

NUTRI NEWS



**Douglas
Laboratories®**
Raising the Standard for Nutrition and Wellness™

Recent health and nutrition information from Douglas Laboratories

January/February 2003

NEUROLOGICAL FUNCTION AND THE AGING PROCESS

Eric R. Braverman, MD

With cloned and manufactured body parts, gene therapies, nanotechnology, and miracle drugs, repaired bodies will raise the average life expectancy to 100 in the very near future. The problem with this inevitable achievement is that studies show that 40% of those reaching age 85, and virtually 100% of those reaching 120, will be senile. So what good will it be living to such a ripe old age if we can't enjoy our restored bodies-or even know that we are alive?

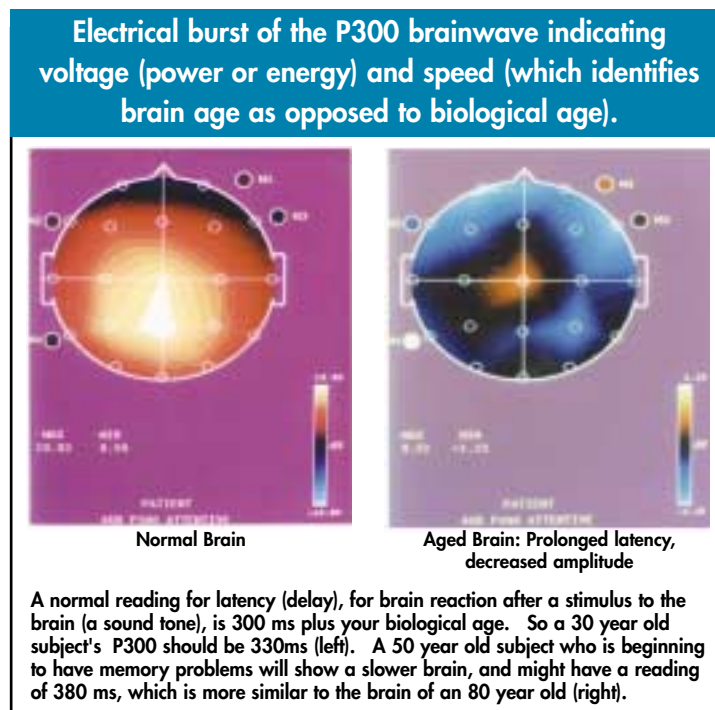
The last organ that will be duplicated – if it ever is – will be the marvelous human brain, so it is incumbent on us to take good care of the one we already have. And fortunately, medical science has given us the means to do so well before the ravages of old age set in.

Your Unique BrainPrint™

An MRI provides an excellent picture of what the brain looks like, and would certainly identify any anatomical abnormalities. But an MRI of a patient right before and right after death would be identical. For all intents and purposes,

the patient would be just fine if making that determination based on a picture. The fact of the matter is, life is determined by brain function, which is beyond the capability of an MRI to assess.

Each of us has a unique profile consisting of every aspect of how the brain is *working*: brainwave bioelectrical function; attention, memory and IQ abilities; as well as psychological mood, personality, temperament, and type. Let's take a closer look at the components of a battery of brain functionality tests:



Brainwave Function: A marvelous diagnostic test, first developed at Harvard Medical School, called the Brain

INSIDE THIS ISSUE

Your Unique BrainPrint™	page 1
The Studied Brain	page 4
Head-First Treatment	page 5
Dopamine Deficiency	page 7
GABA Deficiency	page 8
Acetylcholine Deficiency	page 9
Serotonin Deficiency	page 10
Your Health Is In Your Head	page 11

Electrical Activity Map or BEAM™, uses simple electrodes similar to those used in an EKG, to provide a complete analysis of the brain's functional status:

Power: Voltage measurement assesses brain energy

Rhythm: Assessment of brainwave synchrony or balance

Speed: Assesses memory and cognitive abilities

Symmetry: Assessment of right-left-hemisphere balance

Attention: Measures responses to visual stimulus, with scores for consistency, impulsivity, inattention, and speed of response.


Memory: Tests of brain recall in four areas: working memory, verbal memory, immediate memory, and visual memory.

IQ: Assesses four types of intelligence: abstract, emotional, creative, and perceptual.

