Meet the Nootropics

“Smart” Drugs to Stimulate and Regenerate Your Brain
“Smart” Drugs

- Enhance memory and learning ability
- Protect neurons under oxygenation or chemical assault
  - Cerebral ischemia, stroke
  - Drugs, neurotoxins
- Increase neuronal efficiency
- Enhance focus and motivation
- Are relatively non-toxic
**Caffeine**

Stimulant and mood elevator
Described in ancient Chinese and Arabic texts
Goats consumed berries coffee plant
  "Gamboled and frisked about all through the night instead of sleeping." (2)

**L-Theanine**

Green tea extract
Tempers caffeine side effects
  Esp. anxiety, insomnia, and BP elevation
Enhances Caffeine’s positive effects:
  Improved speed and accuracy of performance,
  Reduced susceptibility to distracting information

**Dose:** 50 mg caffeine/ 100 mg L-theanine. (3)
Piracetam and Choline - GABA Derivative. Enhances memory formation. Choline enhances the effects of piracetam. 
Dose: 1600 mg piracetam; 200-300 mg choline.

Creatine - Improves short term memory, reasoning, and enhances oxygenation. 
Dose: Loading 20 gm/day, x 5 days then 5 gm/d.

Bacopa - Enhances focus and attention reduces anxiety and improves long term memory. 
Dose 300 mg with a fat source (i.e., Ghee, Avocado, Coconut Oil)

Piracetam and Choline - GABA Derivative. Enhances memory formation. Choline enhances the effects of piracetam. 
Dose: 1600 mg piracetam; 200-300 mg choline.

Rhodiola - Improves mood enhances memory, reduces reaction time, improves reasoning skills. 
Dose: 350 mg/day. 3 days on, 1 day off cycle.

Asian Ginseng - Improves memory and memory retention, enhanced attention and focused, reduces anxiety, enhances performance, reaction time, and endurance. 
Dose: 100 mg/day
CEREBROLYSIN

- Anti-inflammatory
- Reduction of Free Radicals
- Free Radical Reduction
- Modulation of Inflammatory Cytokines

- Neuroplasticity
- Neuroregenerative
- Neuroprotective
CNTF – Ciliary Neurotrophic Factor
Counters the adverse effects of elevated levels of fibroblast growth factor (FGF-2)-scar formation.

GDNF – Glial Cells Derived Neurotrophic Factor

IGF-1 - Insulin-like Growth Factor 1

IGF-2 – Insulin-like Growth Factor 2
Neuroplasticity/Neuroregeneration

Benefits from Neuroprotection
- Modulation of CDK5 and GSK3β activity
- Reduction of apoptosis
- Reduction of inflammatory response
- Reduction of free radicals

Dementia → Stroke → TBI

Benefits from Neuroregeneration
- Neuroplasticity
- Neurogenesis
Indications

Dementia

CVA-Protective and Post Event

Traumatic Brain Injury
Dementia

- Cerebrolysin-(30 ml/day, 5 days/week)
- 147 patient, 4-week post CVA
- 200%↑ in cognitive scores (MMSE) exam.
- ADL scores improved in 35% vs. control
- 85% pts. showing some improvement.
- Regulates glycogen synthase kinase-3β and cyclin-dependent kinase 5 activity.
- Decreased β-amyloid deposition /microtubule-associated protein tau phosphorylation
- Increases synaptic density and restores neuronal cytoarchitecture.
- Improved cognitive and behavioral performance

Vereshagin N V et al., 2001 Therapeutic Archives, 73:22-27
Masliah E. et al. / Drugs Today (Barc). 2012 Apr;48 Suppl A:3-24
CVA Recovery

- Treated patients recovered motor function in 20-21 days; untreated group 90 days to obtain the same level of service.
- Improved Cognitive Function
- Mortality Reduction with early Cerebrolysin intervention

Ever Neuro Pharma; Cerebrolysin Monograph, Unterach, Austria, 2010

Ladumar, G et al., J. Neural Transm 2005; 112:415-428
Cerebrolysin Tempers:

1. Oxidative Stress Reduction
2. Neuroinflammation Modulation
3. Destructive chemokines, cytokines, and neuropeptides
4. Brain cell mitochondria destruction

28 days immediately post TBI injury =

Cognitive performance No Rx. x 1 year.

