The Food-Mood Connection: Nutrition in Addiction Recovery

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The Role of FOOD

“Let thy food be thy medicine, and let thy medicine be thy food.”
Hippocrates, father of medicine

"The food you eat can be either the safest & most powerful form of medicine or the slowest form of poison."
Ann Wigmore
Comfort Foods

Sick or sad, these make you feel better
We HAVE to Eat to Live

- The body requires energy for all its functions
- We get our energy from the food we eat
- Food is fuel!
We WANT to Eat for Pleasure & Comfort

- Around the world, people use food as a source of pleasure
- Response to odors, tastes & textures of food as well as associations
- Food is an important source of pleasure for most of us, and a primary source for some of us

“and if you like comfort food, I would recommend the Xanax stuffed pork-loin.”
Truths about the Foods we Eat

- Our food becomes US.
- Food is a drug.
- Food can make you feel great.
- Diet influences everything in your life
- Your energy level, ability think clearly and quickly, and your overall health depend on the food you eat
Food DIRECTLY impacts brain function

- High-glycemic food
  - Dopamine
  - Serotonin
  - Endorphines
    - Feel-good neurotransmitters

How toxins affect our health

- Mental fatigue or loss of concentration
- Fatigue of lack of energy
- Anxiety, stress, mood swings
- Trouble sleeping or loss of appetite
- Low immune system
- Headaches, dizziness, body aches
- Palpitation, shortness of breath
- Depression
Gut-Brain Connection

**BRAIN AND GUT LINK**

- Like your brain, the gut has its own nervous system, which sends information to the brain via the vagus nerve.

### 30%
- Reduction in the risk for major depression, dysthymia, and anxiety disorders by women who regularly consumed a whole diet consisting of vegetables, fruit, whole grains, and high-quality meat and fish.

### 50%
- Increased likelihood of depression in women who regularly consumed a diet high in refined or processed foods and saturated fats.

### 11%
- Higher likelihood of good functional health by eating two more servings of fruits and vegetables a day.

*University of Warwick Medical School, 2014 (n=13,983)*
“Addiction, whether it be to alcohol, tranquilizers, cigarettes, or heroin, is less likely to occur in those who are well-nourished.”

“The more your brain chemistry is out of balance, the more out of balance it will become as you expose yourself to potentially addictive substances.”

(Holford, 2009, p. 354)
Food-Addiction Connection

- Study with mice: 2 groups (healthy diet & junk food diet), free access to water or alcohol
  - Positive correlation: bad nutrition and alcohol use
- Most alcoholics and drug addicts have hypoglycemia
- Alcohol: the greatest anti-nutrient
  - Depletes almost every vitamin (A, B1, B2, B6, folic acid, B12, C, D, & E)
  - Depletes minerals (calcium, magnesium, potassium, zinc, selenium)
  - Amino acids (tyrptophan, taurine, glutathione, etc.) & Essential fats (Omega 3 & 6).
Biochemical Mental Health Problems

- Blood sugar problems
- Stimulant and drug dependence
- Food and chemical allergies and intolerances
- Under- or overactive thyroid
- Faulty methylation and Vitamin B deficiency
  - Chemical balance
- Methylation-friendly nutrients:
  - B2: Eggs, almonds, wholegrains, soybeans, spinach
  - B6: Wholegrains, bananas
  - B12: Meat, fish, dairy, eggs
  - Folic acid: Green leafy veggies
  - Zinc: Wholegrains, spinach, beets
Biochemical Mental Health Problems

- Essential fats - deficiencies or imbalances
- Heavy metal toxicity
- Detoxification overload and inflammation
- Histamine excess
- Serotonin deficiency
- Adrenal imbalance
- Acetylcholine imbalance (affecting learning)
“Big” Foods

Macronutrients that are essential for functioning and maintaining life

- **Fats**
  - Long-term energy reserves for both brain and body
  - Provides essential building-blocks for cells
  - Contains high levels of Omega-3 fatty acids (linked to depression, cognition, memory, etc.)

