



The Role of Dietary Supplements in Maintaining Cognitive Health and Mental Hygiene

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Presented by:



IN COLLABORATION WITH



Integrative Medicine



“What we have now is a ‘sick care’ system that is reactive to problems. The integrative approach flips the system on its head and puts the patients at the center, addressing not just symptoms, but the real causes of illness. It is care that is **preventive, predictive and personalized.**”



Predictive
Personalized
Preventative
Participatory

Ralph Snyderman, MD
Chancellor Emeritus
Duke University School of Medicine

Lee Hood, MD, PhD
P4MI Chairman and ISB President

The Problem

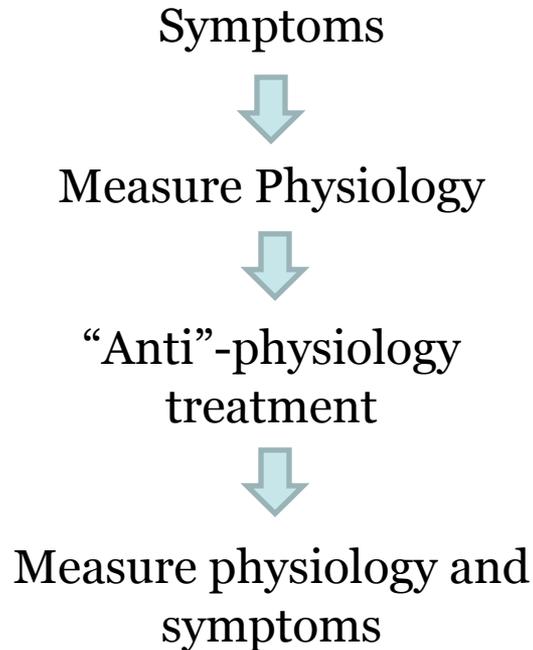


- Depression is one of the most serious and costly health problems in the world today
- Major Depression accounts for the 2nd longest number of days lost to disability in the U.S.
- Approximately 15% of adults will experience severe depressed mood during their lifetime
 - Approx. 15% of these adults will commit suicide
- Suicide is the 3rd leading cause of death in youth aged 15 to 24
- An Average of 25 Suicides per day occur for US Veterans (that we are aware of).
- One death from suicide every **40 seconds**. It is predicted that by 2020, the rate of death from suicide will increase to one every **20 seconds**.

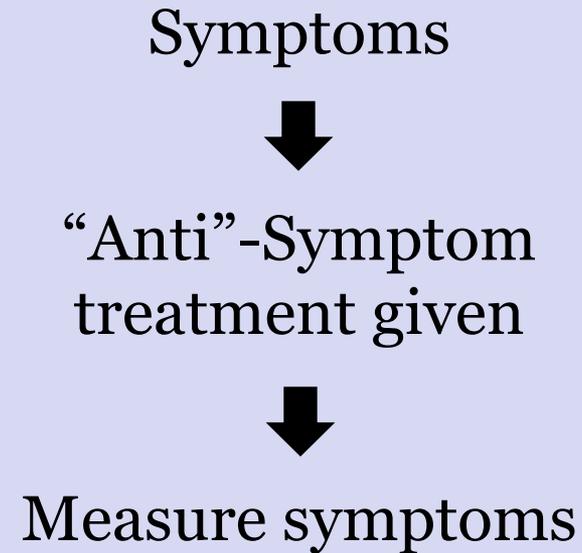
Diagnosis and Treatment



General Medical Treatment:



Psychiatric Treatment:



Psychiatric Testing



Polypharmacy Highway



40%

Relapsed
within 15
weeks

20%

Incapacitated or
committed
suicide

66%

Residual
symptoms

THE ZEEBRA Approach



T – Take Care of Yourself – **Stress, Sleep, Sugar**

H – Hormones – **Thyroid, Sex Hormones**

E – Exclude – **Celiac, Allergies**

Z – Zinc and Other Minerals – **Mg, Li**

E – Essential Fatty Acids – **Cholesterol**

E – Exercise and Energy

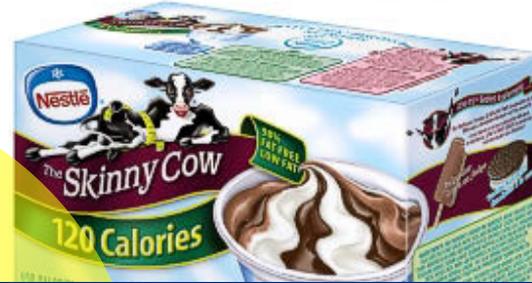
B – B Vitamins & Other Vitamins – **B12, Vitamin D**

R – Restore – **GI tract, Probiotics**

A – Amino Acids and Protein – **Digestive and Absorption**



Cultural Chaos



NO FATS?



