

Autism Linked To Preservative In Processed Foods – New Study

Researchers from the University of Central Florida (UCF) have discovered cellular changes to neuronal stem cells when exposed to propionic acid (PPA), a preservative used to extend shelf life and reduce mold in processed foods, breads, and cheeses.

The study shows how preservatives in food can reduce the development of neurons in fetal brains. highlighting the importance of diet for pregnant women,

Dr. Saleh A. Naser is Associate Director of the Biomedical Sciences department in College of Medicine's Burnett School. He specializes in gastroenterology research. Dr. Naser saw reports that autistic children suffer from irritable bowel syndrome and other gastric issues. Curious about the gut-brain anxious and how it may affect children with autism, Dr. Naser examined the gut bacteria of those diagnosed with autism.

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Studies have shown a higher level of PPA in stool samples from children with autism and the gut microbiome in autistic children is different. I wanted to know what the underlying cause was."

Dr. Naser – Science Daily

PPA exists naturally in our gut. But the study shows that eating foods containing the preservative can increase PPA in the woman's gut, which can then crosses into the fetus.

Laboratory tests show that exposing neural stem cells to

excessive PPA damages brain cells. The acid reduces the number of neurons and increases the number of glial cells (excess glial cells disturb connectivity between neurons and cause inflammation).

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Excessive amounts of PPA also damage pathways neural pathways that communicate with the body. Reduced neurons and damaged pathways disrupt the brain's ability to communicate. This can cause repetitive behavior and difficulty socializing.

To understand the inflammatory response and GI disorder in individuals with ASD, we studied the effect of PPA on gliosis and inflammatory cytokines in differentiated hNSCs. Our data showed that PPA seems to upregulate TNF- α and IL-10 and increase the level of the cytokines (Fig. 6). Since PPA induced glial cell differentiation and increase in TNF- α and IL-10 transcription and translation, we propose that exposure to PPA during gestation may be related to gliosis and inflammation as reported in multiple neuro-developmental diseases including ASD. Specifically, exposure to high dose of PPA during early stages of neural stem cell development promotes proliferation and activation of glial cells, recapitulating the state of neuro-inflammation as reported in the post-partum autistic brain^{18, 19, 20, 35}."

Propionic Acid Induces Gliosis and Neuro-inflammation through Modulation of PTEN/AKT Pathway in Autism Spectrum Disorder