- **Carbohydrates**
  - Energy production- essential for neuron communication (high demand for energy)
  - Enables fat metabolism

- **Protein**
  - Necessary for the body to build, maintain, and repair itself
  - Amino acids from proteins are used to make neurotransmitters-building blocks of brain’s network
Major Sources of Fat in Our Diet

- Cheese
- Pizza
- Grain-based desserts
- Dairy desserts
- Chicken
- Sausage
- Burgers
- Milk
- Eggs
- Candy
- Butter
**“Good” Fats**

Monounsaturated fats and polyunsaturated fats are known as the **“good fats”** because they are good for your heart, your cholesterol, and your overall health.

<table>
<thead>
<tr>
<th>GOOD FATS</th>
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<tbody>
<tr>
<td><strong>Monounsaturated fat</strong></td>
<td><strong>Polyunsaturated fat</strong></td>
</tr>
<tr>
<td>Olive oil</td>
<td>Soybean oil</td>
</tr>
<tr>
<td>Canola oil</td>
<td>Corn oil</td>
</tr>
<tr>
<td>Sunflower oil</td>
<td>Safflower oil</td>
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<tr>
<td>Peanut oil</td>
<td>Walnuts</td>
</tr>
<tr>
<td>Sesame oil</td>
<td>Sunflower, sesame, and pumpkin seeds</td>
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<tr>
<td>Avocados</td>
<td>Flaxseed</td>
</tr>
<tr>
<td>Olives</td>
<td>Fatty fish (salmon, tuna, mackerel, herring, trout, sardines)</td>
</tr>
<tr>
<td>Nuts (almonds, peanuts, macadamia nuts, hazelnuts, pecans, cashews)</td>
<td>Soymilk</td>
</tr>
<tr>
<td>Peanut butter</td>
<td>Tofu</td>
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</tbody>
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“Bad” Fats

- Saturated fats and trans fats are known as the “bad fats” because they increase your risk of disease and elevate cholesterol.

<table>
<thead>
<tr>
<th>BAD FATS</th>
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</thead>
<tbody>
<tr>
<td><strong>Saturated fat</strong></td>
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<tr>
<td>High-fat cuts of meat (beef, lamb, pork)</td>
</tr>
<tr>
<td>Chicken with the skin</td>
</tr>
<tr>
<td>Whole-fat dairy products (milk and cream)</td>
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<tr>
<td>Butter</td>
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<tr>
<td>Cheese</td>
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<tr>
<td>Ice cream</td>
</tr>
<tr>
<td>Palm and coconut oil</td>
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<tr>
<td>Lard</td>
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Best Fats for Overall Brain Function

1. Salmon
2. Avocado
3. Nuts
4. Whole eggs
5. Olive oil
6. Coconut oil
Main Sources of Carbohydrates in Our Diets

| 1. Potatoes (mashed or baked) | 11. Fruit punch |
| 2. White bread | 12. Coca-Cola |
| 5. Orange juice | 15. Pancakes |
| 6. Bananas | 16. Table sugar |
| 7. White rice | 17. Jam |
| 8. Pizza | 18. Cranberry juice |
| 10. Muffins | 20. Candy |

(Harvard School of Public Health)
“Good” Carbs

- Broccoli
- Spinach
- Chard
- Kale
- Cabbage
- Bok choi
- Legumes
- Sweet potatoes

- Whole grains (Barley, millet, oats, quinoa, brown and wild rice, rye)
- Dark berries (blueberries, cherries, blackberries, raspberries)
- Apples, pears, plums, peaches, and nectarines
Bad Carbs
Good sources of protein

- Seafood
- Poultry
- Milk, cheese, yogurt (in moderation)
- Eggs (in moderation)
- Beans
- Soy
- Nuts
How Food Affects Our Mood: Neurotransmitters

- Regulate nerve function, memory, appetite, mental function, learning, reproduction, hormone production, mood, movements, the sleep cycle, etc.

