



Gut Microorganisms and Autism: the Latest Research

LPS and Autism	LPS and Mercury	Treatments for LPS	LPS and Behavior	LPS and Detoxification
LPS and the Brain	LPS and Thyroid	LPS And GI System	LPS and The Immune System	Other Symptoms and LPS

We have collected many research articles to show that the toxins found in microorganisms play an important role in the suspected causes of ASD, in particular, lipopolysaccharide (LPS) the bacterial toxins from gram negative bacteria that inhabit the guts of autistic children. LPS toxicity works synergistically with mercury and other heavy metal poisonings to expand damage. These heavy metals increase harm from LPS.[1] In addition, LPS decreases glutathione levels making it even more difficult for the body to detoxify heavy metals.[2]

One explanation for why symptoms of mercury are so similar to the symptoms of LPS could be the fact that mercury inhibits carbohydrate absorption in the gut. Unabsorbed food does not get into the blood stream quickly; when it remains in the gut, it becomes available as a food supply for bacteria. Consequently, gram negative bacteria multiply and produce LPS. [3] This raises a strong suspicion that some of the symptoms commonly attributed to mercury could be directly caused by LPS and only indirectly by mercury.

LPS also renders toxins from Candida Albicans more damaging.[4] The poisonous effects of LPS are so potent that they produce symptoms of autism even without the help of Candida Albicans and heavy metals. All collected experiments on the following website involve laboratory mice injected with only LPS and exhibiting the same symptoms as those in ASD.

LPS induces a depressive syndrome, characterized by anhedonia, anorexia, body weight loss, and reduced locomotor, exploratory, and social behavior. This result has been replicated so many times by different research studies that the names, "Sickness Behavior" and "Endotoxemia" are now applied to this condition. [5][6][7]

The mission of this website is to collect and display links to some of the available research articles from PubMed, a service from the National Library of Medicine and the National Institute of Health, that link LPS to the varied and diverse symptoms of ASD. We were able to find and collect experiments for almost every possible neurological and biological symptom of ASD in order to prove that most symptoms of ASD, have a corresponding experiment on Medline that proves each is a symptom of

LPS toxicity.

The articles on this website are just a tiny fraction of the available research. The amount of evidence is overwhelming, for example, performing a search for "hippocampus lps", in PubMed will retrieve 222 citations.

The number of similarities between ASD and LPS toxicity is sufficiently impressive to demand attention and cannot be ignored. The following are symptoms of LPS poisoning; these symptoms are also found in children with autism:

BRAIN

Reductions in oligodendrocyte or myelin markers

A marked cerebral cytokine response

White matter injury

Changes in amygdala

Change in dopamine and serotonin levels

Reduction of blood flow to the brain

Changes in blood-brain barrier permeability for large (protein) molecules

Increased the number of pyramidal and granular cells in the hippocampus

EMOTIONS AND BEHAVIOR

Anxiety

Depression

Reduction in social behavior

Lack of social interaction

Increase in addiction

Lack of exploratory behavior

DIGESTIVE

Weight loss

Breakage and depletion of microvilli

The tight junctions widen and become disrupted.

IBS and IBD

Gut inflammation

Leaky Gut

Digestive symptoms

Disrupted Intestinal Transit

LPS is linked to the problems of gluten, soy and dairy in ASD children

IMMUNE FUNCTION

Increase in TNF alpha.

Increases in certain NK cells and monocytes
Increases in lymphocytes

OTHER

Low Levels of Thyroid
Low Levels of Glutathione
Low Levels of Amino Acids
Impairment of Bile Flow
Increasing the Number of Viable Candida Albicans
An increase in pain sensitivity

Researchers at the UC Davis M.I.N.D. Institute found clear differences in cellular responses between autistic children and neurotypical children following exposure to LPS, bean lectin and bacterial agents. At the Institute this was discovered to be a major and important difference between children with ASD and typical children.[8]

Many in the ASD community blame mercury in vaccines for causing autism. Note that the vaccines contain LPS or other toxins from microorganisms. It is possible that LPS and other microbial toxins also play a key role in the vaccine damage.

"Lipopolysaccharide (LPS) is localized at the exterior leaflet of the outer membrane and serves as the major surface component of the bacterial cell envelope. This remarkable glycolipid is essential to virtually all Gram-negative organisms and represents one of the conserved microbial structures responsible for activation of the innate immune system. For these reasons, the structure, function, and biosynthesis of LPS has been an area of intense research."[9]

The majority of the research articles involve mice or humans displaying symptoms of toxemia after being given an injection of LPS. Another method to assess the important influence of bacterial toxins is to observe the changes in ASD children after removal of the neurotoxin-producing bacteria. Both Vancomycin and the Specific Carbohydrate Diet (SCD) are treatments for removal of bacteria. Both treatments produce a decrease in the symptoms of ASD. However, the changes from vancomycin were only short term because the bacteria develop a resistance to the medication. Changes from SCD diet are more powerful because they are long lasting. Even adults with ASD who live in group homes have been shown to lose many of their symptoms after being on the diet. SCD now also eliminates beans during the early months of the diet and encourages parents to only use beans later provided there are no adverse reactions.

UC Davis M.I.N.D. Institute reports in its findings concerning the reaction of autistic children to LPS, bacterial agents and lectin from beans "may lead to significant advances in the early detection, prevention and treatment of this complex neurological disorder."[8]

We are in total agreement, and offer as our own evidence, scientific articles and many positive results from using a diet that eliminates neurotoxin-producing bacteria and fosters intestinal healing.

In view of the research, we have to consider Lipopolysaccharide (LPS) a poison, as toxic as mercury and other heavy metals, LPS has drastic consequences for those in the ASD Community. Fortunately, dramatic improvements may result after its removal.

Increasing awareness of LPS to doctors, researchers and parents, will hopefully result in an increase in recovery rates for autism.

The links on the upper side of this website provide comprehensive research about LPS from around the world.

References

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- [2] Zhu Y, Carvey PM, Ling Z : Altered glutathione homeostasis in animals prenatally exposed to lipopolysaccharide. *Neurochem Int*. 2007 Mar;50(4):671-80. Epub 2007 Jan 13.
- [3] [Read the articles in the "Treatments for LPS" section of this website](#)
- [4] Akagawa G, Abe S, Yamaguchi H. Mortality of *Candida albicans*-infected mice is facilitated by superinfection of *Escherichia coli* or administration of its lipopolysaccharide. *J Infect Dis*. 1995 Jun;171(6):1539-44.
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- [8] [Link to the announcement from the M.I.N.D. Institute.](#)
- [9] Trent, M. Stephen I; Stead, Christopher M. I; Tran, An X. I; Hankins, Jessica V. (2006). Diversity of endotoxin and its impact on pathogenesis. *Journal of Endotoxin Research*, Volume 12, Number 4, August 2006, pp. 205-223(19)
- [10] *Autism: Effective Biomedical Treatments (Have We Done Everything We Can For This Child? Individuality In An Epidemic)* by Rimland, Ph.D. Bernard (Introduction), M.D. Sidney Baker (Author), Ph.D. Jon Pangborn (Author) Boston DAN! April 2005 edition. Page 24

