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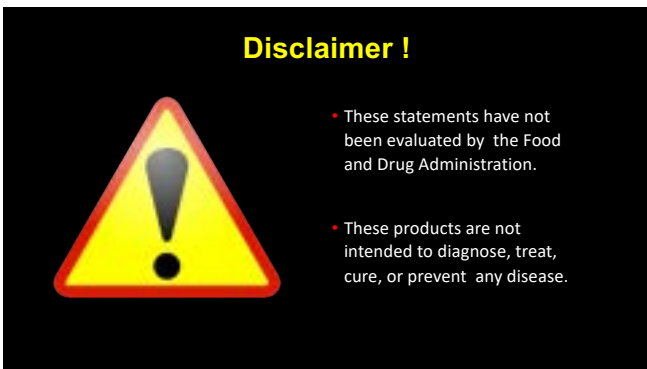
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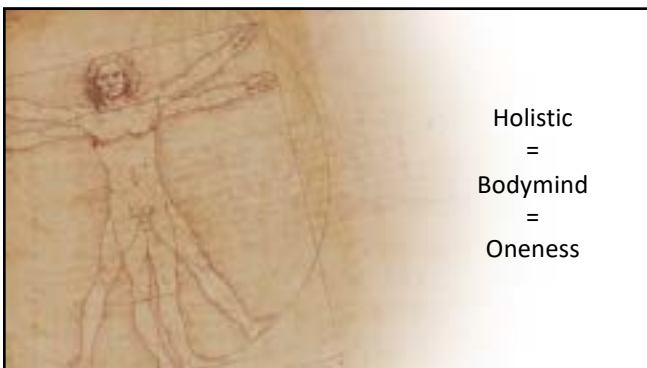
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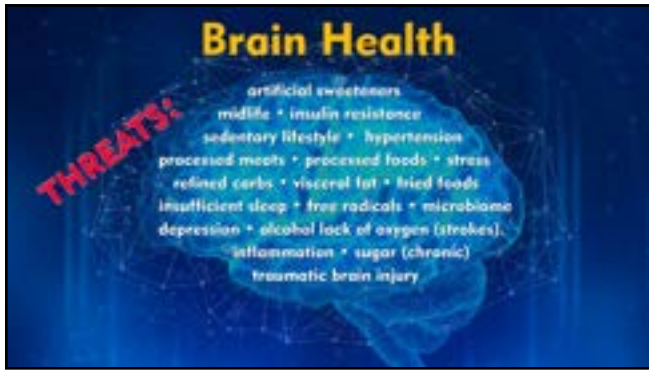
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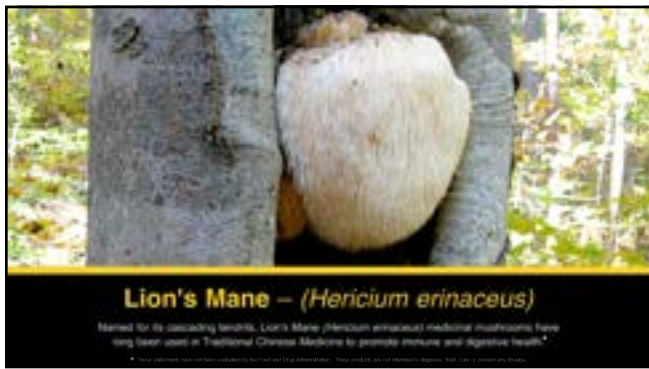
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### In silico Study of Lion's Mane and Alzheimer's Disease

**Examples of overlap:**

- Inflammatory pathways
- Cholinergic synaptic transmissions
- Neurotrophin signaling pathways
- Negative effect apoptosis
- Cell proliferation

\* These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure or prevent any disease.

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### In silico Lion's Mane and Alzheimer's Disease

**Genetic overlap:**

- 17 hypoxia related genes
- 19 inflammatory response genes
- 14 negative regulation of apoptosis
- 14 chemical synaptic transmission genes
- 12 cholinergic synaptic transmission genes

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### Lion's Mane for Mental Health

- Overall improvements in Q of L, mood, anxiety, irritability, focus, depression\*
- Amynenone® study - reduced inflammation and depression and anxiety (m)\*
- Placebo controlled study – improved concentration, anxiety, sleep, and irritability\*
- Promoted neurogenesis in hippocampus