- Neurotransmitters (NTs) are made in the body from proteins
  - Also required are certain vitamins and minerals called “Cofactors”

- Poor diet and toxic substances can also cause damage to nerve cells that make NTs and can deplete NTs

- Medical conditions can also influence NT levels
  - Inflammatory conditions, gastro-intestinal disorders, blood sugar imbalance
Neurotransmitters & Mental Health

- **Inhibitory**: Inhibits action potential (energy) in nerve cells
- “Slows us down” (Parasympathetic Nervous System)
- **Serotonin** - mood, appetite, sleep
- **GABA** - anxiety and stress
- **Dopamine**
  - *(both excitatory AND inhibitory)*
Neurotransmitters & Mental Health

- **Excitatory**: Increase the likelihood that a nerve cell will produce an action potential
- “Speeds us up”- Sympathetic Nervous System
  
- **Dopamine**: motivation, interest, drive, pleasure
- **Norepinephrine/Epinephrine**
- **Glutamate**: learning and memory
Serotonin

- Relaxing brain chemical - leaves you feeling peaceful, happy, and flexible
- No other NT is as strongly liked to your diet as serotonin
  - 95% of the body’s serotonin is in the gut
- Manufactured from an amino acid tryptophan, with help from B6, B12, and folic acid
- **High** levels boost your mood, curb cravings, increase pain tolerance, improve sleep, increase alertness, and increase sociability
- **Low** levels contribute to depression, anxiety, headaches, sleep problems, cravings for sweet and starchy foods, tiredness, and irritability
Serotonin: Effects from Food

- Sugar (sweets) trigger a quick release of insulin, which allows tryptophan (serotonin) to enter the brain quicker
- Whole grains trigger a slow, sustained release of insulin, resulting in a gradual rise of serotonin
- Omega-3 fatty acids also increase serotonin levels
- Foods that boost serotonin:
  - Turkey
  - Flaxseed
  - Wild fish and seafood
  - Bananas
  - Whole grains
  - Sweet potatoes
  - Dark chocolate
GABA

- Helps to regulate brain excitability and calms over-firing of the brain
- Regulates production of other mood-regulating NT’s
- Made from neurotransmitter glutamate
- Inhibits nerve transmission in the brain, calming nervous activity
  - Without it, nerve cells fire too easily and too often, causing anxiety
- Low levels contribute to panic attacks, seizure disorders, addiction, generalized anxiety
  - Cravings for high-volume of food
GABA

- Most widely distributed inhibitory NT
- Vitamin B6 most important cofactor that regulates the manufacture of GABA in the brain
  - Most Americans are deficient in B6
- Foods that **boost** GABA: cherry tomatoes, asparagus, avocado, blueberries, spinach, oranges, olive oil, shrimp, and brown rice
Dopamine

- The chemical of motivation, saliency, drive and stimulation
- Low levels are associated with low motivation and energy, poor concentration, impulse-control problems, some forms of depression, ADD.
Dopamine

- Manufactured from amino acid **tyrosine** with help from **folic acid**, **magnesium**, and vitamin **B12**
- Major behaviors that dopamine affects are movement, cognition (thinking), pleasure, and motivation
- Low levels contribute to poor concentration and energy, lack of motivation, depression, irritability, and compulsions to use substances and other addictions
- Foods that **boost** tyrosine: fava beans, duck, chicken, ricotta cheese, oatmeal, mustard greens, edamame, dark chocolate, seaweed, & wheat germ
Glutamate

- Glutamate (GA) and its metabolites are the most abundant amino acid neurotransmitters.

