



Thursday, September 11, 14

Nutrition and Psychiatry Research-Based Prevention and Treatment Approaches

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The Typical American Diet

Three food groups -
sweets and desserts, soft
drinks and alcoholic
beverages - comprise
almost 25 percent of all
calories consumed by
Americans.

Salty snacks and
fruit-flavored
drinks make up
another five
percent

bringing the total
energy contributed
by nutrient-poor
foods to at least 30
percent of the total
calorie intake

37% of Energy is From Fat



Too many calories, too
little exercise=
Obesity







"EVOLUTION"

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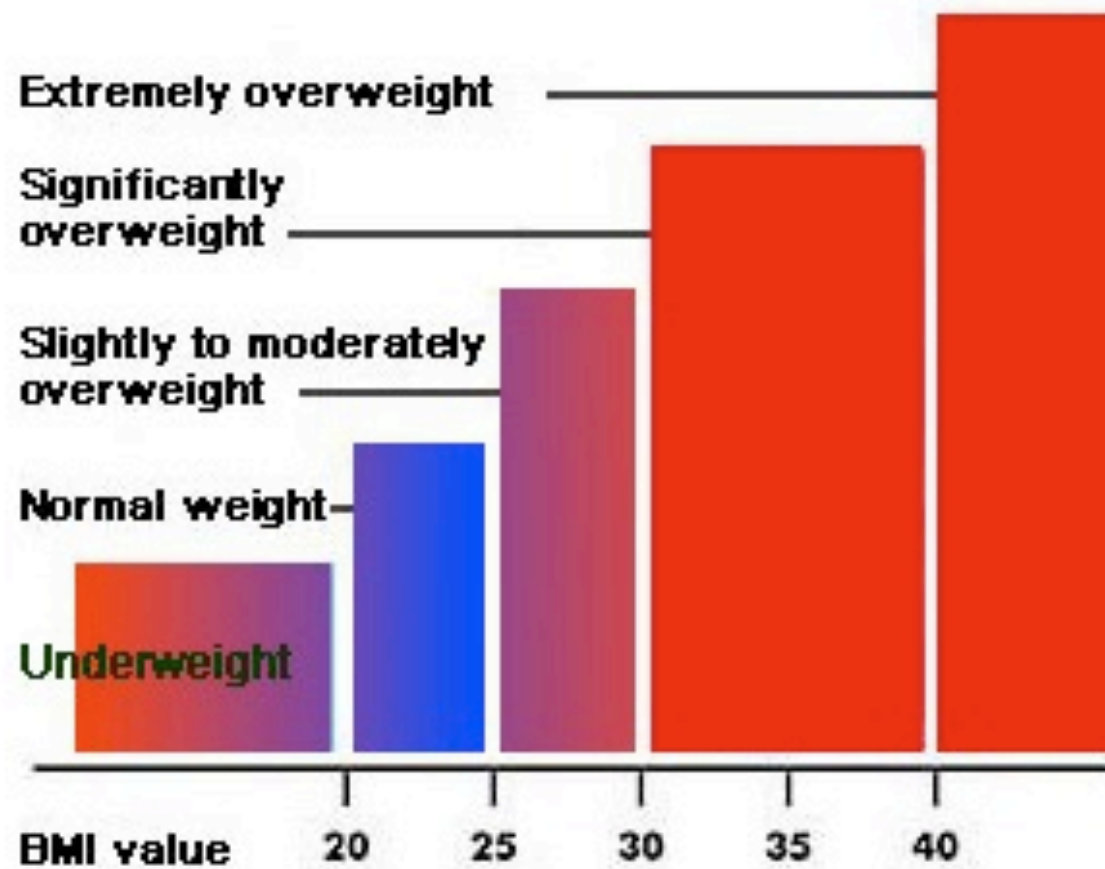




Obesity and Psychiatry

Obesity

A BMI (Body Mass Index)
over the 95th percentile for
age and sex.



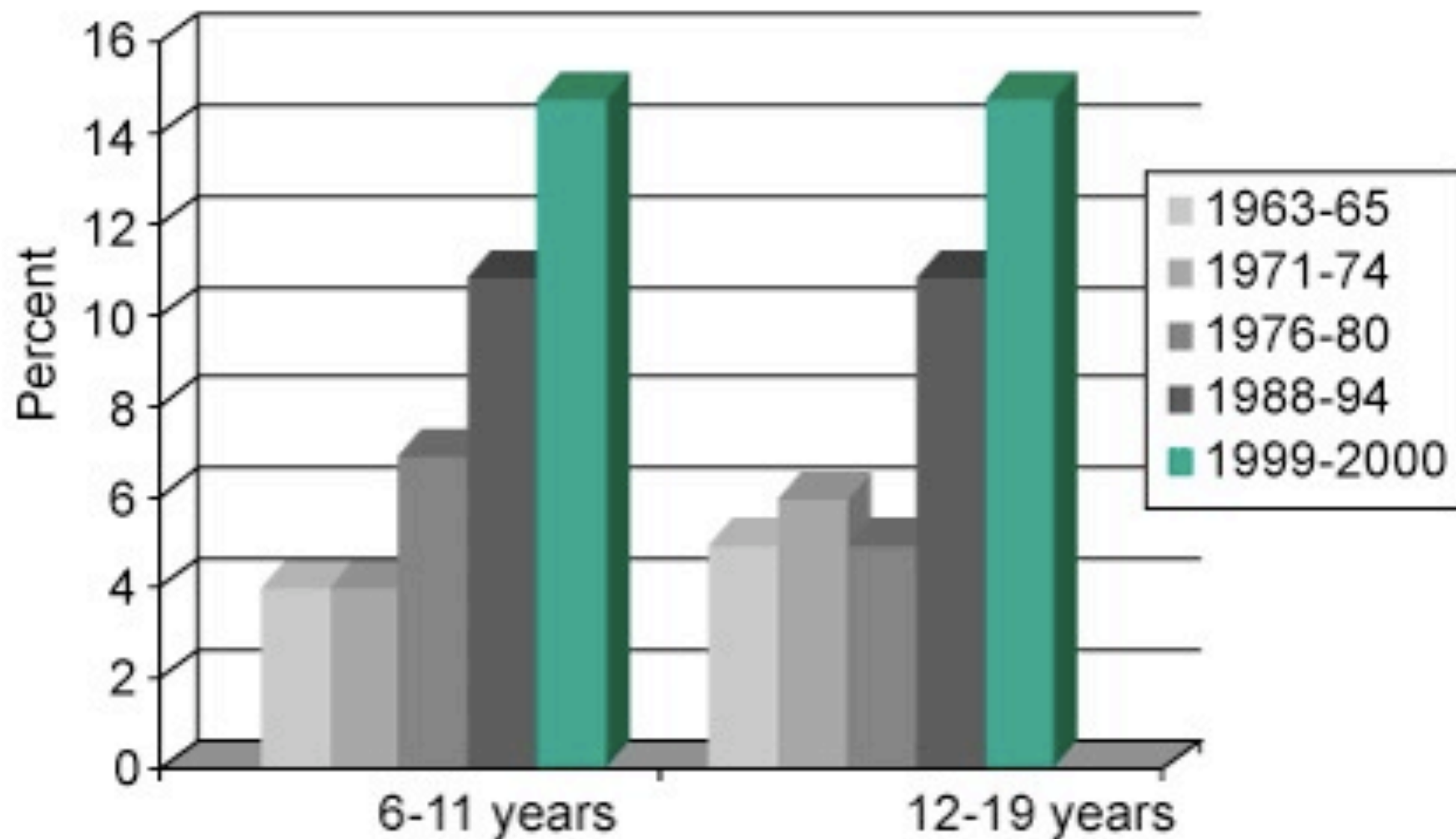
More than 15% of youth aged
6-19 are obese

More than 10% of children age
2-5 are obese

More than 23% of non-Hispanic
black and Mexican American
adolescents are obese

The prevalence of obesity has doubled to tripled in the last twenty years in the child and adolescent population

Prevalence of Overweight Among Children and Adolescents



As many as 94%
suffer from a sleep
abnormality, most
often sleep apnea.

**Sleep apnea can lead to
daytime sleepiness,
altered mood and
cognitive difficulties.**

Adjustment Disorder from Prejudice, Taunting, Discrimination

The cultural bias
against obesity has
been described as “the
last socially acceptable
form of prejudice”

Depression precedes
obesity in adolescents
and obesity precedes
depression in older
adults.

Psychopathology is most common in the chronic obese group first, suggesting that obesity increases the risk of developing a mental health disorder.

Obese pediatric patients
have higher rates of anxiety,
depression and eating
disorders than the general
population.

58% had at least one diagnosis.
32% had anxiety disorders,
12% had mood disorders, and
16% had disruptive behavior
disorders

Chronic obesity is associated
with psychiatric disorder:
oppositional defiant disorder in
boys and girls and depressive
disorders in boys.

Major depression among adolescents predicted a greater body mass index (BMI = kg/m²) in adult life than for persons who had not been depressed.

Obesity Caused By Psychiatric Medication

Antidepressants- especially
tricyclics and MAO inhibitors.

Of the SSRIs, paroxetine
(Paxil) has been implicated in
weight gain.