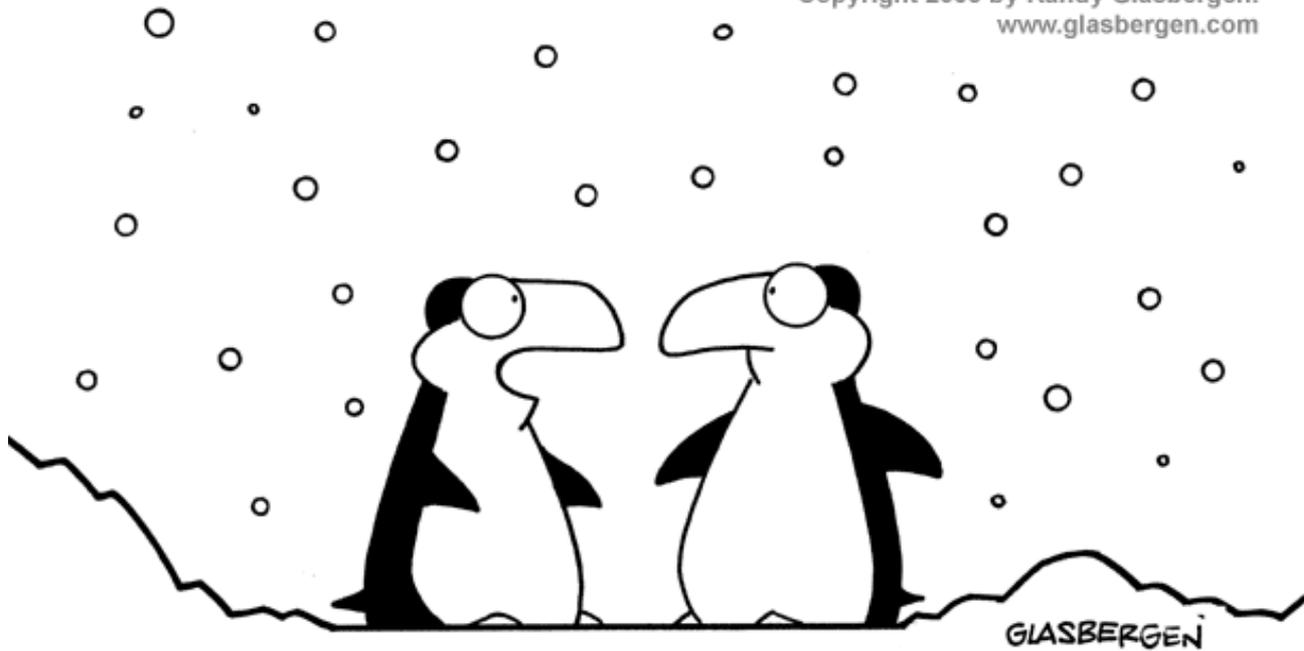


60% of the dry weight of the brain is fat

Approximately **30%** of fatty acid pool cannot be made de novo and must be obtained through **diet**

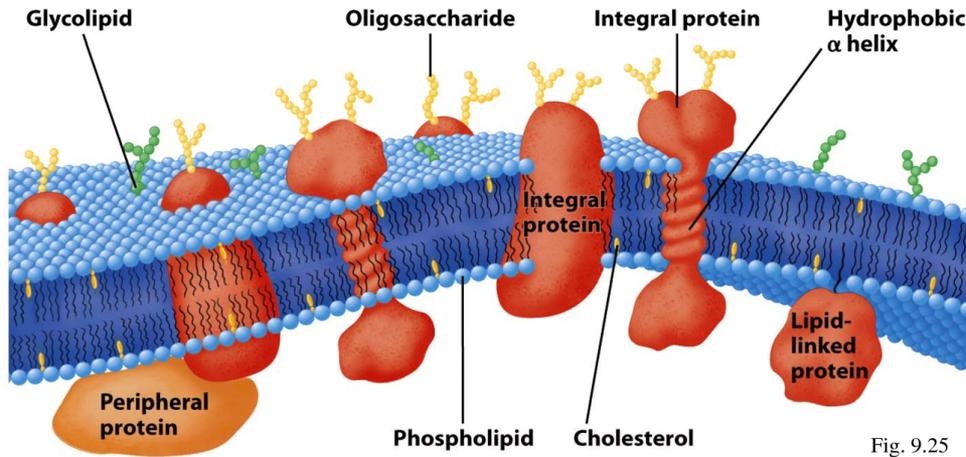


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**“Low fat diets don’t work. I eat fish every day
and my butt still drags on the ground!”**

Omega-3 Fatty Acids



Neurotransmitters

Every aspect of neurotransmission involves adequate functioning of omega 3s.

Inflammation research studies suggest that levels of omega-3 fatty acids may directly influence the magnitude of the inflammatory response to stress and depression.