Mind Health: Assesses behavioral temperament and personality.

Simple tests for each of these can be easily administered in a primary care physician's office, with dramatic impact on current and future health. The data from all of these results in a BrainPrint™ that is as unique to an individual as a fingerprint, retinal print, and voiceprint are. Why is this important? Because a brain health assessment enables us to effectively treat causes – not symptoms. It makes no sense to pump out the basement while there is a gaping hole in the roof.

Would you rather be treated – medicated – for symptoms that occur one after another, such as irritable bowel, hyperventilation, sweating, cold or clammy hands, tinnitus, or would you rather just take some Inositol and B vitamins that restore the brain chemical that is responsible for relieving those symptoms? If you're fighting a losing battle trying to drop excess weight, would you rather starve yourself once more, or take some tyrosine and phenylalanine – natural amino acids – to shut off the brain's hunger impulse?



Publisher Peter W. Hefele
Editor In Chief Andrew D. Halpner, Ph.D.
Assistant Editor Michael Traficante
Assistant Editor & Research Natalie Shamitko
Technical Advisors/Contributors:
.....Nita Bishop, N.D.
.....Martin P. Gallagher, M.S., D.C.
.....Mitchell J. Ghen, D.O., Ph.D.
.....Vern S. Cherewatenko, M.D., MEd
.....Derek DeSilva Jr., M.D.
.....James Wilson, Ph.D.

Contact Us:
NutriNews Inquiries
600 Boyce Road • Pittsburgh, PA 15205
Phone: (412) 494-0122 • Fax: (412) 278-6804
Email: nutrinews@douglaslabs.com

Canadian Inquiries
Toll-Free: 866-856-9954
Email: douglaslaboratories@on.aibn.com

[View back issues of NutriNews online at www.douglaslabs.com](http://www.douglaslabs.com)

The battery of tests below results in a complete functional assessment of overall brain health

- **Brainwave Function: Power, Rhythm, Speed, Symmetry**
- **Type & Temperament**
- **Axis I & Axis II Psychological Assessment**
- **Test of Attention**
- **Memory Assessment**
- **IQ Levels**

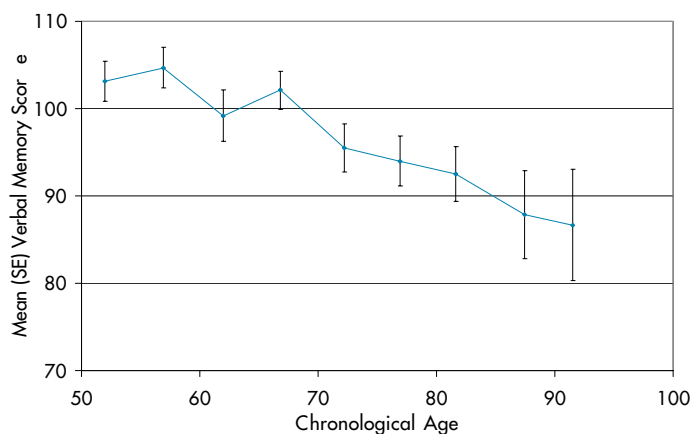
Studies repeatedly correlate the impact of a person's psychological profile on treatment. The mind must be recruited when treating illness to ensure the fastest and best outcome. If a person is not organized and detail-oriented, there are added difficulties complying with complex instructions regarding exercise, diet, or pill-taking. Armed with this knowledge, steps can be taken with patients to truly heal.

To the health-conscious person, how to prevent illness is

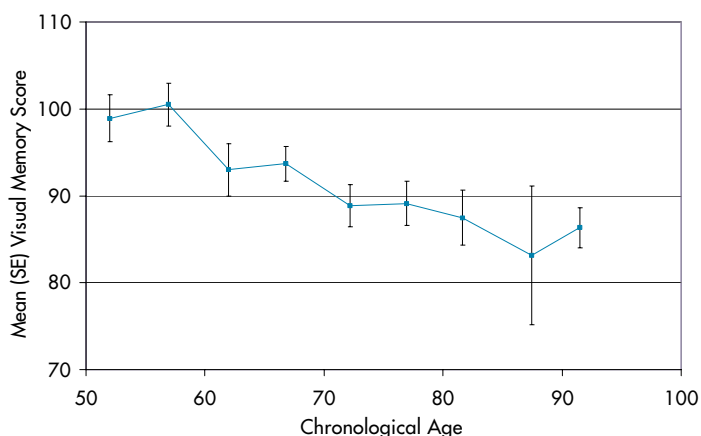
just as important as how to treat it. A shift is already well under way from an illness/pharmaceutical/surgical paradigm to a wellness/natural/prevention one. Tests such as the P300 wave status that is part of the BEAM™ test are indispensable as a prevention tool. The P300 predicts Alzheimer's by as much as 15 or 20 years, when there is still time to do something about it. The chart below represents the decline in brain memory function as we age.

