Metabolic Solutions Report
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Fluoride: Trading Tooth Decay for Cellular Death?

Below is a Letter to the Editor that my Associate Editor, Cory, and I had published on the website of the British Medical Journal this past week.

When "programmed cell death" was first identified as a cellular function in 1972, water fluoridation in the United States had already been around for over two decades.

Several years ago, fluoride was found to induce apoptosis (1), joining a list of other apoptosis inducing substances, such as radiation, mercury and anti-cancer drugs. The mechanism of action is likely through activation of the enzyme caspase-3 (2). Although these discoveries may be important in the development of pharmacological agents to treat cancer or other diseases, it should cause a great deal of concern regarding current levels of fluoride exposure.

While fluoride has long been known to be highly toxic, we find it most disturbing that it acts through apoptosis rather than necrosis, since the former requires genetic interference.

As researchers stated last year "Even though fluoride toxicity is increasingly being considered to be important, very little information is available on the mechanism of action of fluoride." (2)

Since apoptosis is potentially implicated in the development of neurological disorders such as autism, Alzheimer's, and schizophrenia (3, 4), this lack of understanding is concerning. A logical question would be if pregnant women consuming large amounts of fluoride be increasing their unborn child's risk of autism? While this is unproven, it is biologically possible, especially considering the vital role of apoptosis in embryogenesis.

This is especially relevant when one considers the fact that any benefit of water fluoridation in the reduction of dental caries is miniscule at best.

In 1990, researchers from the National Institute of Dental Research in the US performed an epidemiological study and declared "The results suggest that water fluoridation has played a dominant role in the decline in caries and must continue to be a major prevention methodology." (5)

However, a closer look at the study shows that the conclusion is not supported by the actual data.

The difference in tooth decay was actually found to be 0.6 DMFS (Decayed, Missing, or Filled Surfaces). In other words, the tremendous benefit of fluoridation amounted to about one half of a single tooth surface, out of a total number of tooth surfaces of 128 (less than 0.5% difference). In addition, it is doubtful whether such a small difference is even statistically significant.

The medical community really needs to ask itself exactly what their priorities should be.

Considering the fact that apoptosis "sculpts the developing brain", as a review in Nature describes it (6), it needs to determined if we are willing to continue to recommend that children be subjected to the potential risk of water fluoridation for the meager benefits, if any, described above.

How can we assure the public that it is perfectly safe, when the biological effects of fluoride are still in the process of being unraveled, even today?

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