Omega-3s and Suicide in the Military



- Study of 800 U.S. servicemen and women who committed suicide between 2002 and 2008 (compared to 800 who didn't)
- Personnel with medical records showing low blood levels of DHA were 62% more likely to have been suicide victims than those with the highest levels
- Study found that U.S. service personnel generally have low levels of DHA in their blood

Omega-3 Fatty Acids Augmentation of Antidepressants



- 42 patients (40.5 y/o) with dietary intake of Omega 3 <3 gms/day
- DBPC 1.8 gms EPA .4gms DHA Omega 3 supplements or placebo BID x 8 weeks
- Celexa 20-40mg
- Higher proportion of patients achieved full remission in Omega 3 group versus the placebo group
 - 44% versus 18%

Gertsik L et al. *J Clin Psychopharmacol* 2012 ;32(1):61-4.

Prevention is Possible



- Omega-3s may have the ability to delay or prevent psychosis
- 81 adolescents or young adults with subthreshold psychosis
- 1.2 g omega-3 fatty acids or placebo daily for 12 weeks
- After 40 weeks:
 - 5% (2 out of 41 individuals) in omega-3 group developed psychosis
 - 28% (11 of 40 individuals) in placebo group developed psychosis

Amminger, et al., *Archives of General Psychiatry*, 2010, 67(2): 146-154.

Inflammation as a Predictive Biomarker as Response



Molecular Psychiatry

Original Article

Molecular Psychiatry advance online publication 24 March 2015; doi: 10.1038/mp.2015.22

Inflammation as a predictive biomarker for response to omega-3 fatty acids in major depressive disorder: a proof-of-concept study

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Received 19 September 2014; Revised 21 January 2015; Accepted 23 January 2015
Advance online publication 24 March 2015

Importance of Cholesterol



- The brain is a “cholesterol rich” organ
- Cholesterol is involved in the synthesis of all steroid hormones
- Activates serotonin and oxytocin receptors
- Bile salt formation for fat digestion and absorption of fat soluble vitamins
- Synthesis of vitamin D



Low Cholesterol is associated with...

- Increased cancer rates
- Increased violent behavior and aggression
- **Increased anxiety**
- **Increased depression and suicide**
- Increased death rate
- Increased incidence of stroke
- More difficult recovery from drug addiction
- Increased rate of school suspensions



- 42 patients (40.5 y/o) with dietary intake of Omega 3 <3 gms/day
- DBPC 1.8 gms EPA .4gms DHA Omega 3 supplements or placebo for 8 weeks
- Celexa 20-40mg
- Higher proportion of patients achieved full remission in Omega 3 group versus the placebo group
 - 44% versus 18%



It takes at least 10 weeks for cerebral membranes' highly unsaturated fatty acid levels to recover following chronic deficiency.

Bourre, et al. *Prostaglandins Leukot Essent Fatty Acids* 1993.



“By modifying natural fats, we have altered the basic building blocks of the human brain – weakening cerebral architecture. And, like unstable buildings that come apart in an earthquake or storm, poorly structured human brains are failing to cope with the mounting stress of modern life.”

Non-Gastrointestinal Manifestations of Celiac Disease



Most common presentation of age: older child to adult

- **Nutrient malabsorption**
- Iron deficiency
- Short stature
- Hair Loss
- Dermatitis Herpetiformis
- Irritability and behavioral changes
- Liver enzyme elevation
- Delayed puberty (no menstrual cycle)
- Infertility
- Osteoporosis/ osteopenia
- Malnutrition
- **Fatigue**
- **Depression**

Deficiencies in Celiac Disease



When a disorder such as Celiac Disease (CD) affects the intestine, the absorption of almost all elements is impaired.

- Essential fatty acids
- Iron
- Fat soluble vitamins
(A,D,E,K)
- Magnesium
- Folic Acid
- B Vitamins
- Zinc

One study involving 12 patients presenting with CD and depression who had been on a gluten-free diet for a year without improvement of the depression, showed that malabsorption not only was an issue, but was also inevitable even if the diet was 100% gluten-free.¹

Hallert, C. (1982). *Biol Psychiatry* 17(9): 959-61.

Zinc Supplements for Depression



- Serum zinc levels are inversely correlated to depression scale¹
- Women who took the multivitamin and zinc showed a significant reduction in anger-hostility and depression-dejection versus women who did not²
- Patients who received 25mg of Zinc daily had significantly reduced HDRS and BDI scores compared to placebo group³

¹Amani R et al. *Biol Trace Elem Res.* 2010; 137(2):150-8.

²Sawada T et al. *Eur J Clin Nutr* 2010;64(3):331-3.

³Nowak et Al. *Pol J Pharmacol* 2003; 55:1143-1147.