Mood Stabilizers-
Lithium, Depakote,
gabapentin,
carbamazepine

Antipsychotics,
especially clozapine,
olanzapine, risperidone,
ziprazadone

The prevalence of
overweight among
hospitalized children and
adolescents with
exposure to atypical
antipsychotics is triple
that of national norms

Dyslipidemia is
also common

The psychiatric effects of obesity can be prevented by preventing obesity in the first place

Obesity that results from
psychiatric disorders (e.g.,
overeating in depression)
can be prevented by
treating the underlying
disorder

Things that Make You Worse

Toxins in the Environment and Their Effect on Psychopathology

Body Burden - The Pollution in Newborns

A benchmark investigation of industrial chemicals, pollutants and pesticides in umbilical cord blood

Environmental Working Group,
July 14, 2005

Researchers at two major laboratories found an average of 200 industrial chemicals and pollutants in umbilical cord blood from 10 babies born in August and September of 2004 in U.S. hospitals

Tests revealed a total
of 287 chemicals in the
group

The umbilical cord blood of these 10 children, collected by Red Cross after the cord was cut, harbored pesticides, consumer product ingredients, and wastes from burning coal, gasoline, and garbage

Of the 287 chemicals we detected in umbilical cord blood, we know that 180 cause cancer in humans or animals, 217 are toxic to the brain and nervous system, and 208 cause birth defects or abnormal development in animal tests

Mercury (Hg) - tested for 1, found 1

Polyaromatic hydrocarbons (PAHs) - tested for 18, found 9

Polybrominated dibenzodioxins and furans (PBDD/F) - tested for 12, found 7

Perfluorinated chemicals (PFCs) - tested for 12, found 9

Polychlorinated dibenzodioxins and furans (PBDD/F) - tested for 17, found 11

Organochlorine pesticides (OCs) - tested for 28, found 21

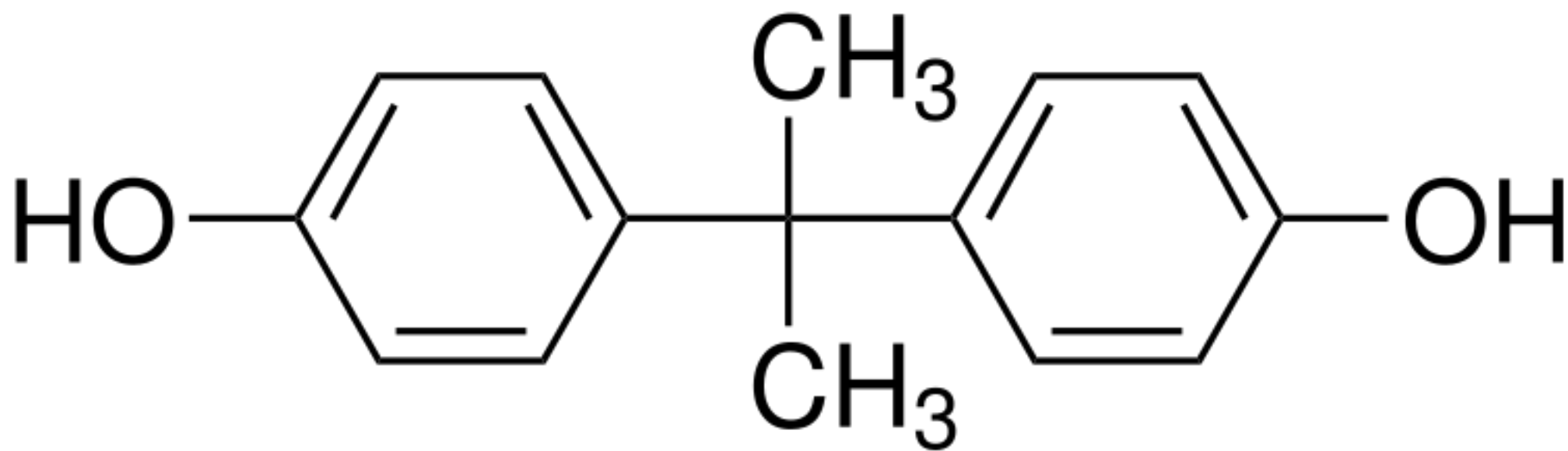
Polybrominated diphenyl ethers (PBDEs) - tested for 46, found 32

Polychlorinated Naphthalenes (PCNs) - tested for 70, found 50

Polychlorinated biphenyls (PCBs) - tested for 209, found 147

Of more than 80,000 registered chemicals and more than 900 pesticides, only 12 have been tested for toxicity to the developing brain, using EPA's only validated test for such effects.

**Bisphenol A has been used
in plastic baby bottles. It
has been linked to damage
in developing brain tissue**





http://
www.newshttp://
www.news--
medical.net/?
id=14790medical.net
/?id=14790

Pesticides

National Research Council.
Pesticides in the Diets of
Infants and Children.
Washington: National
Academy Press, 1993.

A major finding of the NAS report "Pesticides in the Diets of Infants and Children" is that children have proportionately greater dietary exposures to pesticides than adults

In addition to being proportionately more heavily exposed to pesticides than adults, infants and children are biologically more vulnerable to them

Children's metabolic pathways, especially in the first months after birth, are immature compared to those of adults.

Fetuses, infants, and children are less able to detoxify chemicals such as organophosphate pesticides and thus are more vulnerable to them

Infants and children are
growing and
developing, and their
delicate developmental
processes are easily
disrupted

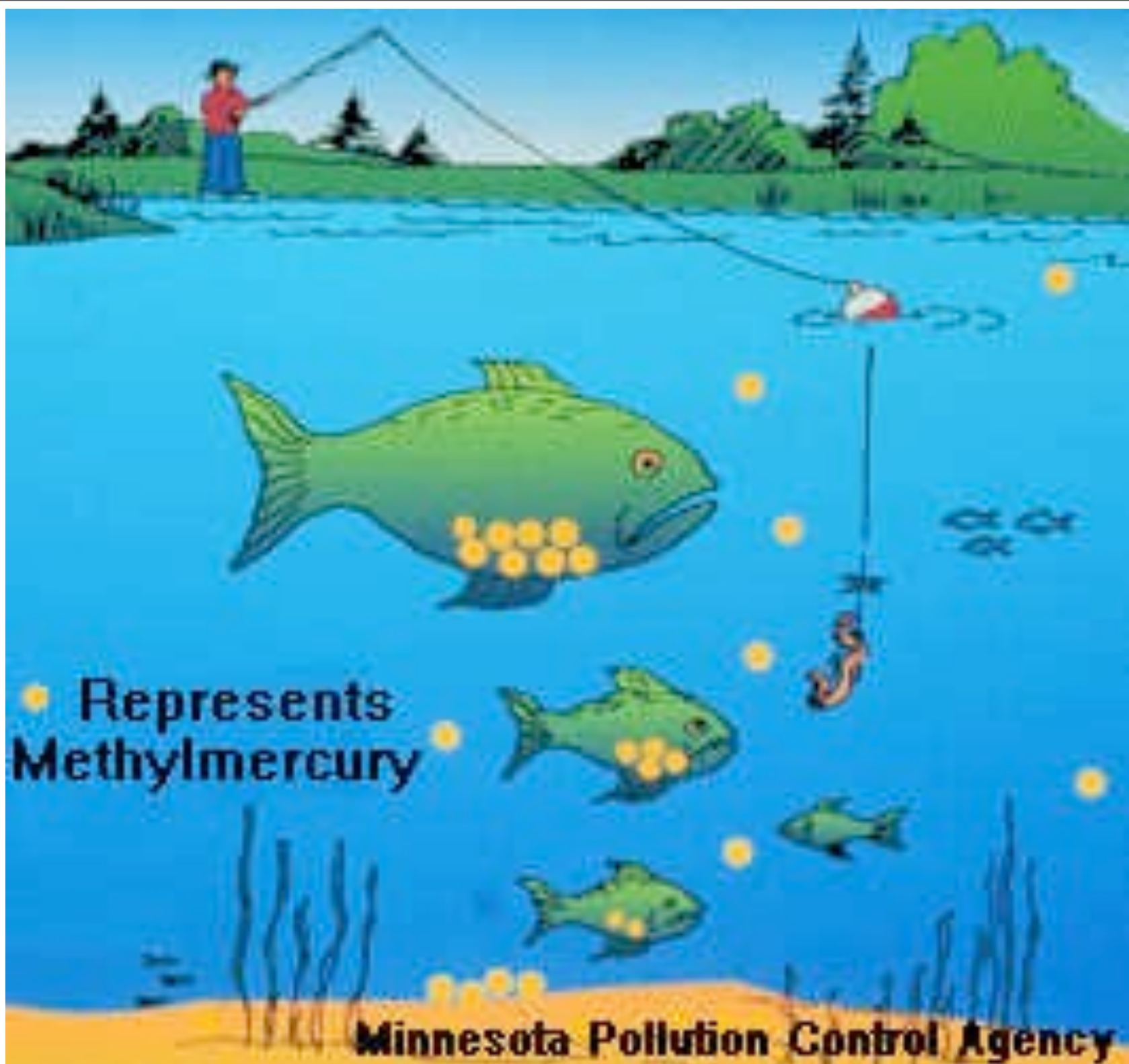
The concordance of young children's disproportionately heavy exposure to pesticides, coupled with their developmental vulnerabilities, places them at seriously increased risk for neurologic, endocrine, and other developmental disabilities

AUTISM	10X	increase early 80's-1996
MALE BIRTH DEFECTS	2X	increase hypospadias, 1970-1993
CHILDHOOD ASTHMA	2X	increase 1982-1993
ACUTE LYMPHOCYTIC LEUKEMIA	62%	increase in children, 1973-1999
CHILDHOOD BRAIN CANCER	40%	increase 1973-1994
PRETERM BIRTH	23%	increase mid 80's-2002
INFERTILITY	5-10%	of couples
BIRTH DEFECTS	3-5%	of all babies
SPERM COUNTS	1%	decrease yearly 1934-1996

Mercury



In the United States,
exposure to organic
mercury is primarily
through ingestion of
contaminated fish



Mercury's harmful effects that may be passed from the mother to the fetus include brain damage, mental retardation, incoordination, blindness, seizures, and inability to speak. Children poisoned by mercury may develop problems of their nervous and digestive systems, and kidney damage

The effects on infants born to mothers with mild exposure to methylmercury are mainly neurological, including delayed developmental milestones (first step, first word, etc.), altered muscle tone and tendon reflexes, and depressed intelligence

Those who consume
large amounts of
seafood from
contaminated waters
have an increased
risk of toxicity

Surveys indicate
that public
awareness of the
risks of mercury-
contaminated fish is
limited

Low level
methylmercury
exposure affects
neuropsychological
function in adults

Environ
Health. Jun
4 2003;2(1):8

A study of 129 residents of fishing villages in Brazil reported that higher hair mercury levels were associated in a dose-dependent manner

with reduced
response
inhibition and
manual dexterity

Emissions from burning fossil fuels containing trace amounts of mercury;

Emissions from the disposal, use, or manufacture of mercury-containing products or industrial wastes; and

Incidental emissions from processing mineral resources containing mercury (e.g., lead, taconite or copper ores, and limestone).