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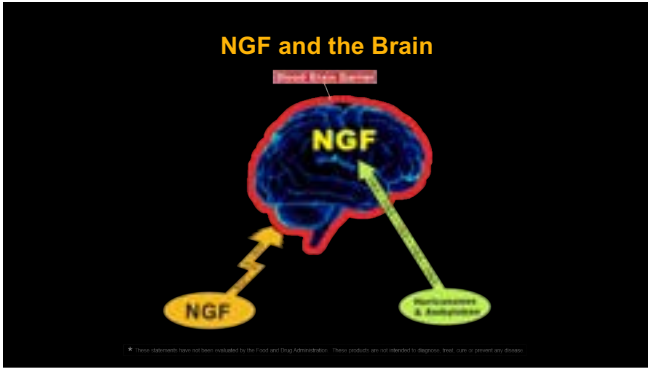
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### Brain Derived Neurotrophic Factor

*"Miracle Grow for the brain"*

- Stimulates production of new brain cells
- Strengthens brain cells
- Turns on a series of genes
- Increases brain neuroplasticity

High BDNF = faster learning  
better memory  
slower aging  
rewire your brain

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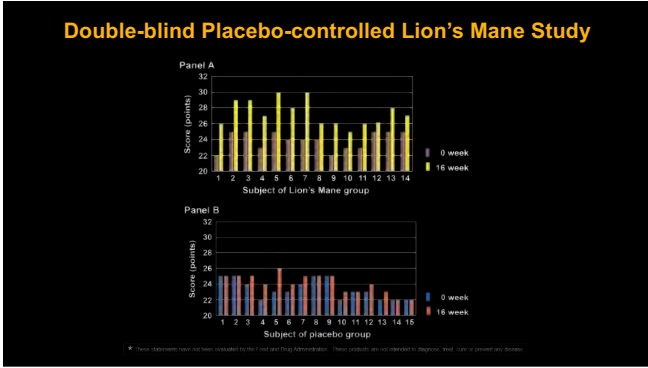
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### More Lion's Mane Nerve & Brain Support

- Improved brain function
- Enhanced acetylcholine levels
- Stimulated cognitive function (m)
- Helped improve memory
- With and without AD model (m)
- Inverse relationship LM and AD (m)
- Protects PC12 cells
  - Significantly delays cell death

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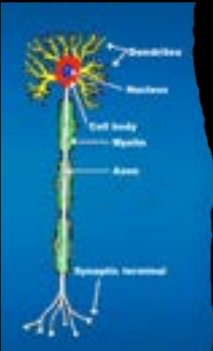
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### Lion's Mane Nerve Support

- Induces genes to produce **BDNF**
- Inhibition of the cytotoxicity of  $\beta$ -amyloid peptide
- Protection against neuronal cell death
- Stimulates myelination
- Enhances neurite outgrowth
- Anti-oxidant properties
- Hypoglycemic effects
- Immune enhancement

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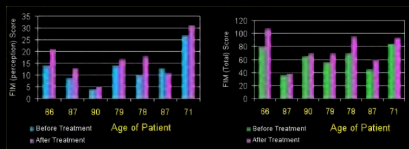
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### Lion's Mane Clinical Study



- Rehabilitative hospital, Japan; elderly with degenerative diseases
- 6 of 7 dementia patients improved **percentual capacities**
- Marked improvements in patients evaluated by Functional Independence Measure
- Appears to **cross blood brain barrier**
- Two other studies-retarded progression improved cognition

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**Lion's Mane for Cognitive Impairment**

18 patients with mild to moderate  
1.5 grams of Lion's Mane,  
2x a day

Results:

- 9 of 18 saw improvement
- 7 of 18 saw no change \*
- 2 of 18 got worse

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**Lion's Mane Amyloban May Help Support**

Better sleep for people with...

- Circadian Rhythm Sleep Disorder
- Sleep Apnea Insomnia
- Excessive Sleepiness Disorder
- Insomnia Secondary to Drug Dependency
- Long Sleeper

To improve overall sleep quality

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**Lion's Mane Immune Activity**

- Anti-fungal
- Increases IL-12, interferon and dendritic cells
- Tumor inhibition (m & l)
- Induced apoptosis on leukemia cells (l)
- Reduced size of colon tumors (m)
- Enhanced T cells & macrophage
- Increased CD4+, T lymphocytes, & macrophage
- Differentiation of T cells

*Note: one study suggested immunomodulatory effects most likely due to regulation of mucosal immune activity*

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### Lion's Mane Supports Healthy Blood Sugar Levels\*