Zinc Supplementation for Depression



- 12 week study with 60 patients with unipolar depression
- 25 mg Zinc daily or placebo
- Zinc supplementation significantly reduced depression scores **in antidepressant treatment resistant patients**

Siwek, et al., *J Affect Disord.* 2009 Nov;118(1-3):187-95.

Zinc in Depression: A Meta-Analysis



- Seventeen studies, measuring peripheral blood zinc concentrations in 1643 depressed and 804 control subjects, were included
 - Zinc concentrations were lower in depressed subjects than control subjects

- **Depression is associated with a lower concentration of zinc in peripheral blood**

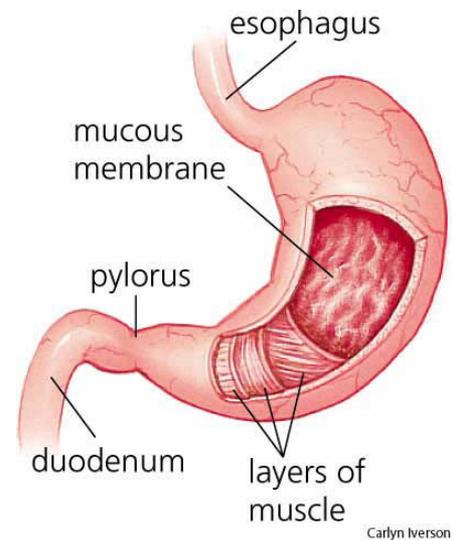
Swardfager W et al. *Biol Psychiatry* 2013 Jun. [E-pub ahead of print.]

Zinc and Digestive Enzymes



- Zinc increases the activity of digestive enzymes
- Zinc deficiency influences ability to form hydrochloric acid (HCl)

Zinc deficiency causes insufficient gastric acid production



Zinc Dependent Enzymes

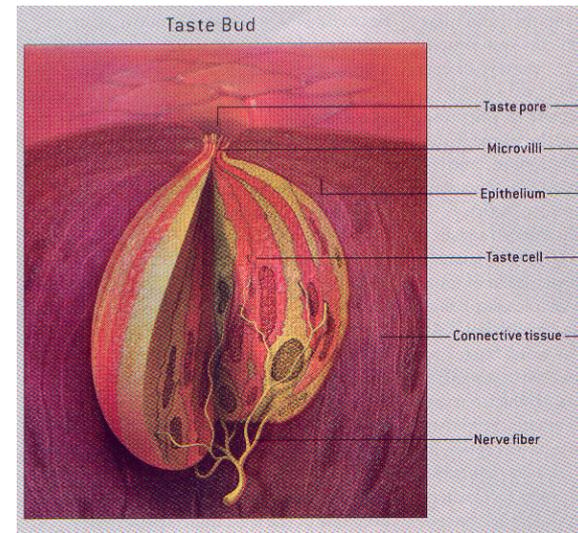
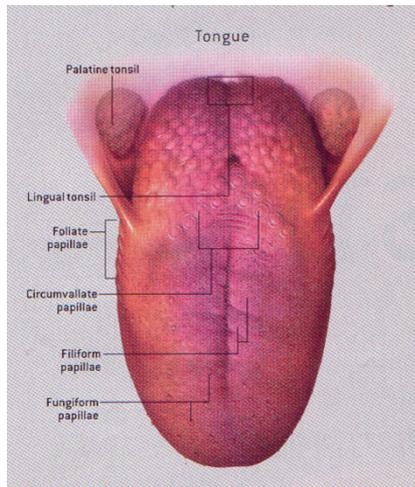


Enzyme	Digests
Trypsin	Protein
Chymotrypsin	Protein
Elastase	Protein
Carboxypeptidase	Protein
Lipase	Fat
Amylase	Polysaccharides
Maltase	Maltose
Sucrase	Sucrose
Lactase	Lactose
Pepsin	Protein

