2012: Nutrition & the Mind Research Roundup

LOS ANGELES—2012 was a banner year for brain / mind / nutrition research. Advances were made on a number of fronts. New insights were gained into:

- how food addictions drive the American obesity epidemic,
- why effective nutritional interventions supportive of mental health involve nutrient combos rather than single nutrients,
- inflammation’s contribution to autism and other disorders was further illuminated,
- new evidence appeared supporting the sugar/violence connection.

Here’s some highlights:

**Inflammation and Psychopathology.** Inflammation is oxidation, a slow "rusting" of the brain's tissues. Allergies are one way to become inflamed. Modern industrialized diets are another—who eats seven servings of veges every day? There are others.

Felger and Miller ¹ detailed how inflammation degrades dopamine pathways controlling attention and motivation, contributing to depression. Raison and Miller ² examined evidence for and against the idea that depression is an inflammatory disorder. It appears this may indeed be the case for some, but not all, depressed patients.

Rossignol and Frye ³ linked immune dysregulation and the inflammation that results to autistic spectrum disorders. (Allergies are one example of an immune system run amok.) Felger and Cole ⁴ demonstrated that immune dysregulation can also contribute to chronic fatigue and depression.

A pilot study by Mischoulon and Brill ⁵ demonstrated that acupuncture, working in part by stimulating the release of mood-elevating, anti-inflammatory endorphines, is effective in depression. Best of all: some therapeutic approaches themselves may be anti-inflammatory. Creswell, Irwin et al ⁶ provided evidence that mindfulness-based stress reduction training was actually able to reduce the expression of pro-inflammatory genes in older adults.
The Importance of Matrix Interventions When Testing Nutrient Effects. Early nutrition studies tended to focus on single nutrient interventions and produced false negative results. The realization is dawning in the research community that the body is a complex phenomenon dependent on multiple inputs. If we want to see the effects of best-practice nutrition work, we need focus on rich combinations of nutrients instead. Benton\textsuperscript{7} explains this best.

Rucklidge and Kaplan\textsuperscript{8} contributed a review of studies testing at least four nutrients in combination and found "evidence for the efficacy of miconutrients in the treatment of stress and antisocial behaviors as well as depressed mood in nonclinical and elderly populations." Davison and Kaplan\textsuperscript{9} weighed in with a study showing nutrient and micronutrient intakes correlating strongly with mental health, especially cognitive function.

Critical Incident responders will find new research by Rucklidge and Andridge\textsuperscript{10} interesting. They found that "micronutrients are an inexpensive and practical treatment for acute stress following a natural disaster with a slight advantage to higher doses." And Rodway and Vance\textsuperscript{11} showed that childhood psychosis responded much better to micronutrient formulas than to pharmaceuticals.

Syndrome X and Mental Health. Syndrome X is the combination of obesity, diabetes and cardiovascular disease sweeping the United States. Some investigators believe\textsuperscript{12} that there may be a form of diabetes that preferentially affects the brain, contributing to some forms of mental illness. Avena and Gold\textsuperscript{13} reported on new work linking the neurobiology of food addiction and drug abuse. Avena and Rada\textsuperscript{14} follow up with a look at how acetylcholine (the neurotransmitter of cognition and learning) and dopamine (the pleasure/reward neurotransmitter) take turns rising and falling in states of addiction and aversion. The path of excess may not be the road to wisdom after all.

Agrawal and Gomez-Pinillia\textsuperscript{15} demonstrated that the combination of a high fructose diet with low omega-3 intake sets the stage for a cerebellar diabetic state that impairs cognitive function in rats. Fernstrom\textsuperscript{16} explored the neurobiology behind the paradoxical observation that switching to artificial sweeteners leads to weight gain instead of weight loss. The bottom line: artificial sweeteners tweak reward circuits in the same way sugar and cocaine do, leading to increased desire for ever more stimulation. Artificial sweeteners, essentially, make us crave even more food.

Solnick and Hemenway\textsuperscript{17} showed that the more soft drinks a group of Boston high school students consumed, the more likely they were to have carried a weapon and engaged in violence with peers, family members or dates.
**Briefly Noted.** For decades there's been a glaring research / practice gap between lay attitudes towards nutrition as medicine and the evidence base. Benton et al \(^{18}\) joined a growing chorus of researchers pointing out that dominant research models may miss nutrition's healing effects because of technical issues: trials that are too short, interventions that are too simplistic.

Amino acids are the closest thing to pharmaceuticals available at health food stores. Many pharmaceuticals are designed to mimic the natural actions of amino acids in the body. Hinz, Stein et al \(^{19}\) produced a comprehensive review of and rationale for the careful use of amino acids to enhance the brain's production of anti-depressant neurotransmitters. Miyamae, Kurisu et al \(^{20}\) showed that a naturally-occurring compound found in coffee, bamboo and peaches appears to stop the process that creates Alzheimer's Disease. Strain, Davidson \(^{21}\) and others showed that depriving a mother's of essential fatty acids had more of an adverse effect on her baby's language abilities at 5 years than mercury exposure.

Coleman, O'Neill et al \(^{22}\) produced evidence that appears to confirm one of environmentalists' worse nightmares: that the effects of combinations of low doses of herbicides are more damaging than would be predicted by straight-line extrapolation from their effects in large doses. Until now, this is how pesticide risk has been assessed; the new work suggests today's risk models may drastically understate real dangers. And Vandenberg, Colborn \(^{23}\) and their team further undermined the linear dose-response model of toxicity by showing that endocrine disruptors, particularly in combination, have low-dose toxic effects that are not predicted by studies using larger doses or single substances.

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"Before Meds After Meds: Complementary and Alternative Medicine for Anxiety & Depression" (ISBN # 978-0-615-50970-9) can be purchased for $16.95 from Amazon books or by visiting the author's website: www.naturalstresscare.org. The ebook can be purchased on Amazon or Barnes & Noble for $4.99

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