Characteristics of WMS-III vs. Age

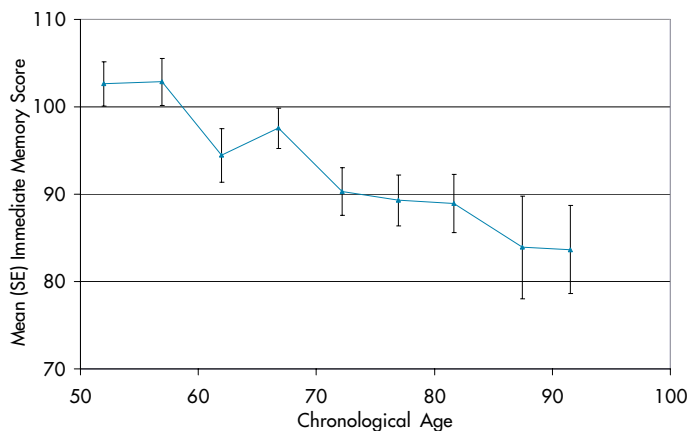
A. Verbal Memory vs Age



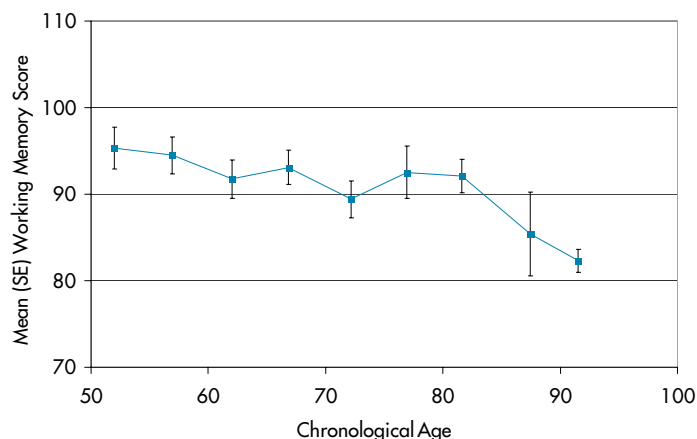
B. Visual Memory vs Age



C. Immediate Memory vs Age



D. Working Memory vs Age



These results were presented at the annual conference of the EEG and Clinical Neuroscience Society (ECNS) this past September in Baltimore, MD.

High-tech, non-invasive, diagnostic tests for the entire body as well as the brain can now identify disease at its earliest stage so that the least-invasive natural treatments, with little or no side effects, can be used effectively.

Before we discuss symptoms and treatments in more depth, let's briefly review the history of brain anatomy and physiology to discover how brain-based treatment in the 21st Century came about.

The Studied Brain

Two thousand years ago the ancient Greeks attributed all behavior to four temperaments, which they called Hot, Dry, Moist, and Cold. The Roman physician Galen attributed all symptoms and behaviors to four distinct bodily fluids, Phlegm, Yellow Bile, Black Bile, and Blood, which he called the humors. While these humors were not restricted to the brain, early observations that divided symptoms and behavior into four categories were remarkably intuitive relative to subsequent discoveries. In fact, the work of Hippocrates and Galen formed the foundation of medicine for 1500 years.

In the 18th and 19th centuries, brain anatomical science advanced to the point where four distinct lobes were identified, and specific behaviors and body functions were ascribed to individual lobes. Biochemistry and pharmaceutical research over the next one hundred years resulted in the discovery of four separate brain chemicals called neurotransmitters that were produced by the four lobes of the brain. Later, four distinct brainwaves –

representing the conduction of electricity – were correlated with individual brain lobes. The most complicated and mysterious organ was now being truly understood.

