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**NUTRITIONAL & OTHER NATURAL MEDICAL TREATMENTS
FOR CHILDREN & ADOLESCENTS WITH ATTENTION-
DEFICIT/ HYPERACTIVITY DISORDER - AD(H)D**

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"Recent research has led to the evolution of an important clinical relationship among psychology, neurochemistry, and nutrition. The result has been the development of the multidisciplinary field of psychoneuro-nutritional medicine.

The successful application of this medical model to mental health problems, ranging from behavior disorders in children to cognitive/ emotional disorders in adults, has opened the door to new, lower-technology, cost-effective approaches to improving functional neurobiochemistry. ... Nutritional intervention derived from this model is directed at reducing one's exposure to substances that cause a neurotoxic response, and enhancing one's intake of nutrients that help normalize neurochemical activity. Specific nutritional interventions, therefore, can improve cognitive and emotional function." (1. Bland JS, 1995).

INTRODUCTION: NUTRITIONAL/ NATURAL VS. CONVENTIONAL MEDICINE

What Jeffrey Bland is talking about here is nothing less than a massive paradigm-shift in medicine, an entirely new way of looking at medical and psychiatric problems. I was first introduced to the word 'paradigm' and the concept of paradigm-shifts just 2 years ago when I was given a copy of the 1992 paperback by Joel Arthur Barker called "Paradigms: The Business of Discovering the Future" (2. Barker JA, 1992). It was an eye-opener to me, as it provided for me the explanation of why human beings, esp. in groups, organizations or societies, are often unable to change their thinking in a timely fashion when new circumstances, discoveries and factors would appear to mandate that their thinking change. Basically, it said that humans are creatures of habit and do not change those habits or that mind-set until a stimulus large enough to dislodge the outdated thinking occurs for each individual - or for a 'critical mass' of individuals - in that group or culture.

So I am claiming that, whatever distance nutritional-medical people have traveled along their path so far, this is the approach of the future. History will have to be the judge of this claim. For now, let me remind you that Thomas Edison already remarked, a century ago, that the physician of the future would not employ medicines, surgery or other artificial procedures or mediums to cure illness but would guide the patient in the best way to structure his/ her natural diet and lifestyle in such a way as to achieve maximum health.

Firstly, for my part, I want to point out, for the record, that, while I do search for nutritional, metabolic and other medical causes of all these conditions, I have used and still do use medications when the situation is desperate and no immediate natural means of treatment appears to be immediately available or has a reasonable chance of providing relief in the child's condition immediately. Some of my patients have had to stay on medications for years on end, in addition to the use of appropriate nutrients, hormones and other treatments. In these cases it seems to me

that the patient has done better on the combination of medications and the natural substances than when I used medications as the only prescription; and in cases where the medications were not required at all, the child has done best of all.

Secondly, I want to stress that, while most of the remedies I suggest are not by prescription only and may be freely available, they are best taken under the direction of a qualified, licensed professional who is well-versed in such treatment-approaches. In many cases it is also advisable to have the blood levels of the suspected deficient substances tested before just running out and purchasing and taking x amounts of the substance. Because (a) the child may already have a sufficient or even excessive amount of that substance in his system; or, (b), even if deficient, it is usually best to know whether something you may need to take forever is indeed deficient, in the first place, or not. Else why would one remain motivated to take that substance? Follow-up blood levels are usually also necessary, to make sure that the deficiency is sufficiently - but not excessively - corrected, and so that the intake of that substance may be fine-tuned to the correct amount for that individual.

Finally, let me say that, while I may be regarded by some who don't know better as 'alternative', actually, almost everything I do is applied from 'mainline' medical journals. I will mention the journals as I go, so that those of you who are familiar with the best medical journals will recognize their names.

The only difference between me and most mainstream physicians is that I am one of the few who has paid attention to these nutritional journal-articles and applied their conclusions in my practice. So don't be afraid that you will be sucked in by some flaky fringe practitioner or quack! So-called 'alternative' practitioners have been persecuted greatly, as documented by public-health physician James P Carter in his 1992 book, "Racketeering in Medicine: The Suppression of Alternatives" (3. Carter JP, 1992). Someone has asked "Why is 'alternative' medicine regarded as alternative and not part of the great healing tradition of medicine?": The answers are in this and several other similar books.

