Nutrition and the Brain-
PD, MS, Depression, Alz, Aging, Anxiety

Goals

• Optimize your diet
• Reduce inflammation
• Reduce toxicity
• Maintain bowel regularity
• Maintain bone health
Optimize your diet
Optimize your diet

HEALTHY EATING PLATE

Use healthy oils (like olive and canola oil) for cooking, on salad, and at the table. Limit butter. Avoid trans fat.

The more veggies—and the greater the variety—the better. Potatoes and french fries don’t count.

Eat plenty of fruits of all colors.

Drink water, tea, or coffee (with little or no sugar). Limit milk/dairy (1-2 servings/day) and juice (1 small glass/day). Avoid sugary drinks.

Eat whole grains (like brown rice, whole-wheat bread, and whole-grain pasta). Limit refined grains (like white rice and white bread).

Choose fish, poultry, beans, and nuts; limit red meat; avoid bacon, cold cuts, and other processed meats.

Harvard School of Public Health
The Nutrition Source
www.hsph.harvard.edu/nutritionsource

Harvard Medical School
Harvard Health Publications
www.health.harvard.edu

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Reduce Inflammation
Reduce Inflammation

- **Keep your blood sugar levels balanced.** Eat several small meals throughout the day. Glucose imbalance symptoms include fatigue, irritability, dizziness, insomnia, depression, excessive sweating (especially at night), poor concentration and forgetfulness. In addition, excess sugar in the blood contributes to inflammation.

- **Take in antioxidants from fresh fruits and vegetables.** Alcohol is a toxin. Antioxidants combat inflammation and support your body’s detoxification pathways.

- **Increase omega 3 fats.** The omega-3’s are *anti-inflammatory* which may be beneficial as brain-inflammation is a feature of neurodegenerative disorders like PD, Alzheimer’s, dementia, stress-related and stroke. Mood problems are also a common feature and there has been a lot of research into the *mood-boosting properties* of the omega-3 essential fats. A small placebo-controlled pilot trial reported significantly greater improvement of depression in Parkinson’s patients treated with omega-3 fatty-acid supplementation versus placebo. The precise cause(s) of Parkinson’s Disease is unknown, but there is consensus that an inflammatory event or episode is involved in the initiation of neurodegeneration.

- Consider **Aloe Vera as an excellent supplement to reduce inflammation.**
Reduce inflammation by increasing omega fats.

**Omega-3 Fatty Acids**

- Group of polyunsaturated fatty acids
- Essential – must be obtained in the diet
- Component of cell membranes
- Mediate inflammation, regulate blood clotting and contraction/relaxation of arterial walls
- May be helpful in relieving symptoms in rheumatoid arthritis and age-related macular degeneration
Omega 3 fats are a group of unsaturated fatty acids.
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<table>
<thead>
<tr>
<th>Omega-3 Fatty Acids</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ALA: alpha-linolenic acid</strong></td>
<td>Vegetable oils: canola, soybean, flaxseed Nuts (walnuts), flax Brussels sprouts, kale, spinach, greens Can be converted – in very small amounts – to EPA + DHA in the body</td>
</tr>
<tr>
<td><strong>EPA: eicosapentaenoic acid</strong></td>
<td>EPA + DHA Fatty fish: salmon, herring, mackerel, trout, sardines</td>
</tr>
<tr>
<td><strong>DHA: docosahexaenoic acid</strong></td>
<td>DHA: brain development, nervous system</td>
</tr>
<tr>
<td>Food</td>
<td>Serving Size</td>
</tr>
<tr>
<td>-----------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Flax Seeds, ground</td>
<td>2 tbs</td>
</tr>
<tr>
<td>Walnuts</td>
<td>0.25 cup</td>
</tr>
<tr>
<td>Salmon</td>
<td>4 oz-wt</td>
</tr>
<tr>
<td>Sardines</td>
<td>3.20 oz-wt</td>
</tr>
<tr>
<td>Beef, grass-fed</td>
<td>4 oz</td>
</tr>
<tr>
<td>Cloves</td>
<td>2 tsp</td>
</tr>
<tr>
<td>Soybeans</td>
<td>1 cup cooked</td>
</tr>
<tr>
<td>Halibut</td>
<td>4 oz-wt</td>
</tr>
<tr>
<td>Scallops</td>
<td>4 oz-wt</td>
</tr>
<tr>
<td>Shrimp</td>
<td>4 oz-wt</td>
</tr>
<tr>
<td>Tofu</td>
<td>4 oz-wt</td>
</tr>
<tr>
<td>Tuna</td>
<td>4 oz-wt</td>
</tr>
<tr>
<td>Cod</td>
<td>4 oz-wt</td>
</tr>
<tr>
<td>Winter Squash</td>
<td>1 cup baked</td>
</tr>
<tr>
<td>Collard Greens</td>
<td>1 cup cooked</td>
</tr>
<tr>
<td>Spinach</td>
<td>1 cup cooked</td>
</tr>
<tr>
<td>Raspberries</td>
<td>1 cup</td>
</tr>
<tr>
<td>Kale</td>
<td>1 cup cooked</td>
</tr>
<tr>
<td>Mustard Seeds</td>
<td>2 tsp</td>
</tr>
<tr>
<td>Romaine Lettuce</td>
<td>2 cups</td>
</tr>
<tr>
<td>Turnip Greens</td>
<td>1 cup cooked</td>
</tr>
<tr>
<td>Strawberries</td>
<td>1 cup</td>
</tr>
<tr>
<td>Brussels Sprouts</td>
<td>1 cup raw</td>
</tr>
<tr>
<td>Miso</td>
<td>1 lbs</td>
</tr>
<tr>
<td>Green Beans</td>
<td>1 cup raw</td>
</tr>
<tr>
<td>Summer Squash</td>
<td>1 cup raw</td>
</tr>
</tbody>
</table>
Omega 3 fats are a component of cell membranes.