For:

- Pregnant women**
- Women who might
become pregnant**
- Children under age 15:**

Fish caught in Minnesota:

Sunfish, crappie, yellow perch, bullheads

1 meal a week (see exceptions)*

Walleyes shorter than 20 inches, northern pike shorter than 30 inches, smallmouth bass, largemouth bass, channel catfish, flathead catfish, white sucker, drum, burbot, sauger, carp, lake trout, white bass, rock bass, whitefish, other species

1 meal a month (see exceptions)*

Walleyes larger than 20 inches
northern pike longer than 30 inches, muskellunge

Do not eat

Commercial Fish:

Salmon, cod, pollock, canned "light" tuna (6 oz.),
catfish, tilapia, herring, sardines, shrimp, crab,
scallops, oysters

2 meals a week

Canned "white" tuna (6 oz.), tuna steak, halibut,
lobster

2 meals a month

Shark, swordfish, tile fish, king mackerel **Do not
eat**

*Fish from some Minnesota Lakes and rivers have been found to have higher levels of mercury or PCBs. If you eat certain fish from these waters, you should eat it less often than these guidelines

Food Coloring



Food additives and hyperactive behaviour in 3-year-old and 8/9-year-old children in the community: a randomised, double-blinded, placebo-controlled trial

Lancet.
2007:370(9598)
:1560–1567

In a double-blind, placebo-controlled study, artificial food colors and a benzoate preservative appear to increase hyperactivity in children, including those without attention-deficit/hyperactivity disorder

Nearly 300 children
were involved in the
study.

- 153 3-year-olds
- 144 children ages
8 and 9

Three groups of food dyes
were part of the study.

Group One

- Sunset yellow
- Carmoisine
- Tartrazine
- Ponceau
- Sodium benzoate (a
preservative)

Group Two

- Sodium benzoate
- Sunset yellow
- Carmoisine
- Quinoline yellow
- Allura red.

Group Three

- Placebo

Older children showed a "significantly adverse effect" from Group One and Group Two. Younger children seemed significantly affected by Group One, only

Many of the juices children are given to drink as a healthy snack are filled with food colorings. Unless a fruit juice is 100% natural, it is likely to be filled with sugar and dyes

Chips and cereals are filled with dyes. Look at all the colorful boxes in the cereal section next time you go shopping. The use of dyes is quite evident

Dietary replacement in preschool-aged hyperactive boys

Pediatrics, 83:7-17, 1989

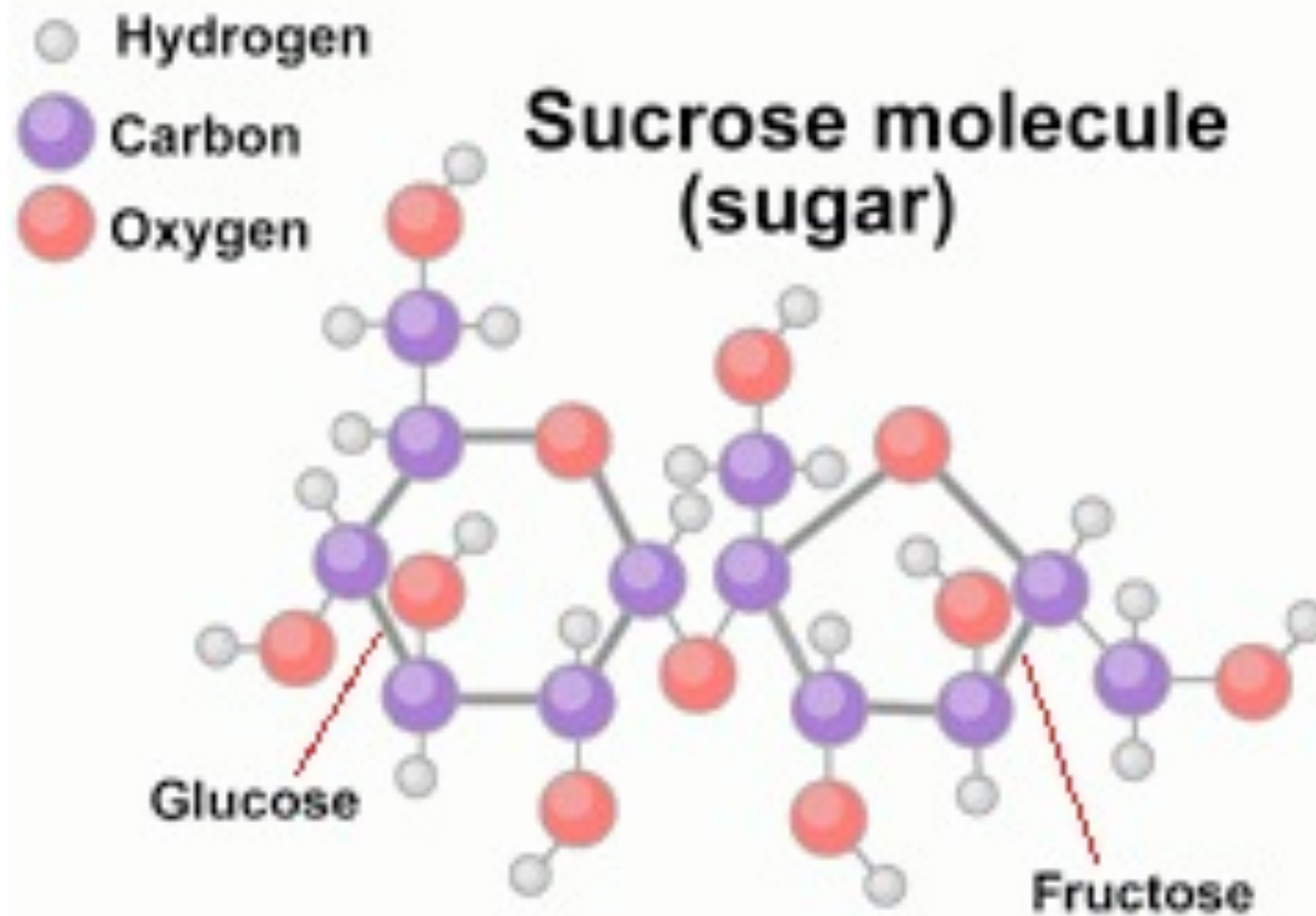
A combination of the antigen- and additive-free (AAF) diet is sometimes advised in suspected additive-reactive and allergy-prone children

At the Alberta Children's
Hospital and Learning
Center, Calgary, Canada, a
4-week trial of an AAF
elimination diet in 24
hyperactive pre-school
boys, aged 3.5 to 6 years

was associated with significant improvements in behavior in 42% and lesser improvements in 12%, when compared to baseline and placebo-control periods of observation

The diet eliminated artificial colors and flavors, chocolate, monosodium glutamate, preservatives, and caffeine; it was low in sucrose. It was dairy-free if an allergy to milk was suspected

Sugar



Effects of sugar (sucrose) on children's behavior

*Journal of
Consulting Clinical
Psychology,
56:583-9, 1988*

On measures of cognitive function, girls made significantly less errors on a learning task performed 30 minutes following the low-sugar content breakfast when compared to the high-sugar meal

On an Abbreviated Conners
Teacher Rating Scale
completed before lunch,
both boys and girls were
more active in behavior
after the high-sugar meal
compared to a low-sugar
intake

Effects of sugar on aggressive and inattentive behavior in children with attention deficit disorder with hyperactivity and normal children

Pediatrics,
88:960-6, 1991

At Schneider Children's
Hospital, inattention,
measured by a continuous
performance task, was
increased following a
sucrose drink given with a
breakfast high in
carbohydrate

MEDICAL TRIBUNE 1985; Jan.9.

Sugar and a high-carbohydrate breakfast, but not sugar and a high-protein breakfast, increased deviant behavior in normal children

Things You Need Enough Of

Deficiency States

Vitamins

An organic compound
required as a nutrient in
tiny amounts by an
organism

A compound is called a vitamin when it cannot be synthesized in sufficient quantities by an organism, and must be obtained from the diet