AD(H)D: GENERAL REMARKS

Attention-deficit/ hyperactivity disorder (AD(H)D) is the commonest psychiatric disorder in children. I believe there are many misdiagnoses of this disorder, partly because of the pressure of family or teachers to do something about the child suffering from a similar condition (agitated depression, mania, anxiety, conduct disorder, or restless legs syndrome). When correctly diagnosed, and no other immediate relief is feasible, I am not opposed to the use of Ritalin (methylphenidate) and other medications (and have often prescribed them myself, at least as a stop-gap measure until more-definitive treatment can be given and can have enough time to do its curative work, based on the abnormalities found on blood-testing of that particular child/ adolescent). My job here is to concentrate on these other treatments, which are mostly corrective measures for deficiencies or other biochemical abnormalities. I do just want to say 2 things about these medications: (1) In the case of some of them (not Ritalin), it is very useful to measure the blood-level of the medication in the blood in monitoring the effectiveness of different dosages of these medications; and (2) I agree with Leutwyler, writing just 2 months ago in the Scientific

American, that "the controversy over ADHD and the drug Ritalin is obscuring a real look at the disorder and its underpinnings" (4. Leutwyler, 1996). I also believe that, with the use of Ritalin increasing 2- to 3-fold over the last year or 2 (5. Hamilton K, 1996), it is possibly being overused by primary care physicians, also as a diagnostic tool, as suggested by Erik L Goldman, writing in the November 1, '95 issue of Family Practice News (6. Goldman EL, 1995). Not everyone who responds to Ritalin has AD(H)D; most normal people would also; virtually only anxious or hyperexcitable people do not. Goldman quotes a pediatric specialist as saying something I have often heard said before: "I don't mean to belittle medication, but, if all you have is a hammer, then everything starts to look like a nail"!

I will deal with the proof of the abnormalities in the 'underpinnings' mentioned above as causes of the condition, and with the treatment, or correction of the abnormality, at the same time.

SPECT brain-imaging, and PET Scanning with 18F-fluorodeoxyglucose, respectively, have shown diminished left frontal and parietal cortical perfusion and metabolism (in areas involved in the control of attentional processes); and global cerebral metabolism that was 15% less in ADHD girls than in normal girls. These studies were performed by Sieg et al, from the department of psychiatry at the University of Kansas Medical Center, and published in Clinics in Nuclear Medicine in January '95 (7. Sieg et al, 1995); and by Ernst et al, of the National Institutes of Mental Health in Bethesda, and published in the Journal of the American Academy of Child & Adolescent Psychiatry in Jul-Aug '94 (8. Ernst et al, 1994).

Pliszka and others, in the Dept of Psychiatry at the University of Texas at San Antonio and writing in the Journal of the American Academy of Child and Adolescent Psychiatry in 1994, found that children with AD(H)D without anxiety had a higher tonic activity of the noradrenergic system than controls; while children with both AD(H)D and anxiety could be differentiated from those with AD(H)D-only by higher adrenergic activity. Noradrenalin is more prevalent in the neurotransmitters in the brain and nervous system, while adrenalin is secreted into the blood by the adrenal glands and then causes anxiety (9. Pliszka SR, Maas JW, Javors MA, et al, 1994).

CAUSES AND INDICATED TREATMENTS FOR AD(H)D

(a) ALLERGIES TO FOODS AND FOOD-ADDITIVES

Boris and Mandel, of the Cornell Medical Center in New York, in a paper published in the Annals of Allergy in May '94, found that these are significant causes of ADHD in a majority of the children with this disorder (10. Boris & Mandel, 1994). Treatment with a multiple-item elimination diet showed that 19 of 26 ADHD children responded favorably. That is a 73% success-rate, which may even have been higher if they had specifically tested for which foods and additives these children were actually reacting to, rather than simply eliminating the ones most commonly found to be the offenders in cases like this. Blood and skin tests have usually been notoriously poor at pinpointing the exact items to which a child is allergic, but, at least as far as foods are concerned,

there is now a very accurate and reliable test, the IgG4-90 food-allergy test, by the ELISA method, which is done by a small number of highly-specialized reference laboratories around the country. I have found that there is a dramatic improvement in symptoms when the exact food-allergies of any one particular individual are avoided in his or her diet.