From the 1950s to today, psychiatrists and psychologists described four classifications for behavior: extroverted (E) or introverted (I), intuitive (N) or sensing (S), thinking (T) or feeling (F), and perceiving (P) or judging (J). They then identified four primary behaviors-which they also called temperaments-and sixteen distinct sub-types of behavior, which are formed by combinations of the four pairs of behavior classifications. Academic tests and books are plentiful, allowing anyone who is interested to discover his or her own make-up. And if you suspected that each of the four primary behaviors could be assigned to a specific lobe, you would be right. From ancient Greece to today, all of the subsequent pieces of information about the brain and its function fell neatly into place.

The Four Behavioral Temperaments

All of us possess all of the human behavioral traits to one degree or another, in combinations that make each of us unique, but each of us can be defined generally by the primary traits we possess:

- **NT: The Rationalist or Strategic Thinker:** characterized by power and control over realities instead of people, competence, capability, knowledge
- **NF: The Idealist or Dreamer:** characterized by reflection, self-discovery, creativity, becoming
- **SJ: The Guardian or Traditionalist:** characterized by tradition, conformity, belonging, loyalty, commitment
- **SP: The Artisan or Dionysian:** characterized by non-conformity, free-thinking, living for today

With the painstaking work of neurological specialists since 1980, the final piece of the puzzle was put into place: the connection between brain chemistry and electricity, and the identification of four key measures of the functioning brain, attributed to specific brain lobes – voltage (frontal lobes), rhythm (temporal lobes), speed (parietal lobes), and symmetry (occipital lobes):

Voltage (Energy or Metabolism): Is the brain getting the necessary nutrients to function?

Rhythm (Calm): Are the four primary waves in balance?

Speed (Memory): How well is the brain processing information?

Symmetry (Mood): Are the left and right hemispheres functionally connected?

So, from the intuition of the first physicians to the research of later scientists to the confirmation of modern medicine, behavior and symptoms have been classified into four categories related to the four lobes of the brain (see chart below).

The challenge with all of the above is what can we do with all of this knowledge?

Physicians, and informed patients, can use their heads now, so they don't lose them later when their bodies are in perfect health.

We can use this knowledge to restore and maintain health.

Head-First Treatment

Doctors are constantly amazed when they discover that a drug developed and used to treat one condition proves just

Brain Lobes & Corresponding Traits				
This chart correlates all of the traits of the working brain with the primary lobe responsible for it.				
	Lobe			
Trait	Frontal	Temporal	Parietal	Occipital
Function	Power	Calming	Speed	Rest
Brainwave	Beta	Theta	Alpha	Delta
Primary Neurotransmitter	Dopamine	GABA	Acetylcholine	Serotonin
Dominant Temperament	NT	SJ	NF	SP
Attention Measure	Variability	Commissions	Omissions	Reaction Time
Memory Dominance	Working	Verbal	Immediate	Visual
IQ Dominance	Abstract	Emotional	Creative	Perceptual

as effective for another. Symptoms and illnesses we experience can be categorized into 'families', related to one of the four lobe-specific chemical neurotransmitters that represent the four distinct brain functions: energy, calm, speed, and mood. Not surprisingly, effective treatments can also be grouped into families that are symptom-specific to address brain chemical imbalances.

Imbalances exist as either excesses or deficiencies of neurotransmitters. Excesses are rare, and they are responsible for severe psychiatric conditions such as paranoia, bipolar disorder, and somatoform disorder. These must be treated with psychotropic medications.

The majority of symptoms we experience that cause us to seek medical attention are related to deficiencies of brain chemicals. These deficiencies exhibit themselves initially as mild symptoms that can be treated first with diet and nutritional supplements. Why? Because each of the neurotransmitters has a natural nutrient precursor: the amino acids tyrosine and phenylalanine are the raw material for dopamine; GABA comes from glutamine, another amino acid; the B vitamin choline is necessary for the production of acetylcholine; and the amino acid tryptophan is metabolized into serotonin.

The precursor nutrients are available from various foods discussed below, but because the body will not absorb all of the available nutrition from food, or may not get enough of a particular precursor from it, proper balancing with supplements, also discussed below, is necessary.