Nutritional Side Effects of Excessive Dieting and Anorexia Nervosa





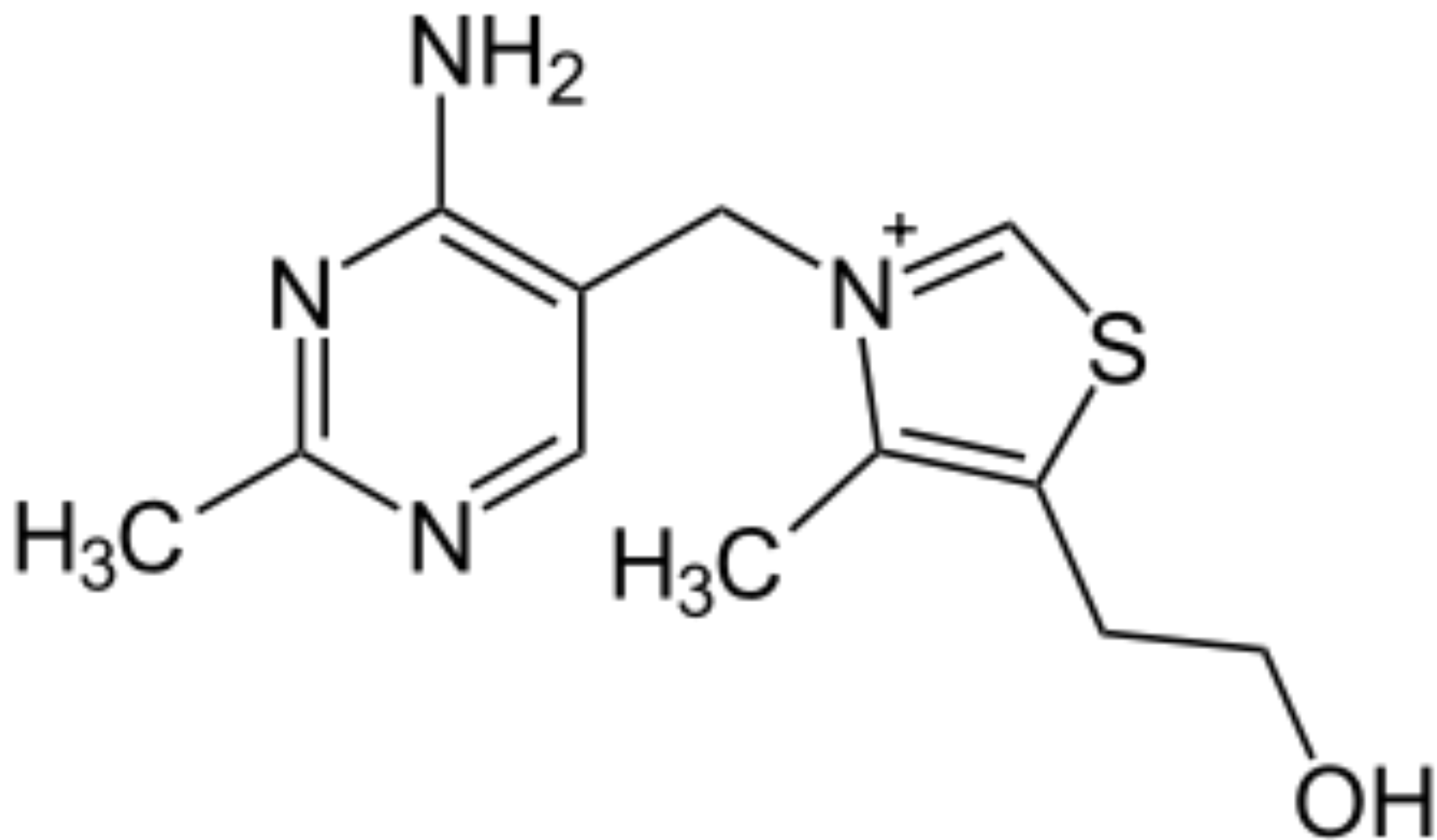




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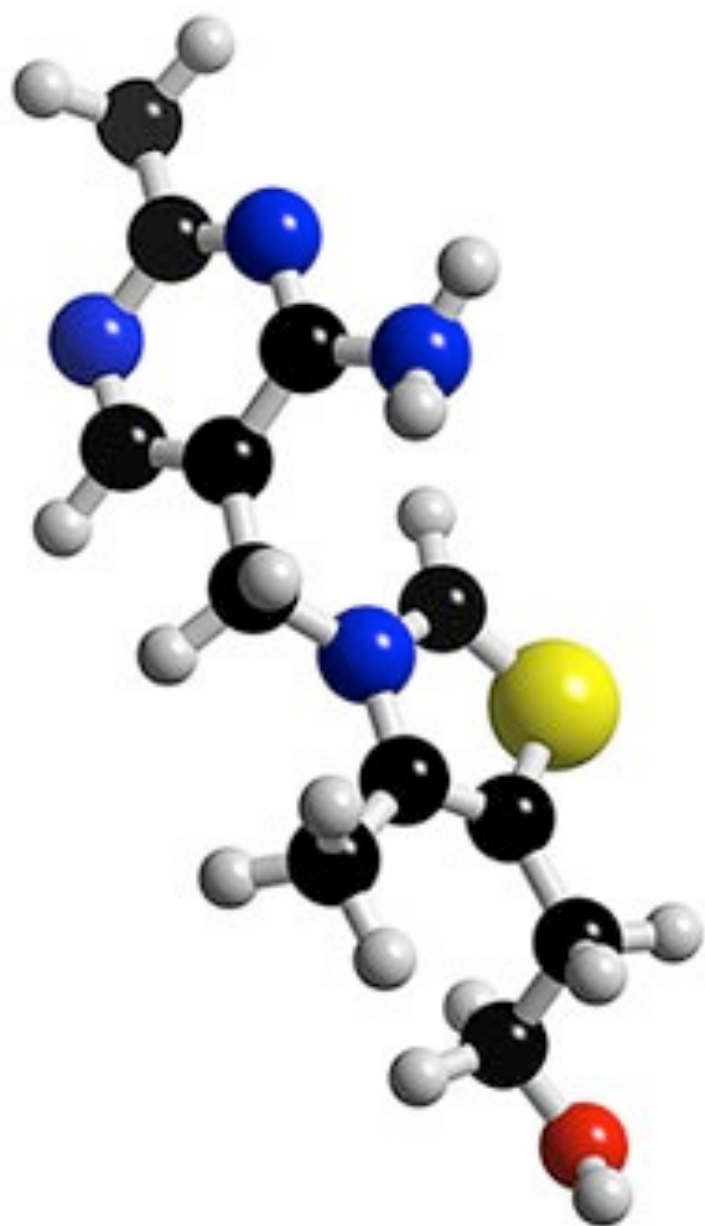


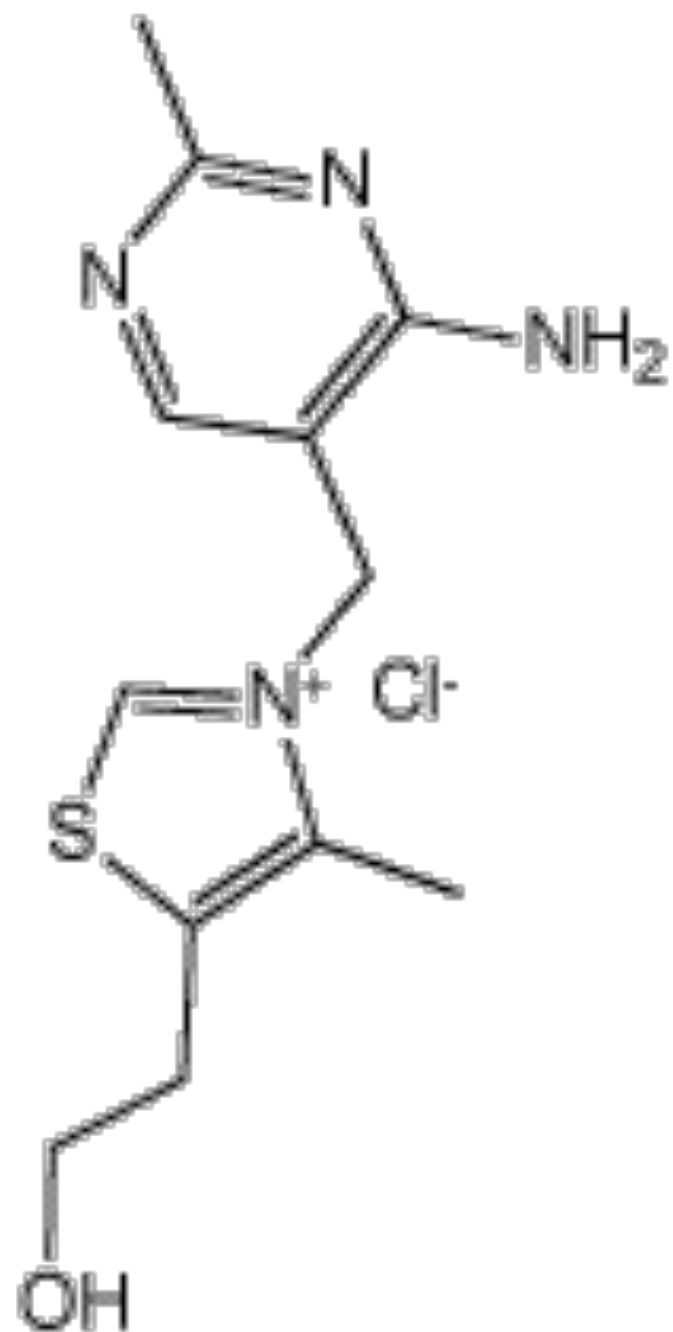
Vitamin B1 - Thiamine



Prevalence of thiamin deficiency in anorexia nervosa

International
Journal of Eating
Disorders. Vol 28(4)
Dec 2000, 451-454





Vitamin B1, (Thiamine), releases energy from carbohydrate, alcohol and fat. It is an anti-neuritic factor, the absence of which from the diet of animal leads to the disease beri-beri, the most fundamental symptoms of which is general nervous atrophy.



**Symptoms: Weight
loss, emotional
disturbance, impaired
sensory perception,
weakness and pain in
the limbs**

Good sources of sources
Vitamin B1 are yeast
eggs and germ of
cereals. It is not present
in polished rice and
other highly purified
cereal products