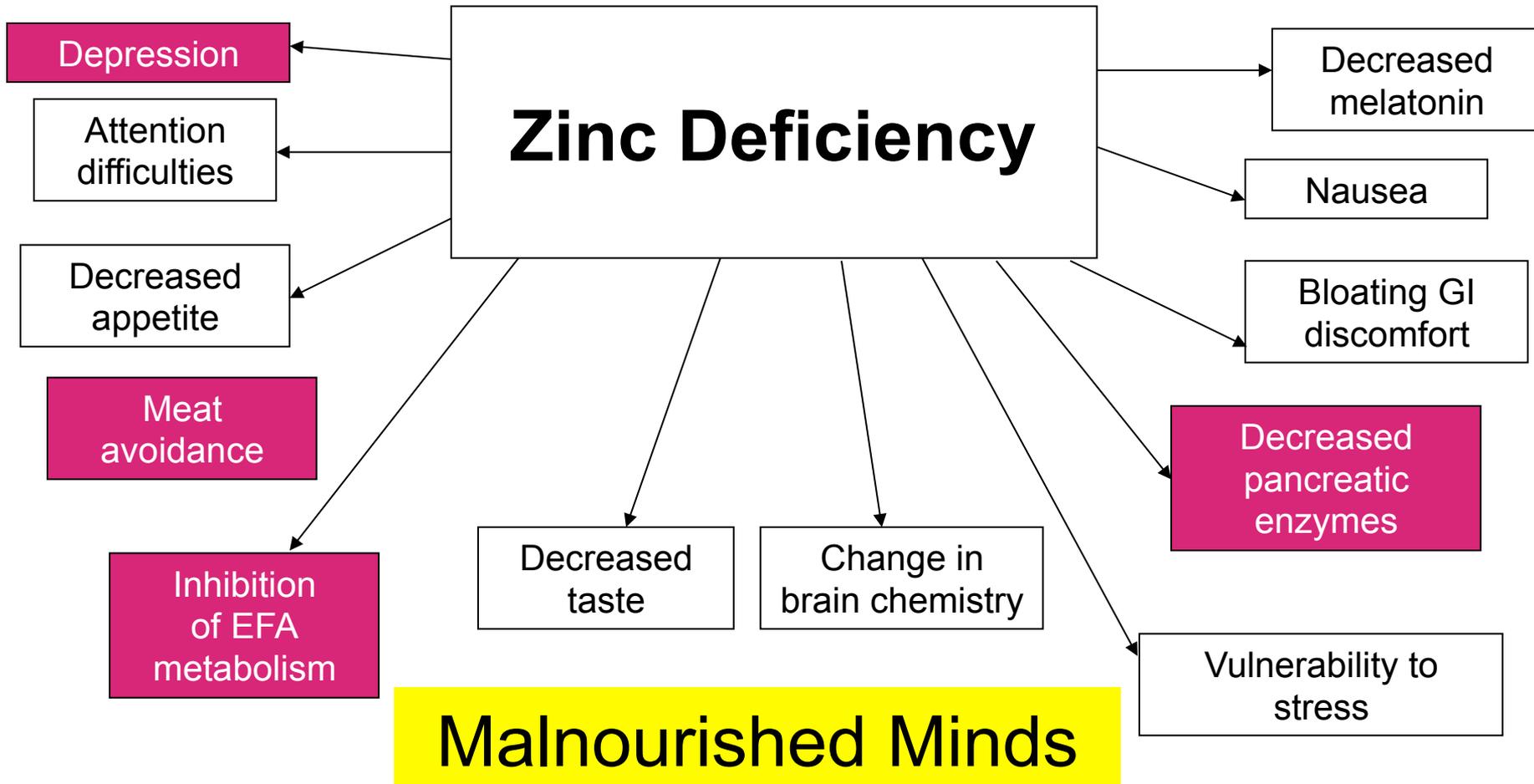
Decreased Taste and Smell



- Zinc deficiency alters taste and smell receptors
- Taste is mediated through a salivary zinc dependent enzyme



Zinc Deficiency





Do you suffer from fatigue, anemia,
depression or frequent falls?

Is your child diagnosed with a
developmental delay or autism?

Has your loved one been diagnosed with
dementia, Alzheimer's or MS?

Could It Be

Please Note: Although the reference range for vitamin B12 is 200-1100 pg/mL, it has been reported that between 5 and 10% of patients with values between 200 and 400 pg/mL may experience neuropsychiatric and hematologic abnormalities due to occult B12 deficiency; less than 1% of patients with values above 400 pg/mL will have symptoms.

*An Epidemic of
Misdiagnoses*

The underground classic
that has saved lives

2nd
Edition

SALLY M. PACHOLOK, R.N., B.S.N.
JEFFREY J. STUART, D.O.

Symptoms of B₁₂ Deficiency



MENTAL

- Irritability
- Apathy
- Personality Changes
- **Depression**
- Memory Loss
- Dementia
- Hallucinations
- Violent Behavior