The above study is a tremendous vindication of the theories and practices of Ben F Feingold, MD, a San Francisco pediatric allergist and immunologist who first presented his findings on the behavioral and cognitive effects of food-additives and food-allergies at the 1973 annual conference of the American Medical Association, and published them in a book in 1975 (11. Feingold BF, 1975) and in the *Journal of Learning Disabilities* in '76 (12. Feingold BF, 1976). He was a paradigm shifter. Paradigm pioneers are those people who recognize the value of what is being proposed by the paradigm shifter. Since his death, the Feingold Association of the US, based in Alexandria, VA has continued his work, and played the paradigm-pioneering role. They have usually done so against false claims by the food and chemical industries, as they have chronicled in an article in the June '93 issue of the respected *Townsend Letter for Doctors and Patients: The Examiner of Medical Alternatives* (13. Feingold Association, 1993).

This article also documents the numerous articles in mainstream journals which have actually corroborated the Feingold approach, including the landmark double-blind one in the *Lancet* in 1985 by Egger et al, which reported that 79% of the hyperactive children reacted to Red Dye No. 5 and a preservative (14. Egger et al, 1985); and the tacit support for Feingold's approach by the Nat. Acad. of Pediatrics Cmte on Drugs in 1985, and by the 1987 edition of the authoritative *Nelson's Textbook of Pediatrics*, which cautions that artificial colors and flavors have been associated with various health and behavior problems, including hyperactivity in childhood. Another important paper that confirmed the Feingold approach was that of Swanson and Kinsbourne in the journal *Science* in 1980 (15. Swanson JM, Kinsbourne M, 1980). Somehow all these articles and reports and texts have been relegated to back-seats because of the influence of the food and chemical industries. The Feingold Association report also gives what is, to me, a reasonable policy-statement on the drugs-vs.-nutrition debate: "... How do they both compare in effectiveness, in difficulty to implement, in cost, and in side-effects? ... If diet proves to be ineffective or of limited benefit, then parents and physicians need to compare the risks of other treatments with their benefits. ... For some children, Ritalin is not an option. For others, the question is not whether it is bad but whether it is necessary. ... "

Several studies supportive of the Food-Sensitivity Hypothesis of AD(H)D are cited by Melvyn Werbach, MD, assistant clinical professor at the UCLA School of Medicine, in the chapter on 'hyperkinesis' in his important book *Nutritional Influences on Illness*, published in 1988 (16. Werbach MR, 1988). Swain and others found that 86 of 140 (61%) children with behavior disorders experienced significant improvement with a modified elimination and challenge protocol, 75% (64/86) of whom reacted to double-blind challenge with salicylates but not to placebo (17. Swain A, et al, 1985). McGovern and others challenged 13 hyperkinetic children and 13 controls with 20 different food and inhalant allergenic extracts, 20 phenolic food components, and traditional antigens (18.

McGovern J, et al, 1983). Acetylsalicylic acid (aspirin) was the phenolic compound provoking the greatest frequency of responses, actually 80%, while the most provocative foods were sugar, corn, beef, and egg (25-30%). Cat hair and house dust provoked positive responses in 25%.