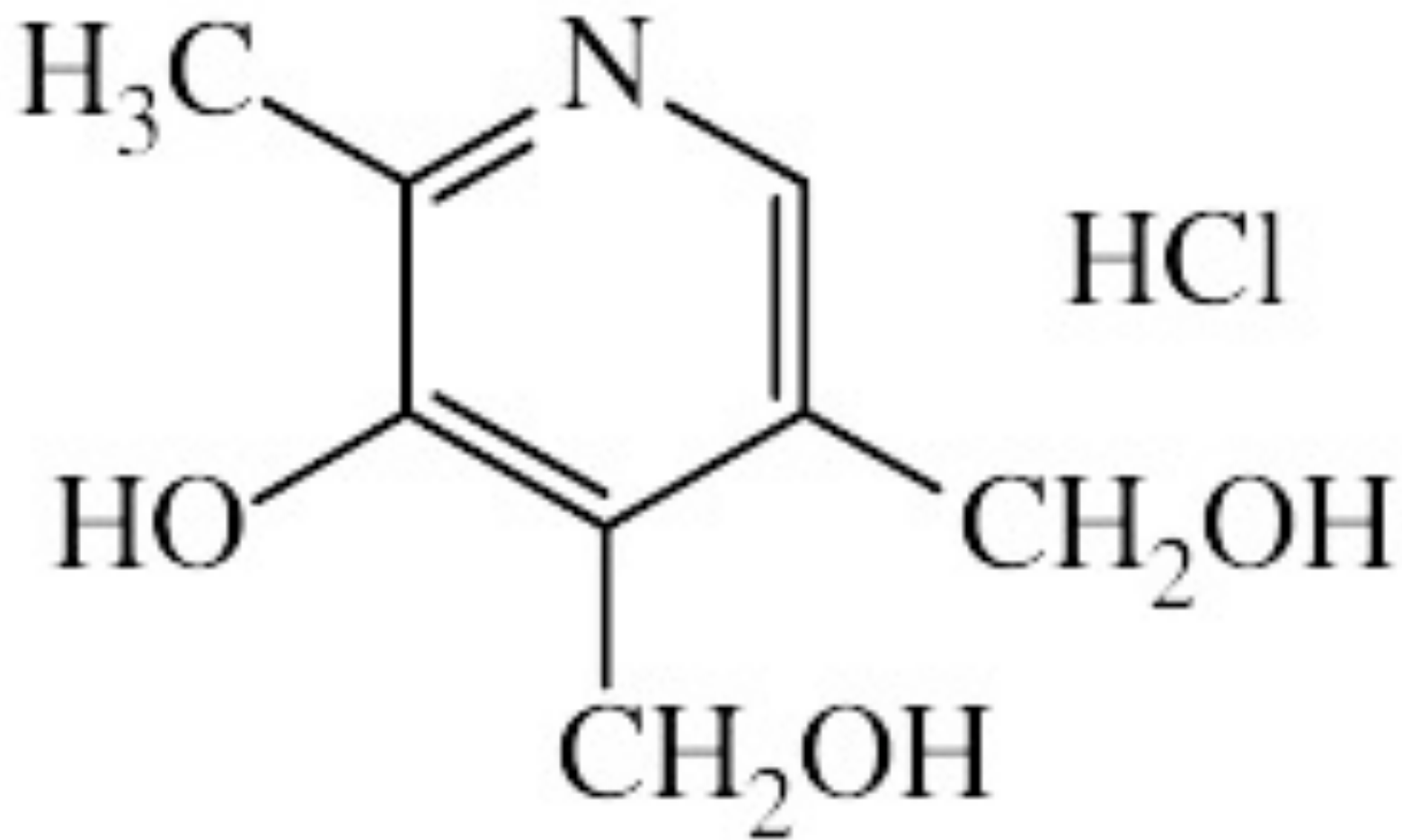
Investigated the
prevalence of thiamin
deficiency in 37 16-60
yr old patients with
anorexia nervosa

14 patients (38%) had results in the deficient range; 7 (19%) met the most stringent published criterion for deficiency

Deficiency was not
related to duration of
eating restraint,
frequency of vomiting,
or alcohol consumption

It was concluded that thiamin deficiency may account for some of the neuropsychiatric symptoms of AN and routine screening or supplementation may be indicated

Vitamin B6



PYRIDOXINE

Dietary sources: Pork, organ meats, meat, poultry, fish, corn, legumes, seeds, grains, wheat, potatoes, bananas, green leafy vegetables, green beans, brewer's yeast, avocados, wheat germ, wheat bran, soybeans, walnuts, blackstrap molasses, cantaloupe, cabbage, milk, egg yolks, green peppers, carrots, peanuts and pecans

Vitamin B₆ is needed for more than 100 enzymes involved in protein metabolism. It is also essential for red blood cell metabolism. The nervous and immune systems need vitamin B₆ to function efficiently, and it is also needed for the conversion of tryptophan (an amino acid) to niacin (a vitamin)

Reduced by Theophylline
(used to treat asthma),
also may be reduced in
alcoholics and individuals
who have poor diets

Vitamin B₆ is needed
for the synthesis of
neurotransmitters
such as serotonin
and dopamine

Lower levels of serotonin have been found in individuals suffering from depression and migraine headaches. So far, however, vitamin B₆ supplements have not proved effective for relieving these symptoms.

Vitamin B6

nutritional status of a psychiatric outpatient population

Journal of
Orthomolecular
Psychiatry. Vol
11(2) 1982, 81-86

Assessed the vitamin B6
status of 232 7-83 yr old
psychiatric outpatients
and a control group
using an assay method

Results show
that the mean
deficiency was
17.7%

B6 deficiency was
more prominent in
young adults and in
the aged

Cooking and food
processing
destroys vitamin
B6

Analysis of our food
supply indicates that
many of us are
consuming less than
the RDA amount

This is due to practices of milling that remove up to 90% of vitamin B6. As of yet, there are no laws requiring the enrichment of milled grains with pyridoxine

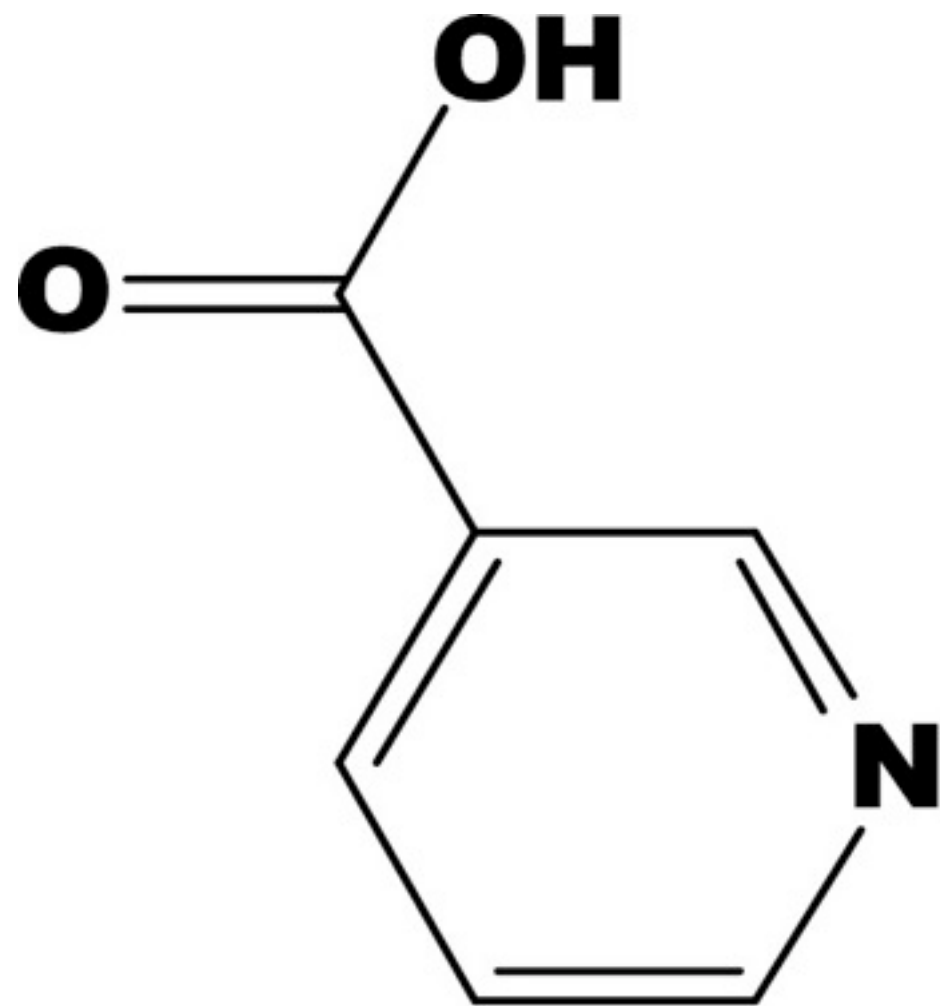
Probably the biggest cause of deficiency (or an increased requirement) is the addition of antagonists in the environment over the last 50 years

Antagonists include:

Hydrazine compounds:
tartrazine (yellow dye #5),
peroxides and free radicals,
birth control pills, PCBs,
environmental toxins,
alcohol, and caramel
coloring

The symptoms of
B6 deficiency may
include depression
and irritability

Vitamin B3 (Niacin)



Niacin

Food sources:
grains, vegetables, meat,
poultry, fish;
also synthesized by
tryptophan

Niacin Deficiency- Pellagra



**Psychiatric symptoms
include aggression,
insomnia, mental confusion
and dementia**

Vitamin D

Persistent, non-specific
musculoskeletal pain:
high prevalence of
severe hypovitaminosis
D. Mayo Clinic
Proceedings.
2003;78:1463-1470

150 patients presented
consecutively between
February
2000 and June 2002 with
persistent, nonspecific
muscu-
loskeletal pain to the
Community University Health
Care
Center

93% (140/ 150)
had deficient
levels of
vitamin D

**Chronic muscle pain
affects one's mental health**



Low Iron Levels are More Common in Patients who have Autism Spectrum Disorders

Malnutrition

Malnutrition at age 3
years and
externalizing behavior
problems at ages 8,
11, and 17 years

Malnutrition predisposes
to neurocognitive deficits,
which in turn predispose
to persistent externalizing
behavior problems
throughout childhood and
adolescence

Reducing early
malnutrition may help
reduce later
antisocial and
aggressive behavior