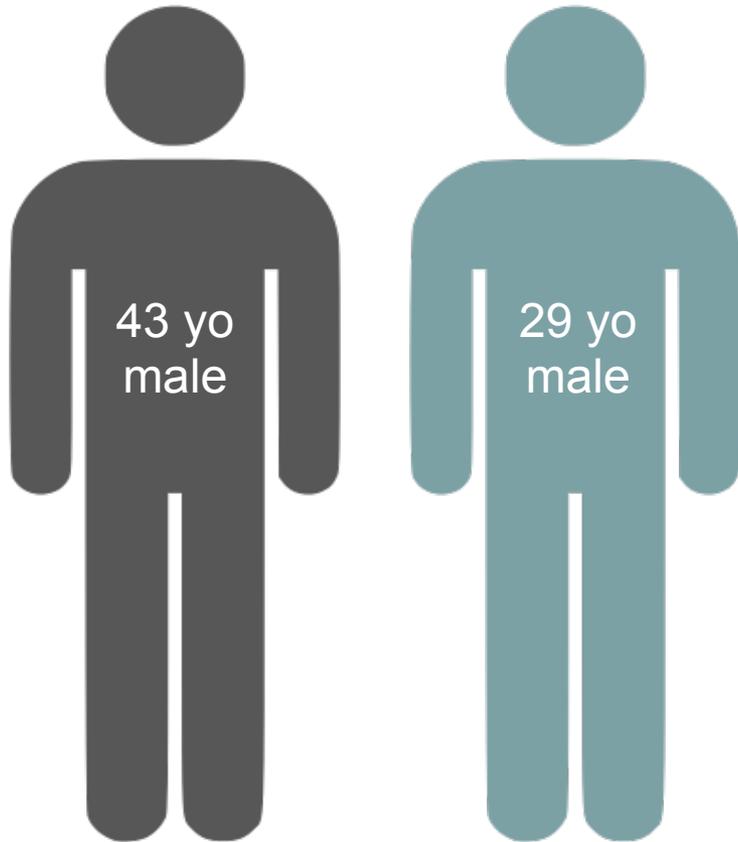
PHYSICAL

- Clumsiness
- Weakness
- Pernicious Anemia
- Chronic Fatigue
- Tremors
- G.I. Problems
- Diminished sense of touch and pain

BIOCHEMICAL INDIVIDUALITY



B12 for Treatment Resistant Depression



- Both males failed to respond to 3+ trials of antidepressants
 - Vegetarians
 - **Low vitamin B12 levels**
- Treatment with 1000 mg/day of Vitamin B12
 - Both noticed improvements within 3-4 weeks

Kale et al. (2009). *Psychiatry Research*. 175(1-2):47-53.

Lithium: Mineral, Medicine, Miracle



Home

The New York Times Magazine



**'I Don't Believe in God, but I Believe
in Lithium'**

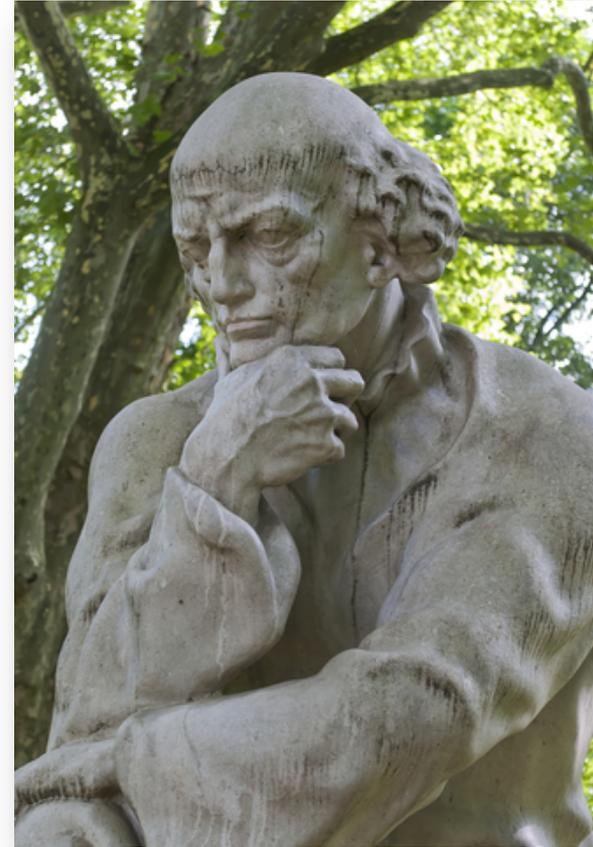
Dosage



- **“The dosage makes it either a poison or a remedy.”**

- *Paracelsus*

Swiss-German physician,
physician, botanist, alchemist,
astrologer
(1493-1541)



Nutritional Lithium and Suicide



- Examined 27 **Texas** counties from 1978-1987
- Examined lithium levels in tap water in the 18 municipalities in **Japan** in relation to the suicide standardized mortality ratio
- **Austrian** study with nationwide sample of 6460 lithium measurements

Overall suicide rate and the suicide mortality ratio were inversely associated with lithium levels

Ohgami H, et al. (2009). *Br J Psychiatry*, 194(5), 464-5.

Schrauzer GN, Shrestha KP. (1990). *Biol Trace Elem Res*, 25(2),105-13.

Kapusta, N.D., et al. (2011). *The British Journal of Psychiatry*, 198, 346-350.