(b) DEFICIENCIES OF ESSENTIAL NUTRIENTS

(i) ESSENTIAL FATTY ACIDS, ESP. OMEGA-3 OILS

A very promising line of research is following the effects of essential fatty acid deficiencies, esp. of omega-3 fatty acids, which are deficient in the Western diet, on AD(H)D. The first one I could find was that of Colquoun and Bunday, in the journal *Medical Hypotheses* in 1981 (the same journal in which I later published my long paper on vitamin-B12 deficiencies' effects in psychiatry) (19. Colquoun V, Bunday S, 1981). They also saw significant support for the fatty-acid deficiency hypothesis of AD(H)D in the facts that: Most foods which cause symptoms in these children are inhibitors of the conversion of EFA's to prostaglandins (PG's); Males, who have much higher EFA requirements than females, are more commonly affected by this condition, as we know; Excessive thirst, a cardinal sign of EFA deficiency, is found in a high proportion of AD(H)D children; Many have eczema, allergies and asthma, which reports suggest can be alleviated by EFA's; Many are zinc-deficient, which is required for the conversion of EFA's to PG's (and I note that zinc is more commonly deficient in males, who require more of it than females); and, Lastly, some are badly affected by wheat and milk, which give rise to exorphins in the gut which can block the conversion of EFA's to PGE1. 5 of the hyperactive children were given evening primrose oil, 1-1.5 G. twice daily, with good results. Next came the paper of Mitchell, Lewis and Cutler, in the journal *Prostaglandins and Leukotrienes in Medicine* in 1983 (20. Mitchell EA, Lewis S, Cutler DR, 1983).

Laura J Stevens, SS Zentall, JL Deck and others, at Purdue University's Dept of Foods and Nutrition, have published 2 excellent and convincing papers on the hyperactive effects of a deficiency of omega-3 essential fatty acids, one in the *Am J Clin Nutr* in Oct '95 (21. Stevens et al, 1995), the other in the journal *Physiology & Behavior* this year (22. Stevens et al, 1996). In the latter paper, 96 boys aged 6-12 showed a greater number of behavior, learning and general health problems (thirst, frequent urination and dry skin) in those with deficient serum omega-3 fatty acid concentrations; and more colds and antibiotic use in those with low omega-6 fatty acid blood-levels.

The reasons for the prevalence of omega-3 fatty acid deficiency in modern life are laid out very nicely by John Finnegan in chapter 2 of his book *The Facts About Fats* (23. Finnegan J, 1993). I will mention a few of them here: 1. A change in flour-milling technology causing rancidity of fats and elimination of essential fatty acids. 2. The elimination of omega-3 foods, such as flax-seed oil, from our diets because of limited shelf-life. 3. The change to feedlot-raised cattle and caged chickens and their eggs, all of which are much lower in omega-3 and -6 fatty acids, as pointed out by Donald O Rudin, MD in his book *The Omega-3 Phenomenon* in 1987 (24. Rudin DO, 1987). 4. The increased use of pharmaceuticals, particularly aspirin, that

block EFA enzyme systems and their conversion to vital prostaglandins. 5. The increased use of sugar, caffeine, refined carbohydrates, and alcohol, which deplete EFA's and prostaglandins. 6. The increasing ingestion of toxins in food. 7. The lack of breast-feeding, which is rich in omega-3 oils, unlike cow's milk, in which it is totally absent. and 8. The excessive consumption of trans fatty acids and hydrogenated fats, rancid fats and free-radicals, due to marketers' desire for their products to last for months, if not years, on supermarket shelves. The average Western person today consumes 1000% more trans fatty acids and hydrogenated fats than ever before, according to Charles Bates, PhD in his 1987 book (25. Bates C, 1987).

(ii) ZINC DEFICIENCY

Bekaroglu et al, from the department of psychiatry of the faculty of medicine at the Technical University in Trabzon, Turkey, in a paper published in the *Journal of Child Psychology and Psychiatry* in Feb '96 (26. Bekaroglu M, et al, 1996), found abnormally-low average levels of both zinc and serum free essential fatty acids in 48 ADHD children, and mid-normal average levels of both in 45 normal control subjects. Whether the low zinc causes the low omega-3 fatty-acid levels, or vice versa, or whether both are simply low in the diet; and whether one or both is the cause of the AD(H)D, it is right now incumbent on us to make sure that no AD(H)D sufferer continues to run low blood-levels of either of these essential nutrients!

It could be that the food and additive allergies are caused by the zinc and/ or omega-3 fatty acid deficiencies, or by some other nutrient deficiency/ies, we just don't know yet. But correcting these deficiencies is relatively easy, harmless and would also have other health benefits as they are essential for good health. So why not correct them, and see what happens?