- Abundant in many foods:
  - Wheat germ
  - Cottage & ricotta cheese
  - Ham & sausage

- Eating foods with MSG increases GA:
  - MSG in high doses can produce convulsions in experimental animals.
  - Too much can lead to neurotoxicity and brain damage.
Blood Sugar & Stress

- Acute stress causes blood sugar levels to spike
- Stress also creates a need to “de-stress”, which often leads to turning to food for comfort
- Stress (including chemical stress from stimulant use) increases cortisol levels, which:
  - Impair appetite
  - Increase cravings
  - Impair blood sugar metabolism
  - Raises blood sugar
  - Increases anxiety, depression, addictive behaviors
THE VICIOUS CYCLE OF STIMULANTS, STRESS AND SUGAR

- Blood Sugar Crash!
- Excess Blood Sugar Stored as Fat
- Insulin Lowers Blood Sugar
- Inflammation
- Pancreas Responds to High Blood Sugar
- Fight or Flight?
- Higher Heart Rate
- Higher Blood Pressure
- Easier to Breath

Stimulants: Caffeine-Alcohol-Tobacco

Stress

Adrenal Glands Respond to Stressors

Cortisol Raises Blood Sugar

Epinephrine & Norepinephrine Raise Blood Sugar
Insulin Effects

- ↑ Inflammation
- ↑ Testosterone (women)
- ▼ Testosterone (men)
- ↑ Estrogen (men)
- ↑ Oxidative Stress
- ▼ Liver detoxification pathways
- ▼ Blood pressure
- ▼ Cholesterol
- ▼ Neurotransmitters
Why is sugar bad for mental health?

- Blood sugar problems, which directly affect NT levels and brain function
- Uses up your body’s stores of vitamins/minerals and provides next to none, leading to deficiencies
- Glucose damages the brain (when above maximum threshold) by damaging nerve cells and slowing brain communication
- Excesses of glucose also cause inflammation in the brain
- It leads to ADDICTION!!!!
Microbiota

- **Gut bacteria**: Involved with digestion, absorption, and synthesizing of vitamins and nutrients

- **Imbalances** have been shown to lead to issues with brain chemistry, emotional behavior, pain perception, and how the stress system responds
  - Linked to Autism, ADHD/ADD, schizophrenia, dyslexia, depression, OCD, Bipolar D/O, immuno-supression
  - Key factor in breaking down carbs
  - Ways to **balance out gut bacteria**: Probiotic supplement, fermented foods (kombucha, saurerkraut, pickles, yogurt, miso, tempeh, kimchi)
Inflammation

- Immune response to bad food (sugar, processed foods, inflammatory fats), stress, toxins, food allergens, bad gut bacteria, and infections

- Many times inflammation is invisible and causes no pain

- Inflammation has been directly linked to **depression and other mood disorders** in a number of studies

- Sugar, refined carbohydrates, trans fats, too many omega-6 fats (soybean, corn oil), artificial sweeteners, hidden food allergies/sensitivities, imbalances in gut bacteria, stress, toxins, and a sedentary lifestyle all promote inflammation
Key Micronutrients for Balanced Mental Health

- Magnesium
- Vitamin D
- Omega 3 Fatty Acids
- Fiber
- Vitamin B
- Folic Acid
Magnesium

- Nutrient involved with relaxation of mind and muscles
- Deficiencies can lead to muscle aches, cramps, anxiety, and insomnia
- Regulates blood sugar levels & digestive enzymes
- Foods that **boost** magnesium: seeds, nuts, vegetables (dark leafy greens like spinach/kale), and fruit
Vitamin D

- Over 80% of Americans are deficient in Vitamin D
- Only vitamin that is also a hormone
- Assists with absorption of calcium, activates genes that regulate the immune system, and releases neurotransmitters such as dopamine and serotonin
- Low levels contribute to abnormal brain function and development, depression and other mental health problems
- Sources: Wild salmon, mackerel, mushrooms, tuna, sardines, milk, yogurt, egg yolks, cheese
Omega-3 Fatty Acids

- Essential for normal brain function: learning, memory, mood regulation, etc.
- Over 90% of Americans are deficient in omega-3 fats
  - **Deficiency** has been linked to increased risk of several mental disorders, including ADD, dyslexia, dementia, depression, bipolar disorder, and schizophrenia
- Critical to control inflammation, blood sugar, and metabolism
Omega 3 sources

- Fish oil
- Flaxseed and flaxseed oil
- Herring
- Mackerel
- Salmon
- Sardines
- Soybeans and soybean oil
- Walnuts and walnut oil
Fiber

- **Slows** the absorption of sugar into the bloodstream from our gut
- Makes us feel full
- Reduces cholesterol
- Comes from plant foods
  - Fruits and vegetables
  - Nuts and seeds
  - Whole grains
  - Beans
B-complex group of vitamins are vital for mental health.