Lithium Cases



- Irritability
- Road rage; waiting room rage
- Family history of mood and substance abuse
- Domestic violence

PATRICIA

43 year old therapist

Diagnosed with depression and alcohol abuse at age 18

Strong family history of alcoholism

Sober for 10 years

Lithium for Prevention of Alzheimer's



- Comparison of 66 elderly patients with Bipolar Disorder who were on chronic lithium therapy and 48 similar patients without recent lithium therapy
- Alzheimer's disease was diagnosed in 3 patients (5%) on lithium and in 16 patients (33%) who were not on lithium ($P < 0.001$)
- Lithium treatment reduced the prevalence of Alzheimer's disease in patients with bipolar disorder to levels in the general elderly population

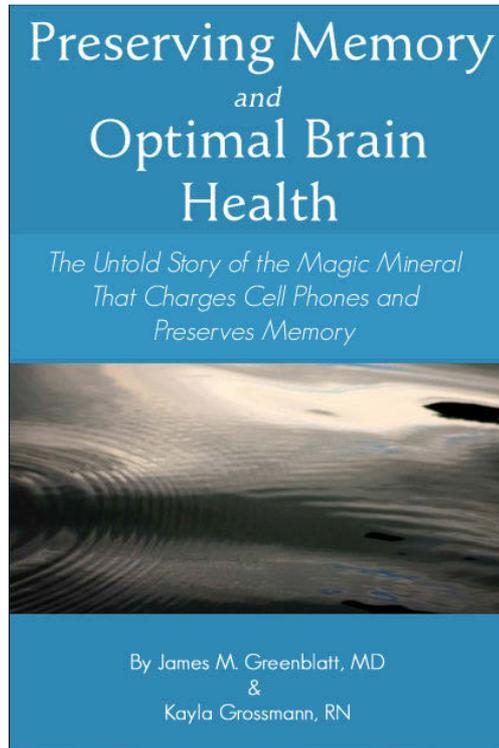
Nunes PV et al. *Br J Psychiatry*. 2007 Apr;190:359-60.

Lithium and Cognitive Decline



- Lithium modulates several biological cascades related to dementia/Alzheimer's
- Modulating these cascades can decrease amyloid and tau-induced neurotoxicity and cell damage

Can lithium reduce risk and/or progression from Alzheimer's?



LowDoseLithium.org

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Ch. 11 Playing God

V. Conclusion

Ch. 12 Peace of Mind

VI. Appendix - Resources and References



- Studies have concluded that people who have faith in religion:

- cope better with stress

- suffer from less depression

- respond better to medical treatment

Murphy PE et al. *Journal of Clinical Psychology* 2009; 65 (9):1000-1008.

Schettino JR et al. *Mental Health, Religion & Culture* 2011; 14 (8):805-818.

Vasegh, S. *Journal of Cognitive Psychotherapy: An International Quarterly* 2011; 25 (3):177-188.

Nutrition and Behavior

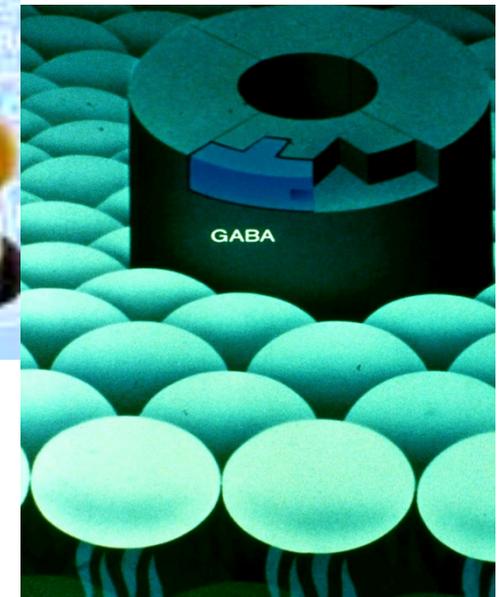
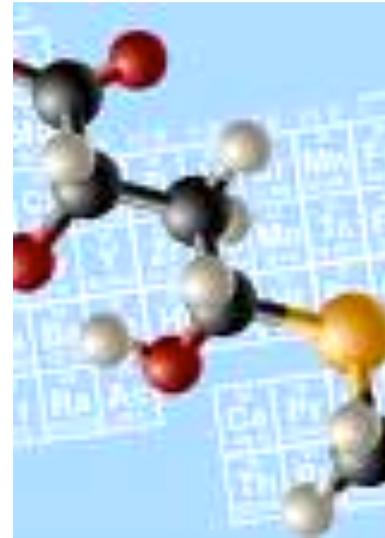


- Double-blind, placebo-controlled trial of nutritional supplements on 231 young adult prisoners, comparing disciplinary offences before and during supplementation for appx. 4 months
- Those receiving supplements committed an average of **26.3% fewer offences** (n=172)
- Those taking supplements for a minimum of 2 weeks experienced an average of **35.1% reduction** in offenses whereas placebos remained within standard error

Gesch, C.B., et al. *British Journal of Psychiatry* 2002;181:22-28.



