PCBs Found in Farmed Fish Oil Shown to Alter Brain Development

Three recent studies suggest polychlorinated biphenyls, or PCBs, may alter the development of brain cells. They linked exposure of PCBs, chemicals found in the environment and in farmed fish, to neuro-developmental problems in children.

PCBs were banned in the 1970s due to their high toxicity and inability to break down in the environment. Prior to the ban, PCBs were used in electronics, pesticides and flame retardants. Today, traces of the chemical dumped into the environment in years past are still leaking into the air and bodies of water, contaminating fish that people eat. Most of the Omega 3 consumed by people comes from farmed fish, not small wild caught fish.

Researchers did not understand the exact link between PCBs and the effects on children before these three studies:

1) Environmental Health Sciences published a study that demonstrates PCBs are altering dendritic growth and plasticity. The significance is in that these characteristics are linked to autism, schizophrenia and mental retardation.

2) The second study, featured in Toxicology and Applied Pharmacology, measured the excitability of neurons in the hippocampus by exposing rats to two differently structured PCBs. The results showed an understanding of how PCBs may impact human neurodevelopment.

3) Appearing in PLoS-Biology, a third study explained the effects learned from the first two.

"Our results show that PCB binds directly to ryanodine receptors and locks the channel in the open state, causing mayhem in calcium signalling," Isaac N. Pessah, director of the UC Davis Centre for Children's Environmental Health in Davis, Calif., and co-author of all three studies, was quoted as saying.

Now that the PCB toxins have been linked to the causes of specific neurological disorders, researchers hope to be able to identify and develop potential treatments.

SOURCE: Environmental Health Sciences, Toxicology and Applied Pharmacology, PLoS-Biology, published online