More serious symptoms require a combination of hormones and medications. Two critical points about these more serious interventions:

Hormone Replacement Therapy (HRT): Loss of libido, muscle mass, bone density, mood, and cognitive function do

not have to be an inevitable consequence of age. Balancing hormones related to these aging symptoms balances health. But it is critical that the right formulations are used.

Recent studies showing the ill effects of estrogen replacement were widely reported. What was not reported, however, was that the adverse effects were attributable to a synthetic estrogen derived from horse urine. There are natural *bio-identical* formulations for all replacement hormones that duplicate the body's originals. These have been used in my practice for over ten years, with hundreds of patients, without serious sequelae.

Prescription Drugs: Pharmaceuticals are wonderful healing mechanisms – but they are not without their drawbacks. They can be totally ineffective, and finding the right dosages can be problematical.

Using non-invasive office diagnostic tools, such as the BEAM™, physicians now can make treatment recommendations with far more assurance. Doctors at UCLA have recently published the results of a study using BEAM™ to assess the effectiveness of depression medications – after only 2 days of dosing. Standard protocol is assessment after 12 weeks! That's quite a long time for someone to be using a powerful drug in his or her body that may be totally useless! Simple, non-invasive testing can not only assess medication effectiveness, it can direct the physician to the right 'family' of pharmaceuticals based on which brain lobe is primarily responsible for the patient's condition.

Ongoing symptoms and serious conditions require the intervention by an experienced physician. With the information presented in the next section, you can now use your brain to ask pointed questions about lobe-specific medications and hormones that will turn out to be most effective for particular patient complaints.

With the information about natural nutrient supplements, you can treat the earliest, milder, symptoms yourself. Let's take a closer look at how all of this knowledge can be put to good use for restoring and maintaining health.

Dopamine Deficiency

Dopamine is the source of the brain's power and energy. Symptoms, conditions, and treatments related to deficiencies in dopamine and its amino acid precursors, tyrosine and phenylalanine, are as follows:

Symptoms related to loss of brain energy

Sugar/caffeine cravings, fatigue, pallor, diarrhea, lightheadedness, decreased libido, routine-task difficulty, decreased physical activity, low mood

Conditions related to loss of brain energy

Obesity, addictions, sexual disorders, Parkinson's disease

Multi-modal treatments for increased brain energy

Natural Treatments:

A protein-rich diet is an excellent source for the amino acids the brain uses for energy. And, when supplemented with the right nutrients, can be an excellent approach to treat the initial stages of dopamine-deficiencies:

- Sugar/Caffeine cravings: B-6, Calcium carbonate, Magnesium Oxide, Chromium, 5 hydroxytryptophan, L-carnitine, dl-Phenylalanine, L-tyrosine, L-glutamine, Rhodiola rosea
- Fatigue, decreased libido, routine task difficulty: (frequency: morning) Tyrosine, dl Phenylalanine, Rhodiola rosea, L-Methionine, Octacosanol
- Low mood: (frequency: morning and afternoon) Tyrosine, dl-Phenylalanine, Rhodiola rosea, L-Methionine, Octacosanol

- Obesity, Parkinson's: (frequency: 4 times daily) Tyrosine, dl-Phenylalanine, Rhodiola rosea, L-Methionine, Octacosanol
- Addictions: Vitamin C, Niacin, B-6, Folic Acid, B-12, Biotin, Pantothenic Acid, Calcium carbonate, Magnesium oxide, Zinc citrate, Copper gluconate, Manganese, Chromium, 5-hydroxytryptophan, dl-Phenylalanine, Lecithin, L-glutamine, L-tyrosine, Rhodiola rosea

Hormonal Treatments: (Physician should check for dosage/contraindications)

Testosterone, Estrogen, DHEA, Thyroid

Pharmaceutical Treatments: (Physician should check for dosage/contraindications)

Clonidine, Tenex, Wellbutrin, Tasmart, Tenuate, Dexedrine, Effexor, Provigil, Prelu

THE BRAIN ENERGY DIET

- Coffee
- Oatmeal
- Wheat Germ
- Tofu
- Beef, Ham, Pork
- Avocado
- Fish
- Pinto Beans
- Black-eyed Peas
- Pumpkin Seeds