Understanding the
role of Nutrition
and Health **is not**
Alternative
Medicine



Integrative Therapies



- Folate/B12
- Thyroid
- Vitamin D
- Zinc/Magnesium
- Copper
- Celiac Disease
- Homocysteine
- Infections
- Cholesterol
- DHEA
- Food Allergies
- Vitamin Deficiencies
- Mineral Deficiencies
 - LITHIUM
- Amino Acids
- Heavy Metals
- Fatty Acids
- Toxins

An Integrative Approach to Mental Health



1. The genetic and biochemical foundations that may predispose to symptoms
2. The dietary habits, pre-symptom history and present
3. The impact of the illness on social and psychological systems
4. The physical and social environment in which the symptoms occur
5. Understanding the patients experience and beliefs of his/her illness



Lancet Psychiatry January 26, 2015

Nutritional medicine as mainstream in psychiatry

Jerome Sarris, Alan C Logan, Tasnime N Akbaraly, G Paul Amminger, Vicent Balanzá-Martínez, Marlene P Freeman, Joseph Hibbeln, Yutaka Matsuoka, David Mischoulon, Tetsuya Mizoue, Akiko Nanri, Daisuke Nishi, Drew Ramsey, Julia J Rucklidge, Almudena Sanchez-Villegas, Andrew Scholey, Kuan-Pin Su, Felice N Jacka, on behalf of The International Society for Nutritional Psychiatry Research

Clinical Psychological Science 2015

Theoretical/Methodological/Review Article

The Emerging Field of Nutritional Mental Health: Inflammation, the Microbiome, Oxidative Stress, and Mitochondrial Function

Bonnie J. Kaplan¹, Julia J. Rucklidge², Amy Romijn², and Kevin McLeod³



Clinical Psychological Science
1–17
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DOI: 10.1177/2167702614555413
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Integrative Psychiatry



Mental Illness may be seen as a reflection of multiple errors in physiology.

**If we find the Causes,
we may find the Cures.**

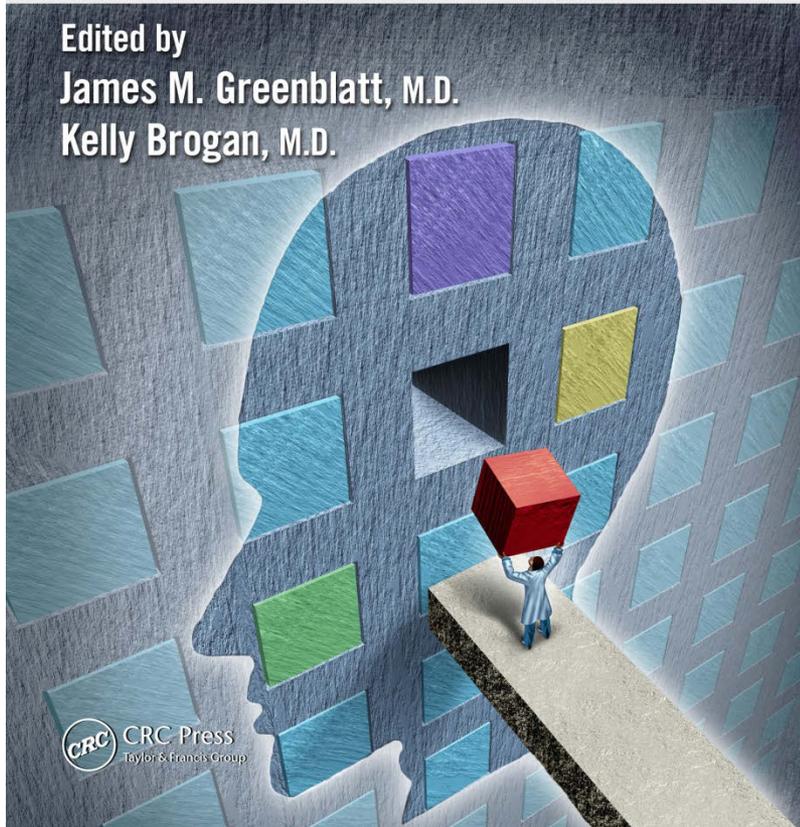
Prevention is Possible.



INTEGRATIVE THERAPIES FOR DEPRESSION

Redefining Models for Assessment,
Treatment, and Prevention

Edited by
James M. Greenblatt, M.D.
Kelly Brogan, M.D.



 CRC Press
Taylor & Francis Group

The *Breakthrough* DEPRESSION Solution

A *Personalized* 9-Step
Method for Beating the *Physical*
Causes of Your Depression



James Greenblatt, MD

Thank you!



James Greenblatt, M.D.
Chief Medical Officer

<http://www.waldenbehavioralcare.com/>

<http://jamesgreenblattmd.com/>

<http://www.lowdoselithium.org/>