Fatty Acids

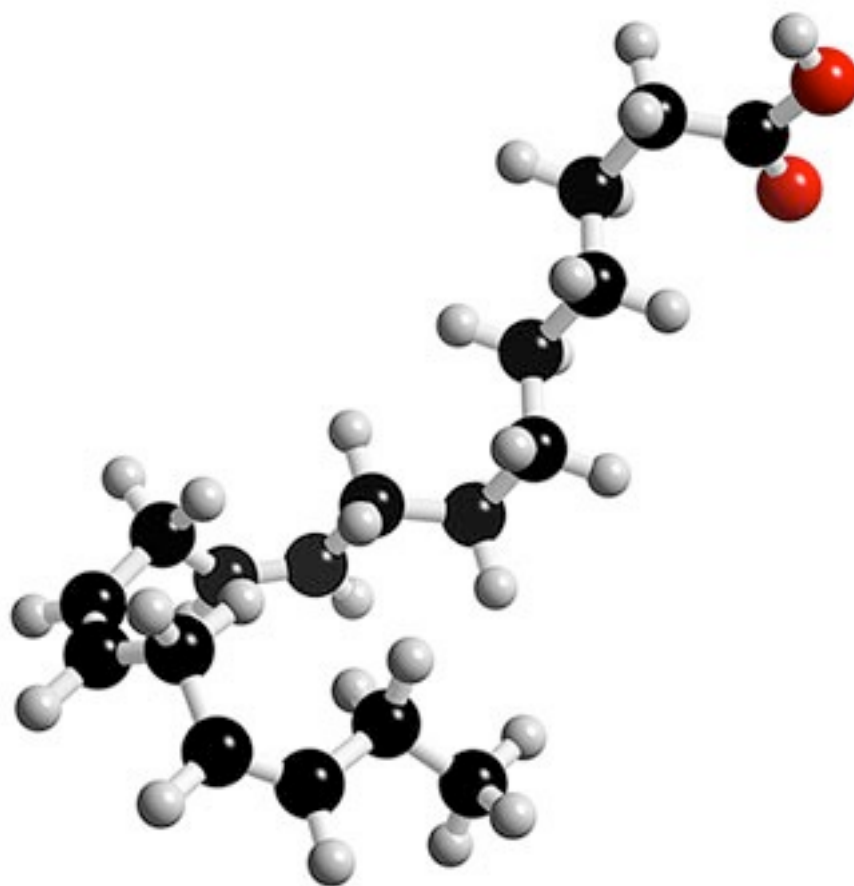
Essential fatty acids, or EFAs, are fatty acids that cannot be constructed within an organism from other components by any known chemical pathways

**and therefore must be
obtained from the diet**

There are two families of
EFAs- omega 3 and omega 6

Some of the food sources of omega 3 and omega 6 fatty acids are fish and shellfish, flaxseed, hemp oil, soya oil, canola oil, chia seeds, pumpkin seeds, sunflower seeds, leafy vegetables and walnuts





Mercury (ppm) (grams/3-oz.)		Omega-3
Canned tuna (light)	0.12	0.17–0.24
Shrimp	ND*	0.29
Pollock	0.06	0.45
Salmon	0.01	1.1–1.9
Cod	0.11	0.15–0.24
Catfish	0.05	0.22–0.3
Clams	ND*	0.25
Flounder/sole	0.05	0.48
Crabs	0.06	0.27–0.40
Scallops	0.05	0.18–0.34

Lobster	0.31	0.07–0.46
Grouper	0.55	0.23
Halibut	0.26	0.60–1.12
Oysters	ND*	0.37–1.14
Mahi mahi	0.19	0.13
Herring	0.04	1.9–2.0
Shark	0.99	0.83
Swordfish	0.97	0.97
Tilefish	1.45	0.90
Mackerel	0.73	0.36
Tuna	0.38	0.21–1.1
Red snapper	0.60	0.29
Orange roughy	0.54	0.028

Omega-3 EFAs, ADHD and Behavioral Disorders

Effect of supplementation with polyunsaturated fatty acids and micronutrients on learning and behavior problems associated with child ADHD

Journal of
Developmental &
Behavioral
Pediatrics. Vol 28(2)
Apr 2007, 82-91

132 Australian children
aged 7 to 12 years with
scores ≥ 2 SD above
the population average
on the Conners ADHD
Index

PUFAs alone, PUFAs +
micronutrients, or
placebo

Significant medium to strong positive treatment effects were found on parent ratings of core ADHD symptoms, inattention, hyperactivity/impulsivity, on the Conners Parent Rating Scale (CPRS) in both PUFA treatment groups compared with the placebo group

No additional
effects were found
with the
micronutrients

Highly unsaturated fatty acids (HUFA)

A randomized double-blind,
placebo-controlled study of
the effects of
supplementation with highly
unsaturated fatty acids on
ADHD-related symptoms in
children with specific
learning disabilities

Progress in Neuro-
Psychopharmacology
& Biological
Psychiatry. Vol 26(2)
Feb 2002, 233-239

The effects of HUFA
supplementation on ADHD-
related symptoms in
children with specific
learning difficulties (mainly
dyslexia) who also showed
ADHD features

41 children (aged 8-12 yrs)
with both specific learning
difficulties and above-
average ADHD ratings were
randomly allocated to HUFA
supplementation or placebo
for 12 wks

After 12 wks mean scores for cognitive problems and general behavior problems were significantly lower for the group treated with HUFA than for the placebo group

There were significant improvements from baseline on 7 out of 14 scales for active treatment, compared with none for placebo

Omega-3 fatty acids in boys with behavior, learning, and health problems

Physiology &
Behavior. Vol
59(4-5) Apr-May
1996, 915-920

Compared behavior, learning,
and health problems in 32 boys
(aged 6-12 yrs) with lower
plasma phospholipid total
omega-3 or total omega-6 fatty
acid levels with those in 64
boys with higher levels of these
fatty acids

A greater frequency of symptoms indicative of essential fatty acid deficiency was reported by the parents of Ss with lower plasma omega-3 or omega-6 fatty acid concentrations than those with higher levels

A greater number of behavior problems, assessed by the Conners' Rating Scale, temper tantrums, and sleep problems was reported in Ss with lower total omega-3 fatty acid concentrations

Additionally, more learning
and health problems were
found in Ss with lower total
omega-3 fatty acid
concentrations

Omega-3 fatty acids and antioxidants in neurological and psychiatric diseases: an overview

Prog
Neuropsychopharmacol
Biol Psychiatry. 2007
May 9;31(4):972-3

Omega-3 fatty acids are known to play a role in nervous system activity, cognitive development, memory-related learning, neuroplasticity of nerve membranes, synaptogenesis and synaptic transmission

The brain is considered abnormally sensitive to oxidative damage, and aging is considered one of the most significant risk factors for degenerative neurological disorders

A number of critical trials have confirmed the benefits of dietary supplementation with omega-3 fatty acids not only in several psychiatric conditions, but also in inflammatory and autoimmune and neurodegenerative diseases

Fish oil and mental health: the role of n-3 long-chain polyunsaturated fatty acids in cognitive development and neurological disorders

International Clinical Psychopharmacology. 21(6):319-36, 2006 Nov.

The role of marine n-3 long-chain polyunsaturated fatty acids in brain functions, including the development of the central nervous system and neurological disorders

Although an optimal balance in n-3/
n-6 long-chain polyunsaturated fatty
acid ratio is important for proper
neurodevelopment and cognitive
functions, results from randomized
controlled trials are controversial and
do not confirm any useful effect of
supplementation on development of
preterm and term infants

The relationship between fatty acid status and mental disorders is confirmed by reduced levels of n-3 long-chain polyunsaturated fatty acids in erythrocyte membranes of patients with central nervous system disorders

Nevertheless, there
are very little data
supporting the use of
fish oil in those
patients

The only way to verify whether n-3 long-chain polyunsaturated fatty acids are a potential therapeutic option in the management and prevention of mental disorders is to conduct a large definitive randomized controlled trials similar to those required for the licensing of any new pharmacological treatment

Long-chain polyunsaturated fatty acids in childhood developmental and psychiatric disorders

Lipids. 39(12):
1215-22, 2004
Dec.

Both omega-3 and
omega-6 long-chain
PUFA (LC-PUFA) are
crucial to brain
development and
function

Omega-3 LC-PUFA in
particular are often
lacking in modern
diets in developed
countries

Increasing evidence, reviewed here, indicates that LC-PUFA deficiencies or imbalances are associated with childhood developmental and psychiatric disorders including ADHD, dyslexia, dyspraxia, and autistic spectrum disorders

These conditions show a high clinical overlap and run in the same families, as well as showing associations with various adult psychiatric disorders in which FA abnormalities are already implicated, such as depression, other mood disorders, and schizophrenia

Preliminary evidence from controlled trials also suggests that dietary supplementation with LC-PUFA might help in the management of these kinds of childhood behavioral and learning difficulties

Treatment with omega-3 FA
appears most promising, but
the few small studies
published to date have
involved different
populations, study designs,
treatments, and outcome
measures

Large-scale studies
are now needed to
confirm the benefits
reported

Further research is also required to assess the durability of such treatment effects, to determine optimal treatment compositions and dosages, and to develop reliable ways of identifying those individuals most likely to benefit from this kind of treatment

Potential diagnostic
aids for abnormal fatty
acid metabolism in a
range of
neurodevelopmental
disorders

Prostaglandins Leukotrienes & Essential Fatty Acids. 63(1-2):65-8, 2000 Jul-Aug

Disorders of
neurodevelopment
include attention deficit
hyperactivity disorder,
dyspraxia, dyslexia and
autism

All of these disorders have been reported as associated with fatty acid abnormalities ranging from genetic abnormalities in the enzymes involved in phospholipid metabolism to symptoms reportedly improved following dietary supplementation with long chain fatty acids

If definitive disorders of lipid metabolism could be defined then the diagnosis and subsequent management of neurodevelopmental disorders might be transformed

In the identification of those disorders of development which involve lipid metabolism, there are now several tests, measures of lipid metabolism, which could be useful

Could oxidative
stress be a factor in
neurodevelopmental
disorders?

Prostaglandins Leukotrienes & Essential Fatty Acids. 63(1-2):61-3, 2000 Jul-Aug

Eicosanoids are signaling molecules made by oxegenation of twenty-carbon essential fatty acids, (EFAs).

They exert complex control over many bodily systems, mainly in inflammation or immunity, and as messengers in the central nervous system

The networks of controls
that depend on
eicosanoids are among the
most complex in the
human body.

Eicosanoids derive from
either omega-3 or
omega-6 essential fatty
acids

There is evidence of co-morbidity in the neurodevelopmental disorders and they display depletion of polyunsaturated fatty acids (PUFAs) in their plasma and red cell membranes

This suggests an abnormal fatty acid metabolism, which may affect cell signalling and synthesis of eicosanoids

This common feature in the neurodevelopmental disorders may be genetic in origin: however, oxidative stress may also contribute to decreased PUFAs found in these disorders

Omega 3 Fatty Acids and Mood Disorders

Depression

**Several controlled studies
in adults have
demonstrated usefulness
and effectiveness**

**Few studies have been
done in children**

e.g., Effectiveness of
complementary and self-
help treatments for
depression in children and
adolescents

Med J.Aust.