GABA Deficiency

GABA ensures that brainwaves operate in harmony, in rhythm, which results in bodily calm. The symptoms, conditions and treatments related to GABA, and glutamine amino acid precursor, deficiencies are:

Symptoms related to loss of brain rhythm

Carbohydrate craving, trembling, twitching, hyperventilation, flushing, tachycardia, palpitations, sweating, cold or clammy hands, parasthesia, chest pain or discomfort, restlessness, blurred vision, tinnitus, abnormal sense of smell, abnormal odors, lump in throat, butterflies in stomach, unusual allergies

Conditions related to loss of brain rhythm

Anxiety, hypertension, cystitis, gastro-intestinal disorders, tinnitus, PMS, seizures, bi-polar disorder

Multi-modal treatments for a calmer brain

Natural Treatments:

A complex-carbohydrate diet provides an excellent source of glutamine which the brain needs to keep itself calm. If supplemented with the appropriate nutrients, a natural approach for treating initial GABA deficiencies results:

- Carbohydrate craving: B-6, Calcium carbonate, Magnesium Oxide, Chromium, 5hydroxytryptophan, L-carnitine, dl-Phenylalanine, L-tyrosine, L-glutamine, Rhodiola rosea
- Anxiety and anxious symptoms (which include trembling, twitching, palpitations, flushing, sweating, cold or clammy hands, irritable bowel, restlessness, lump in throat, butterflies in stomach), tinnitus, gastrointestinal disorders: (frequency: afternoon and evening) Inositol, GABA, Glycine

THE BRAIN CALM DIET

- Caffeine-free Herb Teas
- Banana
- Rice Bran
- Citrus Fruit
- Whole Grains
- Brewer's Yeast
- Brown Rice
- Broccoli
- Molasses
- Liver, Organ Meats
- Halibut
- Lentils
- Baked or Mashed Potatoes
- Spinach Pasta
- Cocktail or Glass of Wine
- Nuts

- Hypertension, mood swings: (frequency: afternoon and evening) Inositol, GABA, Glycine
- Bi-polar disorder: (frequency: morning, afternoon, evening) Inositol, GABA, Glycine
- Seizures: (frequency: four times daily) Inositol, GABA, Glycine
- PMS: Niacin, B-6, Folic Acid, B-12, Pantothenic acid, Calcium carbonate, Iron, Magnesium Oxide, Chromium, 5-hydroxytryptophan, dl-Phenylalanine, L-tyrosine, L-glutamine, Rhodiola rosea

Hormonal Treatments: (Physician should check for dosage/contraindications)

Progesterone, Pregnenolone

Pharmaceutical Treatments: (Physician should check for dosage/contraindications)

Ambien, Topamax, Valium, Dilantin, Depakote, Klonopin, Xanax, Ativan, Phenobarbital, Mysoline

Acetylcholine Deficiency

Acetylcholine is the source of brain's ability to process and recall information quickly. Symptoms, conditions, and treatments related to acetylcholine, and its B-vitamin precursor choline, deficiencies appear below.

Symptoms related to loss of brain speed

Fat cravings, dry mouth, dry cough, memory dysfunction, difficulty concentrating

Conditions related to loss of brain speed

Senility, Alzheimer's, Multiple Sclerosis

Multi-modal treatments to improve brain memory

Natural Treatments:

A choline-rich diet will help to produce the acetylcholine your brain needs to stay sharp. And, when properly supplemented with the right nutrients, the initial stages of acetylcholine-deficient conditions can be treated:

- Fat cravings: B-6, Calcium carbonate, Magnesium Oxide, Chromium, 5-hydroxytryptophan, L-carnitine, dl-Phenylalanine, L-tyrosine, L-glutamine, Rhodiola rosea
- Memory lapses, dry mouth, dry cough, difficulty concentrating: (frequency: morning) Huperzia serratea leaf extract, CDP Choline, Phosphatidyl Choline, N-acetyl L-carnitine
- Senility: (frequency: morning and afternoon) Huperzia serratea leaf extract, CDP Choline, Phosphatidyl Choline, N-acetyl L-carnitine

- Alzheimer's: (frequency: morning and afternoon) Huperzia serratea leaf extract, CDP Choline, Phosphatidyl Choline, N-acetyl L-carnitine