(iii) IRON DEFICIENCY

Writing editorially in the *British Medical Journal* in 1986, DP Addy reviewed 25 articles documenting the following pertinent facts about iron deficiency (27. Addy DP, 1986): It is common in childhood, occurring in 5% of Asian children and even in 23% (almost one-quarter) of the more-socially-advantaged children in white homes in Britain. Its own metabolic effects are added to its effects as a cause of anemia. In other words, it can cause effects on the brain and other parts and functions of the body even without anemia being present. This is very important because most physicians only measure iron and ferritin (iron-storage) blood-levels if the person/child is anemic - and a certain degree of anemia is even accepted as normal, just because it is common, and the 2 essential iron levels (serum circulating iron and serum ferritin) are not even done then. They should be measured even in totally non-anemic children. The evidence of brain-function abnormalities in iron deficiency, even in the absence of any anemia, include learning disability, behavioral abnormalities, responsiveness to the environment, nervous tension and fearfulness, general unhappiness, and mental performance deficits, all of which improve with iron treatment.

(iv) VITAMINS B3 AND C

Werbach (16. Werbach MR, 1988) documents that Hoffer found that only 1 out of 33 'disturbed and disturbing' children failed to respond to nicotinamide or nicotinic acid (vitamin-B3) in doses from 1.5-6 G. daily, and ascorbic acid (vitamin C) 3 G. daily, and, rarely, very small doses of tranquilizers or anti-depressants (28. Hoffer A, 1971). All relapsed within 30 days when the placebo was substituted, and recovered again when vitamins B3 and C were restarted! The author suggests that a trial of this treatment be instituted in all children demonstrating at least 3 of the following 4 symptoms: hyperactivity, deteriorating school performance, perceptual changes, and the inability to acquire or maintain social relationships. This reasonable conclusion, reached in 1971, is hardly ever followed in hyperactive children to this day.

(v) VITAMIN B6 IN LOW-SEROTONIN CASES

Werbach also points out that 3 separate sets of researchers, publishing in the New England Journal of Medicine, the Journal of Biological Psychiatry, and the journal Pediatrics, respectively, found that AD(H)D children who had low serum serotonin levels (this substance forms one of the neurotransmitters in the brain) responded dramatically to 500 mg of pyridoxine (vitamin-B6) 2-3 times daily (and the serotonin level returned to normal) but did not respond to vitamin-B6 if their serotonin levels were not low (29. Haslam RH, Dalby JT, 1983; 30. Coleman M, Steinberg G, Tippett J, et al, 1979; and 31. Bhaga-van et al, 1975). In one of these studies (30. Coleman et al, 1979) a double-blind crossover comparison with methylphenidate (Ritalin) was also carried out - and the B6 was more effective than the Ritalin in decreasing hyperkinesis, and, in contrast to Ritalin, its benefit continued into the following placebo period, in which the effect of Ritalin was not continued.

(vi) CALIUM DEFICIENCY

And Werbach cites S Walker III in the Journal of Learning Disabilities in 1975, who found that a 9-yr-old diagnosed as hyperactive at age 4 had been on Ritalin for 2.5 years. An EEG revealed unusual electrical discharges in the right temporal region, and blood tests revealed a very low calcium level. Increasing milk intake resulted in marked behavioral improvement (32. Walker S III, 1975).

(vii) FOLIC ACID (VIT. B11) DEFICIENCY

Minimal brain dysfunction (MBD)/ attention-deficit disorder (ADD) in an 8-year-old girl, who had had transient severe folic acid (a B-vitamin) deficiency in infancy, was reported by Shapira and others in the Journal of Pediatrics in 1983 (33. Shapira Y, Maayan C, Statter M, et al, 1983). They postulated that the AD(H)D was a late sequela to the deficiency years earlier. Similarly, it is now accepted that intra-uterine deficiency of folic acid, a B-vitamin freely-available in green leafy vegetables and several fruits, as well as in most multivitamin and prenatal vitamin supplements, is the cause of most cases of spina bifida and anencephaly, 2 terrible birth defects.

(viii) GENERAL MALNUTRITION

Malnutrition-in-general in infancy can also predispose to AD(H)D and learning disabilities in later childhood. Dr Janina Galler, a Boston pediatrician, studied this possibility in Barbados (where accurate baby-clinic records are kept and stored for many years) (34. Galler J, 1982). She found that 60% of the babies who had been considered malnourished by the medical staff in a public health clinic went on to display learning disabilities and AD(H)D in elementary school (at ages 5-11); while only 10% of those who had not been considered malnourished in the baby clinic went on to display these characteristics or symptoms. This is a highly-significant difference and would probably have been more so if more-sophisticated measures of nutritional status than clinical observation alone had been used.