2006;185:368-372

Omega-3 treatment of childhood depression: a controlled, double-blind pilot study

Am J Psychiatry.

2006;16:1098-1100

Bipolar Mood Disorder

**Studies in adult patients
show some benefit; no
evidence in children**

Supplements

Dietary supplements and natural products as psychotherapeutic agents

Psychosomatic
Medicine. 61(5):
712-28, 1999
Sep-Oct.

Alternative therapies are widely used by consumers.

A number of herbs and dietary supplements have demonstrable effects on mood, memory, and insomnia

There is a significant amount of evidence supporting the use of *Hypericum perforatum* (St. John's wort) for depression and *Ginkgo biloba* for dementia

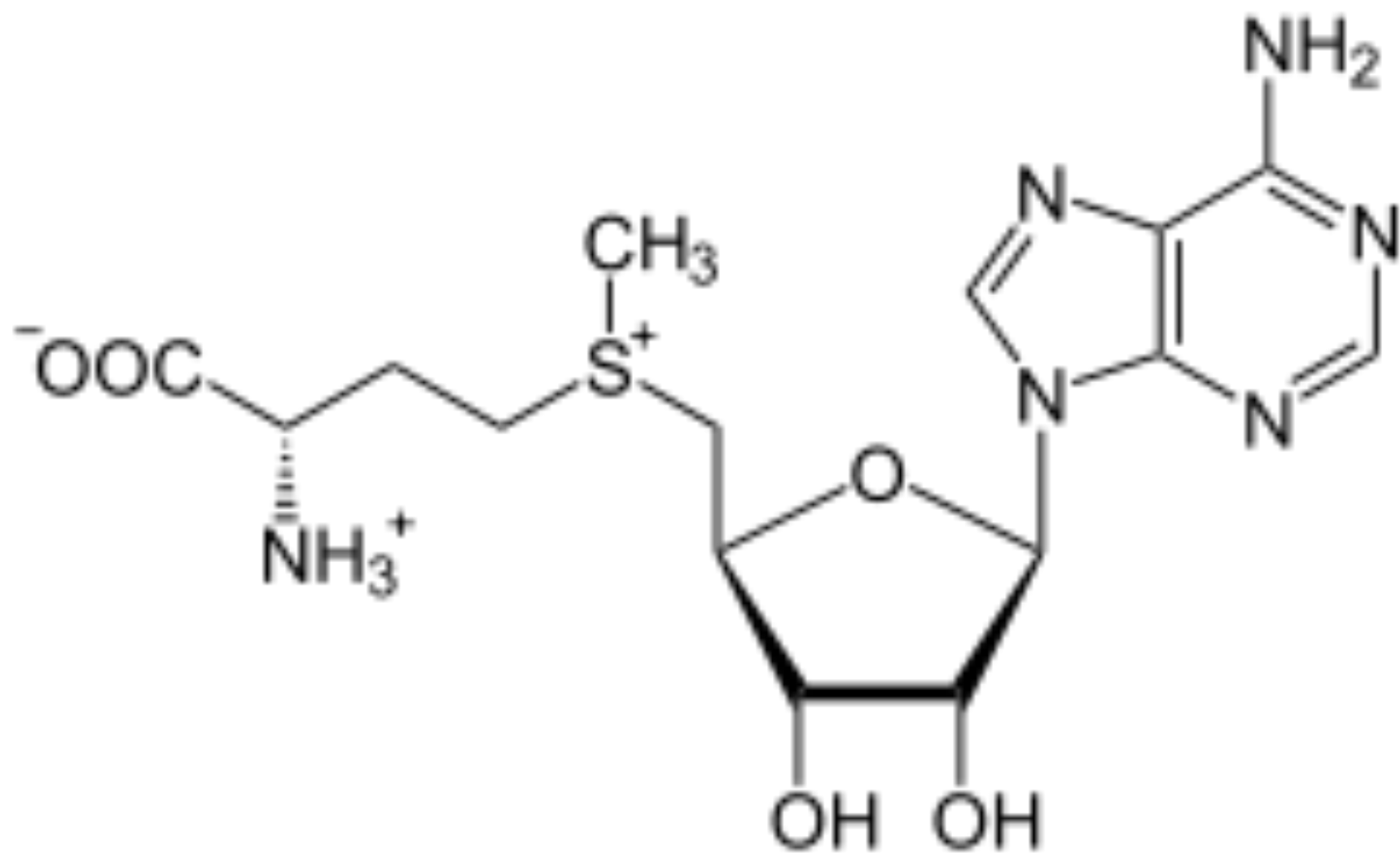
There is intriguing preliminary evidence for the use of folate, tryptophan, and phenylalanine as adjuncts to enhance the effectiveness of conventional antidepressants

S-
adenosylmethionine
(SAMe)
seems to have
antidepressant
effects

Omega-3
polyunsaturated fatty
acids, particularly
docosahexaenoic acid,
may have mood-
stabilizing effects

More research should
be conducted on these
and other natural
products for the
prevention and
treatment of various
psychiatric disorders

SAMe



**SAMe is made by
the body and is a
metabolite present
in all living cells**

SAMe has been found effective
for treating major depressive
disorder in 13 trials comparing
it to placebo, and 19 trials
comparing it to tricyclic
antidepressants with more than
1400 patients studied

The mechanism for
SAMe's
effectiveness in
Major Depression is
unclear

**S-Adenosyl methionine
(SAM) is a coenzyme
involved in methyl group
transfers**

More than 40 metabolic reactions involve the transfer of a methyl group from SAM to various substrates such as nucleic acids, proteins and lipids

Since SAMe functions as a precursor to methylation, aminopropylation and transulfuration pathways, its mechanism may be related to being the most important methyl donor in the brain and essential for polyamine synthesis

**SAMe is an intermediate in
the synthesis of
norepinephrine, dopamine
and serotonin**

S-Adenosyl-L-Methionine for Treatment of Depression, Osteoarthritis, and Liver Disease

Agency for Healthcare
Research and Quality
U.S. Department of Health
and Human Services
2101 East Jefferson Street
Rockville, MD 20852
<http://www.ahrq.gov>

Out of 39 unique studies considered, 28 studies were included in a meta-analysis of the efficacy of SAMe to decrease symptoms of depression

Compared to placebo, treatment with SAME was associated with an improvement of approximately 6 points in the score of the Hamilton Rating Scale for Depression measured at 3 weeks

This degree of improvement is statistically as well as clinically significant and is equivalent to a partial response to treatment

Compared to treatment with conventional antidepressant pharmacology, treatment with SAME was not associated with a statistically significant difference in outcomes

SAMe use in children and adolescents

European Child &
Adolescent
Psychiatry. Vol
13(5) Oct 2004,
332-334

Discusses the successful
use of S-
adenosylmethionine
(SAMe) for Major
Depression in three youths
(a 16-yr-old male and 8-
and 11-yr-old females)

Bipolar Disorder and Schizophrenia Findings

S-adenosyl methionine and DNA methyltransferase-1 mRNA overexpression in psychosis

Neuroreport.
18(1):57-60,
2007 Jan 8

Prefrontal cortex levels of the methyl donor S-adenosyl methionine were increased by about two-fold in schizophrenia and bipolar disorder patients, but not in unipolar depressed patients compared with nonpsychiatric subjects

CoEnzyme Q 10

Is a powerful antioxidant that buffers the potential adverse consequences of free radicals produced during oxidative phosphorylation in the inner mitochondrial membrane

It is an essential component of the mitochondrial electron-transport chain. It is involved in the manufacturing of adenosine triphosphate (ATP) and has been linked with improving cognitive functions.

Oxidative stress, resulting in glutathione loss and oxidative DNA and protein damage, has been implicated in many neurodegenerative disorders, including Alzheimer's disease, Parkinson's disease, and Huntington's disease.

**Alzheimer's Disease:
Suppresses brain protein
carbonyl levels
which are markers of
oxidative damage**

Behavioural
Brain Research.
Vol 171(1) Jul
2006, 9-16.

This study shows the neuroprotective effect of CoQ10 on cognitive impairments and oxidative damage in hippocampus and cerebral cortex of intracerebroventricular-streptozotocin (ICV-STZ) infused rats.

Parkinsons Disease

A 16-month randomized,
placebo-controlled pilot trial in
80 subjects with mild
Parkinson's disease found
significant benefits for oral
CoQ10 1,200 mg/day to slow
functional deterioration

Other:
Heart Failure
Glaucoma
Male Infertility
Hypertension
Exercise enhancement

Psychiatric Benefits?

Improving Children's Diets

Nutritional changes heighten children's achievement: A 5- year study

International
Journal of
Biosocial
Research. Vol 3(2)
1982

Childrens' Achievement Program
for Educational Readiness at an
elementary school that evaluated
whether nutritional changes, and
changes in habits surrounding
nutrition, would have a long-term
impact on the children's learning
and behavioral performances

Children were given a modified menu in which refined carbohydrate foods were eliminated and fresh fruits and juices, whole wheat flour, honey, and unprocessed foods were substituted for other foods

The teachers found that within a period of 6 months after making modifications in the childrens' diet, significant improvements were achieved in both behavior and learning patterns of the children

Herbal Medicine (Another Lecture)

Common Herbs Used for ADHD

Echinacea

Siberian Ginseng

Brahmi (*Bacopa monnieri*)

Blue-green algae

Ginkgo biloba

Oligomeric proanthrocyanidin
(OPCs, Pycnogenol)

Valerian (*Valeriana officinalis*)

Lemon balm (*Melissa officinalis*)

Kava (*Piper methysticum*)

Chamomile (*Matricaria recutita*)

Passion Flower (*Passiflora incarnata*)

Hops (*Humulus lupulus*)

Common Herbs for Treating Depression

St. John's Wort (*Hypericum
perforatum*)

5-hydroxytryptophan (5-HT)
(extracted from *Griffonia simplicifolia*)

Supplements that contain amino acids also reduce symptoms, because they are converted to neurotransmitters that alleviate depression and other mental disorders.