- Multiple Sclerosis: (frequency: morning and afternoon) Inositol, GABA, Glycine, Huperzia serratea leaf extract, CDP Choline, Phosphatidyl Choline, N-acetyl L-carnitine

Hormonal Treatments: (Physician should check for dosage/contraindications)

Growth hormone, Vasopressin, DHEA, Calcitonin

Pharmaceutical Treatments: (Physician should check for dosage/contraindications)

Aricept, Prostigmin, Tacrine, Pilocarpine, Exelon, Galantamine, Piracetam, AVP-arginine

THE BRAIN MEMORY DIET

- Coffee
- Grape Juice
- Eggs
- Blueberries
- Wheat Germ
- Peanut Butter
- Cheese
- Fish
- Chicken
- Cabbage
- Iceberg Lettuce
- Fava Beans
- Caviar
- Cauliflower
- Almonds

Serotonin Deficiency

Serotonin, along with its tryptophan amino acid precursor, allows the brain to restore itself to maintain a level mood. Symptoms, conditions, and treatments related to deficient serotonin follow:

Symptoms related to loss of brain symmetry

Salt cravings, backache, headache, shortness of breath, choking, hypervigilance, sleep disorders

Conditions related to diminished mind-body connection

Insomnia, sleep disturbance, anorexia, bulimia, premature ejaculation, depression, obsessive-compulsive disorder

Multi-modal treatments to raise brain mood

Natural Treatments:

A tryptophan-rich diet will support your body's production of serotonin, which your brain needs to restore its symmetry and stabilize your mood. And when supplemented with appropriate nutrients, you can address initial serotonin deficiencies:

- Salt cravings: B-6, Calcium carbonate, Magnesium Oxide, Chromium, 5-hydroxytryptophan, L-carnitine, dl-Phenylalanine, L-tyrosine, L-glutamine, Rhodiola rosea
- Backache, headache, shortness of breath, choking: (frequency: afternoon and evening) Thiamin, Niacinamide, Folic Acid, B-12, Pantothenic Acid, 5-hydroxytryptophan, St. John's Wort
- Depression, anorexia, bulimia, premature ejaculation: (frequency: afternoon and evening) Thiamin, Niacinamide, Folic Acid, B-12, Pantothenic Acid, 5-hydroxytryptophan, St. John's Wort

- Obsessive-compulsive disorder: (frequency: morning and evening) Thiamin, Niacinamide, Folic Acid, B-12, Pantothenic Acid, 5-hydroxytryptophan, St. John's Wort; evening and bedtime: Inositol, GABA, Glycine
- Sleep disorders: (frequency: evening and bedtime) Thiamin, Niacinamide, Folic Acid, B-12, Pantothenic Acid, 5-hydroxytryptophan, St. John's Wort; bedtime: Melatonin, GABA, Inositol

Hormonal Treatments: (Physician should check for dosage/contraindications)

Progesterone, Pregnenolone, Adenosine, Leptin

Pharmaceutical Treatments: (Physician should check for dosage/contraindications)

Antihistamines, Paxil, Zoloft, Pondimin, Trazadone, Serzone, Tegretol, Hydergine, Triptans

THE BRAIN MOOD DIET

- Caffeine-free Herb Teas
- Cottage Cheese
- Swiss Cheese
- Lox
- Banana
- Salmon
- Turkey
- Cornish Hen, Duck, Pheasant
- Blue Fish, Mackerel
- Beets
- Brown Rice
- Baked or Mashed Potatoes
- Sunflower Seeds

Your Health Is In Your Head

Effective, long-lasting treatments are the ones that incorporate the brain in both diagnosis and restorative recommendations. Being aware of brain-based symptoms that are related to specific anatomic/functional areas – and the biochemicals related to them – enables us to take charge of our own health. With knowledge of the primary neurotransmitters, we can ask the right questions when issues related to hormones and medications arise. And, when mild symptoms first appear, that knowledge allows us to use the readily-available natural alternatives of diet and nutritional supplements to re-charge our brains.

If you use your head, your precious health will be in your hands.

ABOUT THE AUTHOR

Eric R. Braverman, M.D.

