Vitamin/Dietary Supplements and Exercise-Based Therapies

Vitamin Therapies and Dietary Supplements

Carnosine/vitamin E/ zinc	Given together for antioxidant activity, as well as their role in production of the inhibitory neurotransmitter GABA. Paradoxically, overdose may lead to irritability or hyperactivity.
Dimethyglycine (DMG)	Given on the basis of a theory of decreased inflammation and increased immune function. An earlier study reported improvements in language when children with disabilities were given DMG; more recent studies have been unable to replicate these findings.
Melatonin	Pineal gland hormone given to help with sleep. Synthetic melatonin has been shown to be effective in children with neurodevelopmental disabilities in helping with sleep onset and maintenance.
Omega -3 fatty acids	Thought to have a variety of health benefits; proven to reduce blood pressure and low-density lipoprotein cholesterol levels. Preliminary studies have shown mixed,but promising results for improving behavior in children with ASDs. Overdose or interaction with other anti-coagulants could theoretically lead to hemorrhage.
Probiotics	Given to counteract GI bacterial and fungal overgrowth. Beneficial effects of probiotics have been shown in irritable bowel syndrome (IBS), acute gastroenteritis, urinary tract infections, and other conditions, but meaningful research has not been done on the use of probiotics in children with ASDs.
Vitamin A (cod liver oil)	Thought to improve immune function and vision (some groups theorize that autism has to do with immune or auto-immune dysfunction). Can cause hepatotoxicity, increased intracranial pressure.
Vitamin B6 (pyridoxine)-magnesium	Given on the basis of B6's role in neurotransmitter production plus magnesium's supportive effect. Research has been suboptimal, but pediatricians should advise parents of the risk of B6 toxicity (peripheral neuropathy) and magnesium toxicity (changes in mental status, GI upset, muscle weakness, respiratory depression, hypotension, and arrhythmias).
Vitamin B12 (cobalamin)	Given intramuscularly, in conjunction with oral folinic acid, to counteract decreased plasma antioxidant concentrations identified in a study of 20 children with autism. Initial research showed positive results,but attempts to replicate the findings were unsuccessful. There is virtually no risk of B12 toxicity.
Vitamin C (ascorbic acid)	Shown to decrease stereotypic behaviors in double blind, placebo-controlled study that was never replicated. Toxicity causes nephrolithiasis and GI upset.

Exercise-Based Therapies
Many activity-based therapies are also believed to help with symptoms of ASDs. The following are popular, safe, but unproven and often expensive therapies:

- Sensory integration therapy
- Aromatherapy
- Massage
- Hippotherapy (horseback riding)
- Music therapy
- Yoga
- Water therapy (swimming)
- Craniosacral massage

References

Amminger GP, Berger GE, Schafer MR, Klier C, Friedrich MH, Feucht M. Omega-3 fatty acids supplementation in children with autism: a double-blind randomized, placebo-controlled pilot study. *Biol Psychiatry*. 2007;61(4):551-3. Epub Aug 22, 2006.

Chez MG, Buchanan CP, Komen JL, Becker M. Double-blind, placebo-controlled study of L-carnosine supplementation in children with autistic spectrum disorders. *J Child Neurol*. 2002;17(11):833-7.

Dolske MC, Spollen J, McKay S, Lancashire E, Tolbert L. Preliminary trial of ascorbic acid as supplemental therapy for autism. *Prog Neuropsychopharmacol Biol Psychiatry*. 1993;17:765-74.

James SJ, Cutler P, Melnik S, et al. Metabolic biomarkers of increased oxidative stress and methylation capacity in children with autism. *Am J Clin Nutr*. 2004;80(6):765-74.

Levy SE, Hyman SL. Novel treatments for autistic spectrum disorders. *Ment Retard Dev Disabil Res Rev*. 2005;11(2):131-42.

Myers SM, Johnson CP, Council on Children with Disabilities. Clinical report: management of children with autism spectrum disorders. *Pediatrics*. 2007;120(5):1173-81.

NIH National Center for Complementary and Alternative Medicine. Get the Facts: An Introduction to Probiotics. 2008. Publication No. D345. http://nccam.nih.gov/. Accessed April 30, 2010.

NIH Office of Dietary Supplements. Magnesium. http://ods.od.nih.gov/factsheets/magnesium.asp. Accessed April 20, 2009.

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