**Omega-3 Fatty Acids**

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Brain Nerve Cell diagram illustrates highly branched enclosing cell membrane that is critical for nerve function.
Detail of the Cell Membrane shows it is a ‘sea’ of fatty acids (phospholipid bilayer), proteins, and cholesterol.
Endothelial cell membranes form the blood-brain barrier and fatty acids in the membrane regulate relaxation of the arterial walls.
Reduce toxicity
Reduce Toxicity

• **Avoid environmental toxins.** Pesticides and herbicides in foods, in the environment, as well as occupational and household chemicals are implicated.

• **Take in antioxidants from fresh fruits and vegetables.** Alcohol is a toxin. Antioxidants combat inflammation and support your body’s detoxification pathways. Antioxidants help rid body of harmful free radicals. (Consider supplementing with Vitali-C Plus)

• **Identify any food intolerances** and avoid these foods, or you could avoid some of the key culprits (gluten, dairy, soya, yeast) for a trial period.

• **Body Wraps** can remove toxins from skin.
Avoid environmental toxins.

Instructions:
1. Cut along outside line.
2. Fold along middle line.

Fold together
Colorful foods contain color molecules that are ANTIOXIDANTS. They are BIOFLAVONOIDs or POLYPHENOLS (many oxygen/hydrogen groups attached to a carbon ring structure). They come from plants so they are called phytochemicals.

**Phytochemicals**
- Beta carotene
- Ascorbic acid (vitamin C)
- Vitamin E
- Folic acid

**Quercetin** - Apples, onions, teas, red wine

**Anthocyanidins** - Purple grapes, eggplant, red cabbage, radishes, berries, strawberries
Naturally occurring phytochemicals for the prevention of Alzheimer’s disease

Curcumin, resveratrol, and green tea catechins have been suggested to have the potential to prevent AD because of their anti-amyloidogenic, anti-oxidative, and anti-inflammatory properties. These polyphenolic phytochemicals also activate adaptive cellular stress responses, called ‘neurohormesis’, and suppress disease processes.

GREEN TEA LEAVES
EGCG (epigallocatechin gallate) found in green tea leaves has the ability to inhibit the growth of cancer cells without harming healthy tissues. It also may be useful in lowering LDL cholesterol levels.
Maintain bowel regularity
Maintain bowel regularity

- **Exercise** - Walking, Tai Chi, Qigong

- **Chew your food 100 times.**

- **Soluble Fiber:** Dissolves in water, forms gel-like substance. Slows Gastric Emptying. Soluble fiber-containing foods take longer to digest. Reduces cholesterol production in liver. Good sources include oats, oatmeal, oat bran, beans, peas, rice bran, barley, citrus fruits, strawberries, apple pulp.

- **Insoluble Fiber:** Promotes motility and increased stool bulk. Sources include whole-wheat flour, wheat bran, nuts, beans and vegetables.

- Drink plenty of **fluid**.

- **Magnesium** is a mineral that acts as a natural relaxant. Some indications of deficiency are: muscle tremors or spasm, muscle weakness, insomnia or nervousness, high blood pressure, irregular heartbeat, constipation, hyperactivity, depression. Magnesium’s role in supporting good sleep may also be quite important here, since many people with Parkinson’s experience poor sleep patterns. (Osteo Pro Care is a great source of Mg)
Maintain bone health
Maintain bone health
Risk factors for osteoporosis include older age, low body weight, smoking, excessive alcohol intake, limited exposure to sunlight, inadequate intake of vitamin D and calcium and lack of weight-bearing exercise, common in mobility disorders.

- **Calcium**: Milk and milk products are the richest; there are other calcium-containing foods e.g., tofu, calcium-fortified soy-based beverages, orange juice and dark leafy greens, dulse. (Osteo ProCare is a great source of Ca and Vit D)

- **Vitamin D**, in the brain, enhances BDNF – a growth hormone for neurons that is anti-inflammatory. This nutrient is mainly provided by the action of sunlight on the skin. **Vit. D Levels have been associated with severity of symptoms in PD and MS.**

- **Exercise regularly.** Walking, tai chi, qigong sitting in chair abdominal exercise directly promotes digestion and blood circulation to internal organs.

- **Posture.** Upright posture in gravity builds bones, bent posture weakens bones.

Thank You
For more information:
http://www.susanamatthews.com/brain_workshop-programs.htm
Extra: Drugs for neural diseases

levodopa, “L-dopa”
zwiterionic
permeates into brain

catalytic protein
Greek, “to leaven”

dopamine
does not enter brain
Dopaminergic Neurons: “pleasure / reward / well-being” system highlighted.
Several recreational drugs affect this system.

Neurons that Make Dopamine Die in Parkinson's Disease

ORGANIC COMPOUNDS

- Carbohydrates
  - Polysaccharides
    - Disaccharides
      - Monosaccharides
    - Glycerol
  - Disaccharides

- Lipids
  - Triglycerides

- Proteins
  - Peptides
    - Amino acids

- Nucleic Acids
  - RNA
  - DNA
    - Nucleotides
      - Nucleotide
        - Phosphate groups

- High-Energy Compounds
  - ATP
    - Composed of

CHOLESTEROL
PROSTAGLANDINS

ATP CONSIDERED PART OF NUCLEIC ACIDS