



## Autism Spectrum Disorders, Lipid Replacement Therapy and Mitochondrial Function.



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Autism Spectrum Disorders (ASD) are a collection of childhood diseases characterized by widespread abnormalities of social interactions and communication, as well as restricted interests and repetitive behaviors [1]. These young patients generally suffer from an inability to properly communicate, form relationships with others and respond appropriately to their environment.

ASD is a collection of related conditions, including autism, Asperger's syndrome, a milder form of autism, and other Pervasive Developmental Disorders.

ASD patients do not all share the same signs and symptoms but tend to share certain social, communication, motor and sensory problems that affect their behavior in predictable ways. These children often display repetitive actions and develop troublesome fixations with specific objects, and they are often painfully sensitive to certain sounds, tastes and smells [1]. In addition to the signs/symptoms mentioned above, ASD patients often have eating disorders and other, more individual symptoms [1].

### Some Characteristics of Autism Spectrum Disorders

ASD has been estimated as affecting as many as one in 100 children, a rate that has been increasing over the years. Boys are more likely than girls to have ASD. An estimated 1-10% of individuals with ASD show unusual abilities, ranging from the memorization of trivia to extraordinary rare talents of prodigious savants [2]. ASD children have difficulties making and maintaining friendships with other children, and despite the common belief that ASD children prefer to be alone, they are often lonely. Recent studies indicate that ASD patients process sensory information, including sound, touch and vision, differently from typical children [3].

Recently a new procedure for assessing children as early as their first birthday may offer parents a way to recognize ASD before their children are school-aged. Using a simple 24-item checklist parents can screen their children for ASD tendencies. The questions ask about their

child's emotions, eye gaze, communication, gestures, and other behaviors. The screen found suspected ASD, language delays, or other developmental problems about 75% of the time [4].

## Possible Causes of Autism Spectrum Disorders

The cause of ASD is unknown but there appear to be multiple factors that are important, including genetic defects, heavy metal, chemical and biological (infections, allergens, foods) exposures, among others, which are probably different in each patient [5].

Chronic infections appear to be an important element in the development of ASD [5]. In some patients there are a number of nonspecific chronic signs and symptoms, such as fatigue, headaches, gastrointestinal and vision problems and occasional intermittent low-grade fevers and other signs and symptoms that are generally excluded in the diagnosis of ASD but could point to infection(s). Indeed, increased titers to various viruses as well as bacterial and fungal infections have been commonly seen in ASD patients [5], although epidemiological evidence for an association of childhood infections in the first two years of life and ASD is inconsistent [6].

We have found that most ASD patients show evidence of multiple bacterial and viral infections [7]. In addition, environmental exposures to chemicals and heavy metals also appear to be important in the development of ASD [5]. Whether these biological, chemical and heavy metal exposures are related to the multiple vaccines given in childhood remains a controversy [5].

## Mitochondrial Function in Autism Spectrum Disorders

In children as well as adults, energy is produced in the form of high-energy molecules in our mitochondria, the small organelles responsible for energy production found in each cell. When our mitochondria are damaged, which can happen due to infections, heavy metals and other exposures, they do not produce enough high-energy molecules to keep cells functioning properly. The most common way in which mitochondria are impaired is by oxidative damage to mitochondrial membranes by cellular free-radicals called Reactive Oxidative Species or ROS. Excess ROS oxidize mitochondrial membrane lipids, making the mitochondrial membranes less capable of insulating the energy-producing part of the mitochondria, resulting in lowered production of high-energy molecules needed by the cell.

In children with ASD mitochondria are much more likely to be damaged compared to children that develop normally [8]. The lipids in membranes, and specifically those found in nerve cells, are particularly susceptible to ROS and oxidative stress. Such cumulative oxidative stress and ROS can damage mitochondria as well as nerve cell membranes in their synapses, the communication regions between nerve cells [5]. This could influence both the onset and severity of ASD.

## Autism Spectrum Disorders and Lipid Replacement Therapy

Until now ASD patients have mainly been treated using behavioral and dietary modifications and sensory integration therapies. Although useful, these treatments do not get at the source of the problem.

Since ASD patients have mitochondrial and other membrane impairments, Lipid Replacement Therapy with NT Factor™ is an especially attractive, all-natural approach to reduce nerve cell membrane damage and reverse the effects of excess ROS damage to cellular lipids [9]. NT Factor provides cells with the specific types of membrane lipids that can repair mitochondria and cell membranes and make them functional again. The uniqueness of NT Factor over other lipid supplements is that NT Factor's lipids are required by mitochondrial and other membranes for their function, and NT Factor lipids are protected from damage by ROS and other factors that damage most lipids before they even reach our cells.

As one parent related to me recently, "I just wanted you to know that our entire family has benefited from Propax® with NT Factor, but especially our children with ASD. I do believe that the Lipid Replacement Therapy is helping, and I am advocating its use for all autistic kids, their moms, etc., and my ASD doctor is now giving or recommending its use to his patients. I can now look forward to some quality of life for me and my kids." [10].

Lipid Replacement Therapy with NT Factor is an effective way to reduce the effects of excess oxidative damage to our nerves and other cells and restore mitochondrial function.

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## About the Author:

Professor Garth L. Nicolson is the President, Chief Scientific Officer and Research Professor at the Institute for Molecular Medicine in Huntington Beach, California and is an Emeritus Professor of Laboratory Medicine. Professor Nicolson has published over 600 medical and scientific papers, edited 16 books, and served on the Editorial Boards of 30 medical and scientific journals and Senior Editor of four journals. Professor Nicolson has won many awards, such as the Burroughs Wellcome Medal of the Royal Society of Medicine (United Kingdom), Stephen Paget Award of the Metastasis Research Society, the U. S. National Cancer Institute Outstanding Investigator Award, and the Innovative Medicine Award of Canada. He is also a Colonel (Honorary) of the U. S. Army Special Forces and a U. S. Navy SEAL (Honorary) for his work on Armed Forces and veterans' illnesses.

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## Autism and The Role of Nutrition

By Staff Writer

The role nutrition plays in Autism is an emerging field of research study. Recent studies have been done to look at the vital role nutrition plays in relation to children with autism.

A recent study of children with autism found children



with autism were more likely than neurotypical children, to suffer from nutritional and other related metabolic issues.

Children with autism spectrum disorder suffered vitamin insufficiency, increased oxidative stress, reduced capacity for the transportation of cellular energy, sulfation and detoxification. The cause of these issues, and its relation to autism is still under study. However, the biomarkers for these issues are more prevalent in autistic children. One study has stated that these metabolic and nutritional differences are likely benefited by nutritional

supplementation.

NT Factor by its formulation is the nutritional supplement for this task. NT Factor works on replacing damaged cell membranes with new healthy cells. Thus, increasing the ability of the cells, and mitochondria to function properly. This means a reduction in the amount of oxidative stress and an increase in the ability of the body to produce and use energy. NT Factor works on the basic level of the ATP chain to allow for the better creation, and transportation of energy. At the same time it is replacing damage caused by oxidative stress.

NT Factor combined with the nutritional aspects of Propax, or Propax Gold, can provided the great range of nutritional supplementation needed by most people suffering from vitamin deficiencies. While moderately dosed the nutrition in Propax, and Propax Gold are designed for greater absorption potential. The fact that it can be taken with, or without food, or crushed makes it easier to take.

[To learn more about how NT Factor works visit us at www.ntfactor.com](http://www.ntfactor.com)

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