Dr. Braverman graduated Summa Cum Laude from Brandeis University and graduated with honors from NYU Medical School. He performed post-graduate work in internal medicine at a Yale Medical School affiliate and conducted pioneering brain mapping research as a member of a team at Harvard Medical School.

Dr. Braverman is one of the foremost experts in Integrative Medicine, and recognizes the brain's global impact on illness and health. He has published over 100 research papers and abstracts, and is the author of seven books on vitamins, supplements, and alternative medicine.

In addition to maintaining a private medical practice in N.Y. City, Dr. Braverman is Director of the PATH Foundation, a nonprofit research organization established to collect and analyze information concerning the diagnosis, prevention, and treatment of all aspects of brain biochemical disorders.

Dr. Braverman lectures regularly at major medical conferences, and has trained hundreds of physicians and healers in his brain-based approach to healthcare. He hosts a weekly radio show covering diverse health issues, with live call-ins from the listening audience, and he has been a guest on T.V., with appearances on The O'Reilly Factor, Larry King Live, PBS, America's Health Network, and local news programs.

References

- Blum K., Payne J., "Alcohol and the Addictive Brain." New York, NY: The Free Press, 1991.
- Blum K., Braverman E., and et. al., "Neurogenetics of Compulsive Disease: Neuronutrients as Adjuncts to Recovery." In Wallace BC, ed., *The Chemically Dependent*, New York: Brunner/Mazel, 187-231, 1992.
- Braverman E., Blum K., "P300 and Wechsler Memory Scores on an Aging Large Population of Patients." Baltimore, MD: *Clinical EEG*, 2002.
- Braverman E., Blum K., "Abnormalities in Obesity." Philadelphia, PA: *Integrative Psychiatry*, 1994.
- Braverman E., "Hypertension and Nutrition." New Canaan, CT: Keats Publishing, 1999.
- Braverman E., "The Healing Nutrients Within." New Canaan, CT: Keats Publishing, 1997.
- Braverman E., Lamola S., Pfeiffer, C.C., "Pharmacology of Chronic Supplementation of Amino Acids." *Journal of Clinical Pharmacology*, 25:455-474, 1985.
- Coffey C., Cummings J., "Textbook of Geriatric Neuropsychiatry, 2nd Ed." Washington, D.C.: American Psychiatric Press, Inc., 2000.
- Coleman D., "Working With Emotional Intelligence." New York: Bantam Books, 1998.
- Cousins N., "Head First." New York, NY: Penguin Books, 1989
- Dean W., Morgenthaler J, Fowkes S.W., "Smart Drugs II: The Next Generation/V2." California: Smart Publications, 1993.
- Goldman R., Klatz, R, Berger, L., "Brain Fitness." New York, NY: Doubleday & Co., 1999.
- Goldman R., Klatz, R, Berger, L., "Brain Fitness." New York, NY: Doubleday & Co., 1999.
- Hales R., Hales D., "The Mind/Mood Pill Book." New York, NY: Bantam Books, 1995
- Howard P., "The Owner's Manual for The Brain, 2nd Ed." Marietta, GA: Bard Press, 2000.
- Kiersey D., Bates M., "Please Understand Me." Del Mar, CA: Prometheus Nemesis Book Company, 1978.
- Lesser M., Kapktein C., "the Brain Chemistry Diet." New York, NY: G.P. Putnam's Sons, 2002.
- Niedermeyer E., Da Silva F., "Electroencephalography, 4th Ed." Baltimore, MD: Lippincott Williams & Wilkins, 1999.
- Phillips B., "Body for Life." New York: HarperCollins 1999.
- Querijero M., Braverman E., "Brain Aging and Diagnostic Testing." *International Journal of Anti-Aging Medicine*, Winter 2000.
- Roizen M.F. with Stephenson, E.A., "Real Age: Are You As Young As You Can BE?" New York: HarperCollins, 1999.
- Ross J., "The Diet Cure." New York: Penguin Group, 2000.
- Rudin R., "The Craving Brain." New York: HarperCollins, 1997.
- Schmidt R., "Fundamentals Of Neurophysiology." New York: Springer-Verlag, 1978.
- Sirven J., Malamut B., "Clinical Neurology of the Older Adult." Philadelphia, PA: Lippincott Williams & Wilkins, 2002.



www.douglaslabs.com