organize themselves into membranes such as those resembling what seem likely to have been the precursors of cell membranes, as well as combining into quinones which, in turn, may be the basis for chlorophyll, hemoglobin, and the cobalamins.

Comparison of die infrared spectra of the experimentally produced chemicals with the spectra from comets and interstellar clouds have confirmed the presence of such chemicals in those situations. Similarly, such chemicals have been found in carbonaceous chondritic meteorites, and other meteorites such as ALH 84001 which was identified as having come from Mars.

I reiterate that it is but a short step from the above described polycyclic hydrocarbons to cholesterol, not to mention simpler substances such as Niacin (-amide) or even the ascorbates. These in turn would be brought to Earth by comets–as perhaps as is still happening.

The substances essential to Orthomolecular Medicine then were first born in Space.

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