Common herbs used to treat anxiety

Kava-kava (*Piper methysticum*)

Valerian

Others:
Ashwaganda
Borage juice
Bugleweed
California poppy
Catnip

Chamomile

Fennel

Feverfew

Hops

Lemon balm

Meadowsweet

Mullein

Motherwort

Oats

Passion Flower

Peppermint

Skullcap

Verbena

Summary:

Balanced healthy diet

Avoid processed foods, non-nutrients

Exercise

Supplements?

Herbs?

Prevention

Obesity and its sequelae
Problems due to allergens
Problems due to vitamin
deficiency
Problems due to toxins

Treatment

Healthy Diet
Essential Fatty Acids?
SAME?
Herbal medicine?

**Bottom line- what does
research about
complementary and
alternative medicine say?**

Omega-3:

Depression: Several studies in adults, few in children. Good evidence

Bipolar disorder: Studies in adults: some benefit, no evidence in children

ADHD: Several controlled studies, inconsistent results, results uncertain

Specific developmental disorders: Few studies, suggestion of some benefit for reading and spelling

St. John's Wort

Depression: Many studies in adult patients, limited data for children. May be beneficial as antidepressants in mild depression

SAMe

Depression: Adult data increasingly showing that SAMe may be as effective as antidepressants, no clear evidence for children

Kava
Valerian
Passionflower

Anxiety: no
evidence in children

Harvard School of Public Health Healthy Eating Pyramid



1. Start with exercise.

A healthy diet is built on a base of regular exercise, which keeps calories in balance and weight in check.

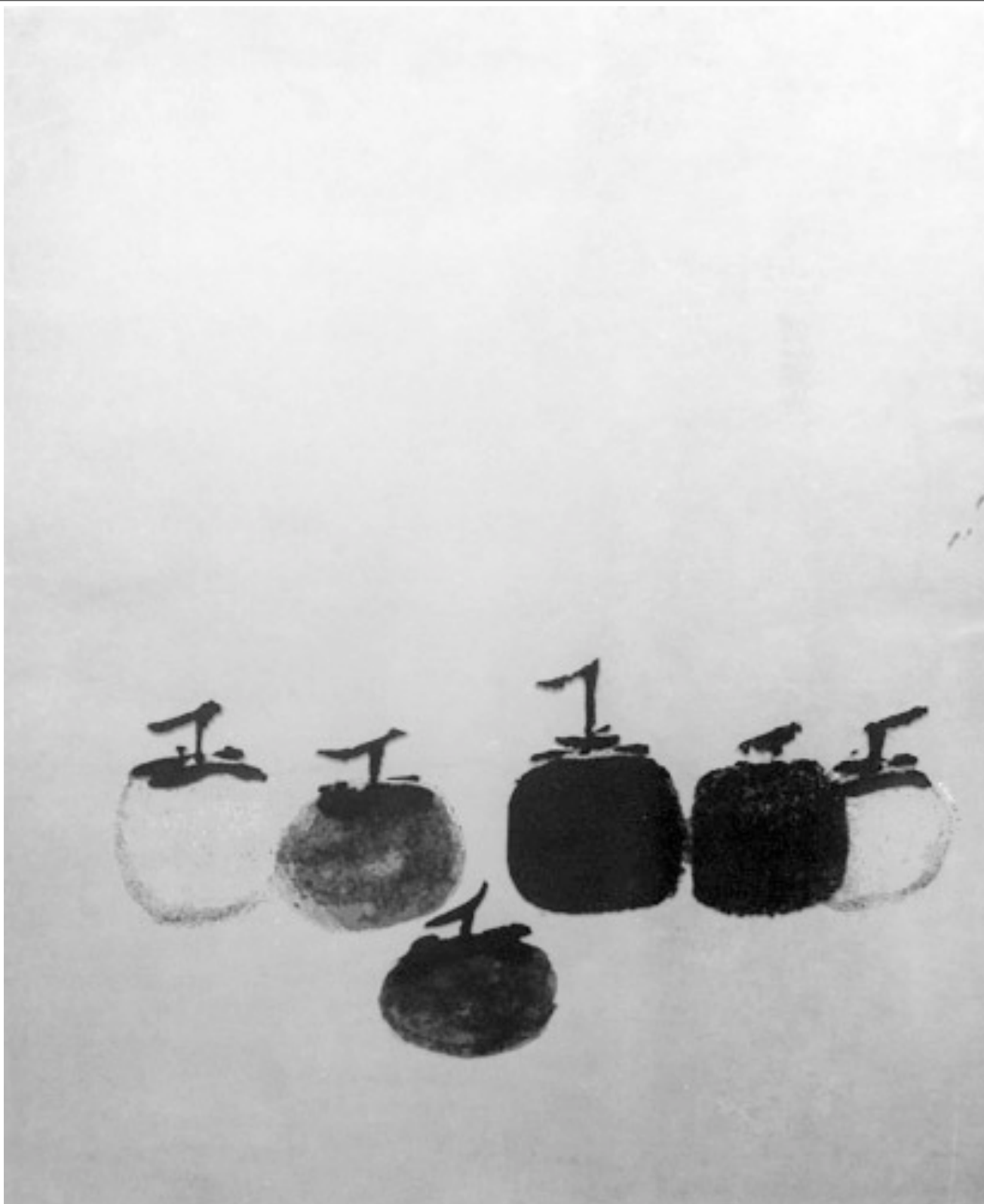
2. Focus on food, not grams.

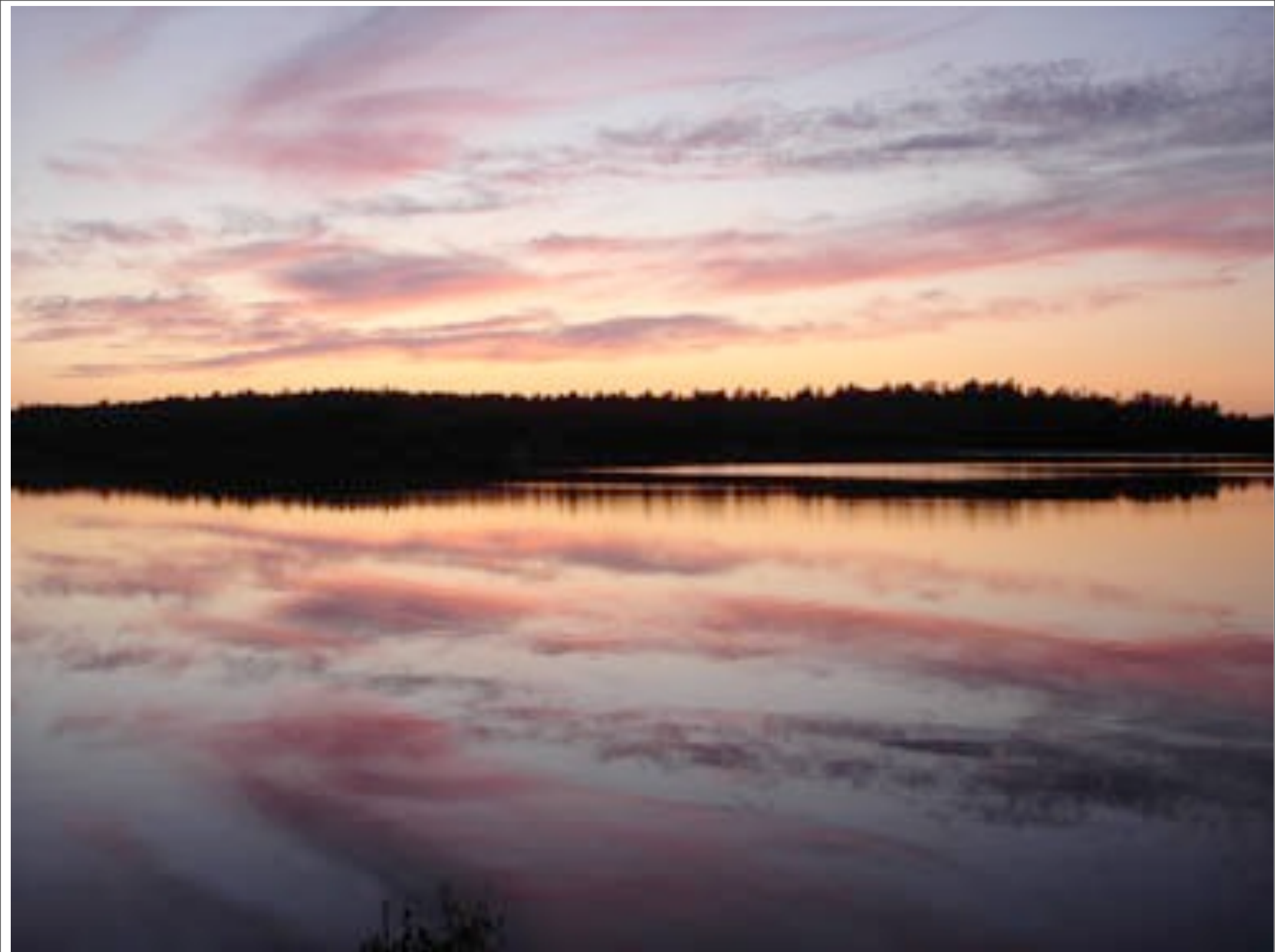
The Healthy Eating Pyramid doesn't worry about specific servings or grams of food, so neither should you. It's a simple, general guide to how you should eat when you eat.

3. Go with plants. Eating a plant-based diet is healthiest. Choose plenty of vegetables, fruits, whole grains, and healthy fats, like olive and canola oil.

4. Cut way back on American staples. Red meat, refined grains, potatoes, sugary drinks, and salty snacks are part of American culture, but they're also really unhealthy. Go for a plant-based diet rich in non-starchy vegetables, fruits, and whole grains. And if you eat meat, fish and poultry are the best choices.

5. Take a multivitamin, and (adults only), maybe have a drink. Taking a multivitamin can be a good nutrition insurance policy. Moderate drinking for many people can have real health benefits, but it's not for everyone. Those who don't drink shouldn't feel that they need to start.





Thursday, September 11, 14