Deficiencies are associated with neuropsychiatric disturbances, including delirium and psychosis.

Need regular intake throughout the day because they are water soluble and rapidly pass out of the body.
Vitamin B

- **B1 (thiamine)**: Helps turn glucose into energy
  - Whole wheat breads, black beans, watermelon
- **B3 (niacin)**: Helps brain/body naturally relax
- **B6**: Relieves stress and affects production of serotonin, keeps neurotransmitters in balance
  - Chicken, liver, other lean animal proteins
  - Navy beans, sweet potatoes, spinach, banana
Vitamin B

- **B9: (folic acid)**: Essential for brain function, facilitation of DNA production, and creation of new cells

- **B12**: supports myelin (allowing nerve impulses to conduct)

- *Low levels of folate and B12 have been observed in studies of depressed patients*
Folic Acid

- **Vitamin B9**
- Essential for brain function, facilitation of DNA production, and creation of new cells
- **Deficiency** has been linked to neurological disorders such as depression and cognitive impairment

12 Foods Rich in Folate

- leafy greens
- asparagus
- broccoli
- papaya & oranges
- avocado
- seeds & nuts
- Brussels sprouts
- beans, peas, lentils
- okra
- cauliflower
- beets
- bell peppers

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Common nutritional imbalances that can worsen your mood & motivation

- Blood sugar imbalances (often associated with excessive sugar and stimulant intake)
- Deficiencies of nutrients (vitamins B6, B12, folic acid, C, zinc, magnesium, chromium, essential fatty acids)
- Deficiencies of tryptophan and tyrosine (NT precursors)
- Allergies and sensitivities
- Poor control of blood-glucose levels
Common nutritional imbalances that can worsen your mood & motivation

- Tryptophan depletion leads to depression
- B-vitamin deficiencies make you anxious, unable to concentrate
- B6 deficiency may account for some of the perceptual disturbances that occur in alcohol intoxication and withdrawal
Eating & Living Well

Reduces vulnerabilities to addictive and mental health disorders by:

- Maintaining consistent blood sugar levels which directly affect mood
- Maintaining proper levels of neurotransmitters necessary for brain function
- Minimizing susceptibility to physical illnesses and physical pain
- Reduces engagement in compulsive behaviors
- Increases engagement in healthy living practices
11 Rules for Brain-Body Nutrition

1. Drink plenty of water, some green tea, and not too many calories.

2. Watch your calories.

3. Increase good fats and decrease bad fats.

4. Increase good carbs and decrease bad carbs.

5. Dump artificial sweeteners and replace them with small amounts of natural sweeteners.

11 Rules for Brain-Body Nutrition

7. Eat great brain foods.

8. Reduce salt intake and increase potassium intake.

9. PLAN snacks and meals.

10. Take a daily multivitamin/mineral supplement and fish oil.

11. Recognize when you have hidden food allergies or intolerances.
Depression & Anxiety

**EAT**
- Sweet potatoes
- Whole wheat and grains
- Tuna
- Flaxseed
- Spinach
- Chicken
- Salmon
- Walnuts

**AVOID**
- Processed sugars and carbohydrates
- Caffeine
- Alcohol
- Omega-6 fatty acids (corn and soybean oil)
- Foods you have an obvious intolerance to
Lastly- BREAK UP WITH SUGAR

- Sugar
- Ivert sugar
- Lactose
- Maltodextrin
- Honey
- Maltose
- Glucose
- Malt syrup

- Galactose
- Molasses
- Fruit juice concentrate
- Sorbitol
- Turbinado
- Fructose
- Agave

- Dextrose
- Dehydrated cane juice
- Corn syrup
- Cane juice crystals
- Sucanat
- Barley malt
References