- Diabetes hospital study – increased anti-oxidant enzyme activities
- Study – diabetic rats, LM for 28 days
  - significantly decreased blood sugar levels
  - increased serum insulin levels
  - improved insulin sensitivity. (1)
- Study (animal) – relieved diabetic neuropathy pain
- Reduces inflammation in fatty tissue

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### Lion's Mane's Cardiovascular Benefits\*

- Study – lowered cholesterol
- Prevented LDL rise
- Increased HDL
- Lowered triglycerides
- Prevented blood clots

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### Lion's Mane Antioxidant Activity\*

- 2012 study – good anti-oxidant protection,
  - protected against hypertension
- Hospital study – increased anti-oxidant enzyme activities
- May help prevent osteoporosis
- Protected against alcohol-induced liver damage (m)
- Improved wound healing
- Slows the aging of skin

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### Lion's Mane for Gut Health\*

- Traditional tonic for digestive health
- Prebiotic
- Regulates the composition & metabolism of gut microbes
- Anti-gut bacterial activity - anti-H. pylori
- Inhibited several common bacteria found in gut
- Anti-inflammatory
- Clinical - reduced symptoms of chronic atrophic gastritis
- Clinical ulcer study, compared favorably to drug combo
  - Protected against ulcer development
  - Shrank ulcers
- IBD – (I & a)

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**Ganoderma lucidum – Ganoderma lingzhi**

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### Reishi and Brain/Memory

• Study – has nootropic potential	• Improving memory
• Improving learning	• Sharpen concentration and focus
• Stimulate neurite outgrowth	• Neuro-protective
• Prevent age-related memory loss	• Increase acetylcholine levels

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### Reishi's Holistic Brain Support

- Immuno-modulator
- Alleviate anxiety
- Anti-depressant
- Improve sleep quality
- Anti-oxidant
- Anti-inflammatory
- Tonic cleanser
- Cardiovascular tonic
- Respiratory tonic
- Microbiome health & balance
- Supports healthy blood sugar
- Stress relief & protection
- Reduce fatigue

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### Reishi and the Central Nervous System

- Sedative
- Sleep inducing
- Neuro-protective
- Antinociceptive
- Anti-epileptic\*
- Anti-depressant
- Anxiolytic effect
- Calm overactive CNS
- GABAergic mechanism
- Supported re-uptake of GABA neurotransmitter



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### Reishi and Alzheimer's Disease

- Long-term consumption may slow progression\*
- Promotes neurogenesis
- Reduces senescence of neurons
- Neuro-protective
- Improved cognitive performance
- Memory & learning markers improved
- Inhibited beta-amyloid production
- Increased anti-oxidant defense
- Increased BDNF levels
- BDNF enhancing effect
- Improved spatial memory
- Increased PSD 95\*
- Lowered TNF- $\alpha$
- Enhanced cholinergic neurotransmission



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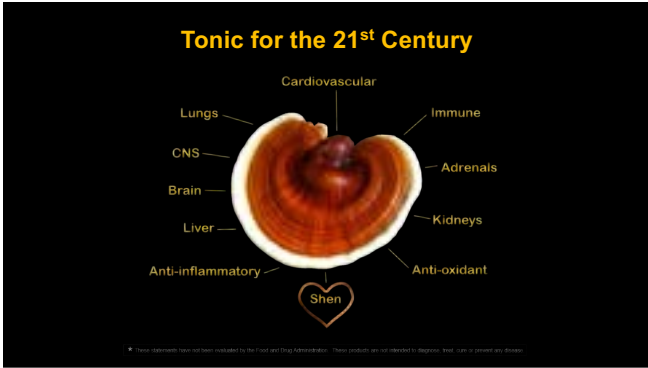
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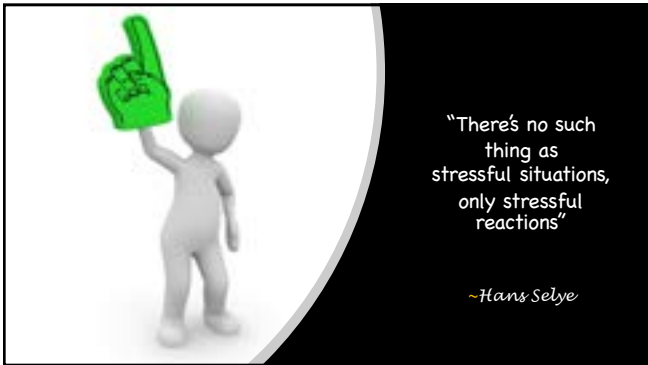
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