There is now a growing body of anecdotal reports of tremendous, rapid improvement in AD(H)D and learning disabilities with the intake of colloidal minerals - which also have no side-effects.

(c) ENVIRONMENTAL TOXINS AND PESTICIDES

Harold E Buttram, MD, of the Woodlands Medical Center in Quakertown, PA, writing in the latest issue of the Townsend Letter for Doctors and Patients, cites references for the great increase in AD(H)D between the 1950's and the 1970's, including the likely causes (35. Buttram HE, 1996): Massive increases in neurotoxic chemicals and pesticides; adulteration of foods with additives, preservatives and pesticides, the safety of which is rarely, if ever, tested-for; and the excessive use of antibiotics in the treatment of minor, non-bacterial childhood illnesses. There has been a 150-fold increase in the levels of volatile organic compounds (VOC's)/ solvents in the air inside our buildings, constituting what the US Environmental Protection Agency has designated as the 'sick building syndrome', which has been compounded by more-efficient insulation - but lack of ventilation - in modern building codes. VOC's are fat-or lipid-soluble meaning that the brain is a prime target because of its high lipid content. And children are 10 times more vulnerable to these effects than adults are, according to the National Research Council in 1993 (36. Nat. Res. Council, 1993). The fumes implicated include formaldehyde, plastic vapors, glues, adhesives, paints, sprays, cigaret-smoke, and disinfectants, or exude from wall-to-wall carpets and flame-retardant mattresses. Buttram cites monosodium glutamate (MSG) and aspartame (NutraSweet, Equal) as being capable of causing brain and retinal damage, according to Russell L Blaylock, in a book entitled 'Excitotoxins, the Taste that Kills' (37. Blaylock RL, 1994).

Buttram suggests that emphasis should be placed on plain, unprocessed foods without chemical additives, and on the reduction of sugar-intake, limiting sweets to special occasions and not as every-meal indulgences (see research below). In comparing this approach with the Ritalin approach, he reminds us of the appetite-reducing and growth-stunting effects of this drug, and also of the lack of sustained beneficial effects in later adolescents if Ritalin is used as the only method of treatment. This was first shown in studies by Satterfield and others, in the Journal of

the Am Acad of Ch & Adol Psychi (38. Satterfield JH, et al, 1987), and by L Hechtam in the journal Psychopharmacology Bulletin in 1985 (39. Hechtam L, 1985). Buttram also points out the well-known deficiency of minerals in the modern American diet, caused by aggressive farming methods which extract 3 crops from the same piece of land every summer, never allowing the land to lie fallow and be replenished in its mineral content. Fertilizers are added to the soil but not many of the essential minerals. Finally he suggests that vitamin, mineral and herbal antioxidants may help to overcome free-radicals caused by the environmental pollution and other toxins mentioned above.

Lead and aluminum toxicities have also been found to cause or aggravate hyperactivity. Werbach (16. Werbach, 1988) cites a good study by Gittelman and Eskenazi who published their report in the Archives of General Psychiatry in 1983, in which a greater proportion of hyperactive middle-class children than normals had toxic blood-levels of lead, and hyperactive children had significantly higher lead levels than their own siblings, suggesting that lead levels are weakly associated with hyperactivity in middle-class children (40. Gittelman R, Eskenazi B, 1983). And Werbach reports that David, writing in The Lancet in 1972, showed that black inner-city hyperactive children had higher chelated urine lead levels than nonhyperactive children from the same area (41. David O, 1972).

And Werbach found that there is one study linking aluminum toxicity to hyperactivity and learning disorders: Howard, in a report in the journal Clinical Chemistry in 1984, showed that 28 hyperactive or learning-disordered children had aluminum levels ranging from 10.1 to 23.9 mcg/l, while the normal range is below 10 mcg/l (42. Howard JMH, 1984).

(d) THE CANDIDA SYNDROME

The issue of systemic candidiasis (yeast overgrowth all over the body and in the blood), as opposed to just the local vaginal, mouth (thrush), toenail or skin infection, is a controversial one. 'Mainline' medicine does not recognize the systemic condition, except in very rare cases of severe immune deficiency, such as in AIDS - although I found one recent 'believing' report, in the journal New Horizons in 1993 (43. Solomkin JS, 1993); many 'alternative' practitioners do recognize and treat it (44. Crook WG, 1992; and 45. Jesop C, 1990). It seems to me that the problem could be solved if more mainline and alternative practitioners would have the accurate blood-tests for the candida antigen, immune complexes, and the IGA, IGG and IGM antibody subclass titers done - the tests done by the ELISA or MONA methods. They would find what I have: That the titers showing active systemic infection are very often raised in cases where one suspects this condition (repeated or persistent vaginal, mouth, skin or nail infections, or unexplained fatigue. They would also find that, after a months-long-continued no-sugar, no-white-flour diet, lactobacillus acidophilus intake (which builds up the normal bacteria in the gut, thus helping to control candida overgrowth), colloidal silver (200-500 ppm) and caprylic acid program (or Nizoral/ Diflucan, except during pregnancy, and/or herbal or homeopathic combos), the fatigue and other symptoms are eliminated or greatly diminished, and the active antigen and antibody titers are returned to

normal or near-normal. This is pretty convincing evidence, to me.

(e) SUGAR-INTOLERANCE

For every study, such as the one by Doris Rapp, MD, pediatric allergist, environmedicine specialist and associate professor at the State University of New York in Buffalo, showing a profound effect of sugar on hyperactivity, attention, learning and behavior in children (46. Rapp D, 1979), there is one (or more), such as the one by Mark L Wolraich of the Child Development Center at Vanderbilt University, showing a lack of such effect (47. Wolraich ML, 1995). However, after reading interviews with these 2 researchers (48. Kirk H, 1996), I am convinced by the integrity and 20-year experience of the former person, and of the influence of the food and sugar industries on the latter. Many people have noticed the effects of sugar on children at birthday parties, etc.

Werbach again obliges by listing several studies showing a definite effect of sugar, esp. when taken in a high-carbohydrate diet, on hyperactivity. KC Wells, in the Laboratory of Behavioral Medicine at the Children's Hospital in Washington, DC in 1985, found that a moderate amount of sugar (about 1 oz. for a 40-lb child) eaten along with a meal balanced in fat, carbohydrate and protein actually improved classroom performance by speeding reaction time, decreasing errors, and reducing activity levels; but, when the same amount of sugar was eaten with a high-carbohydrate meal, it temporarily diminished classroom performance (49. Wells KC, 1985). In 2 studies reported by Connors in the Medical Tribune in 1985, 12 psychiatric in-patients aged 6-12 years who were given 50 G. (about 1.67 ozs.) of sugar (table-sugar) or fructose (fruit-sugar) displayed increased classroom hyperactivity levels, compared to controls, with no difference between sucrose and fructose; and 45 normal children, given about 50 G. of sugar with a high-protein breakfast, showed no effect, but, when they were given the same amount of sugar with a high-carbohydrate breakfast, deviant behavior increased significantly (50. Connors CK, 1985). Two studies by Prinz and others showed, in the Journal of Consulting & Clinical Psychology in 1980, higher sugar consumption in hyperactive children than in controls (51. Prinz RJ, et al, 1980); and, in a report in the Journal of Behavioral Ecology in 1981, that trained observers of a videotape filmed through a one-way mirror, who were blind to the design or purpose of the study, evaluated children who had consumed more sugar to display higher degrees of restlessness and destructive-aggressive behavior (52. Prinz RJ, et al, 1981). And Langseth and Dowd, in a study published in the journal Food and Cosmetic Toxicology in 1978, found that glucose tolerance blood-tests were abnormal in 76% of 265 hyperkinetic children: 50% had flat glucose tolerance curves; 15% had excessive peaks with rapid declines; and 11% had excessive peaks with slow recovery (53. Langseth L, Dowd J, 1978). These results suggested that abnormal glucose metabolism may be a factor in the etiology of hyperkinesis.

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