1. Ever Neuro Pharma; Cerebrolysin Monograph, Unterach, Austria, 2010

**Dosing**

- Single dose up to 50 ml-multiple doses over a cycle preferred
- Treatment over 10-20 day course-Daily Dose
- After the initial course, reduce dose to 2-3 days/week
- A treatment “holiday” equal to the length of treatment is recommended every other cycle.
- IM injection-May give up to 5 ml
- IV Injection 10 ml undiluted-10 to 50 ml infuse in NSS in 15-60 minutes
- Vitamins and drugs may be mixed in IV solution, not in the syringe
Contraindications (19)

- Drug Hypersensitivity
- Epilepsy
- Severe Renal Impairment

Special Considerations (20)

- Do not mix with amino acid solutions
- Monitor anti-depressant and MAO inhibitors—dose may need to be lowered

Toxicity studies = 5 times human therapeutic dose for 26 weeks
No substance-related intolerability

No teratogenic, embryotoxic or foetotoxic effects
No antibody formations, no anaphylactic reactions
No carcinogenicity recorded

Dosing

- **Organic Brain disorders, metabolic disorders, neurodegenerative disorders (dementia)**
  - 5 days/week x 4 weeks
  - 2-4 cycles/year
  - 10 ml/d cognition
  - 30 ml/d behavior

- **Post-apoplectic complications (Stroke)**
  - 5 days/week up to 4 weeks
  - Up to 20 days (acute)
  - Treat ASAP
  - 30-50 ml (Higher doses for more severe s/s 5 days/week x 4 weeks for rehab
    - 10-30 mk/d

- **Craniocerebral Trauma** 10-50 ml
- **Children** 1-2 ml
## Dosing

### Acute Brain Trauma

<table>
<thead>
<tr>
<th>Dosage</th>
<th>30 ml–up to 50 ml for severe cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment cycle</td>
<td>up to 20 days</td>
</tr>
<tr>
<td>Window Opportunity</td>
<td>treatment starts as soon as possible</td>
</tr>
</tbody>
</table>

### Rehabilitation After Brain Trauma

<table>
<thead>
<tr>
<th>Dosage</th>
<th>10 ml–up to 30 ml for severe cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment cycle</td>
<td>5 days per week/up to 4 weeks</td>
</tr>
<tr>
<td>Window Opportunity</td>
<td>as soon as possible after the acute treatment</td>
</tr>
</tbody>
</table>
Semax

ACTH/MSH-like analog peptide

✓ Neuroprotective
✓ Anxiolytic
✓ Antidepressant
✓ Analgesic
ACTH/MSH-like analog peptide

⇑ BDNF = ⇑ serotonin, NE
Antidepressant, anti-anxiety

Encourages growth and differentiation of new neurons and synapses
Necessary for long term memory retention


Semax

ACTH/MSH-like analog peptide

- Memory
- Learning
  - Counters negative learning and memory effects of heavy metals
- Attention
  - Relieves Symptoms of ADHD
- Augments psychostimulants on central dopamine release
- Modulates brain development.

Semax

Indications:

- Anxiety/Depression
- Memory retention and learning
  - Increase in mental processing
  - Improvement in memory recall
- Hypoxemic States
  - TIA, CVA (Stroke) and Acute MI
  - Heavy Metal Toxicity
  - Pain relief
Semax

Indications:

1. ADHD
2. Increased attention during repetitive tasks
3. Migraine Headache
4. Increased Intellectual capacity
5. Mental Clarity
6. Mood Stabilizer
7. Mood Stabilizer
   Improves Outlook on life
8. No “high” feeling
Semax
Indications:

- Increased Energy
- Improved Visual Acuity
- Expanded visual fields
- Increased electrical sensitivity of optic nerve
- Improved color vision
- Improves olfactory sense
Infrequent Side Effect: Secondary Anxiety

300 mcg – 1,000 mcg SubQ/ 1/day once daily
2 times weekly
More can lead to desensitization
Depends on patient response
Can alternate with Selank
Infrequent Side Effect: Secondary Anxiety

300 mcg – 1,000 mcg SubQ/ 1/day once daily
2 times weekly
More can lead to desensitization
Depends on patient response
Can alternate with Selank
Infrequent Side Effect: Secondary Anxiety


3. Tsai SJ. Semax, an analog of adrenocorticotropin (4-10), is a potential agent for the treatment of attention-deficit hyperactivity disorder and Rett syndrome. Med Hypo 2007;68(5):1146-6


Selank
Anti-anxiety, Antidepressant, Opioid, Alcohol Withdrawal/Dependence
Selank

- Immunostimulatory peptide
- Located in the heavy chain of IgG
- Modulates:
  - IL-6
  - 5-HTP, dopamine, and norepinephrine
  - T-helper cell cytokines
  - Increases BDNF
  - Reduces the breakdown of enkephalins
Benzodiazepines

01 Alters Affinity for GABA-A Cell Receptor
02 Potentiates GABA
03 Sedating Addictive Cognition Issues

Selank

01 Alters Affinity for GABA Cell Receptor
02 Potentiates GABA Inhibition > than Benzos
03 Non-sedating Non-addictive No cognition loss
Selank vs. Benzos


Selank Odds and Ends

Positively effects BCL6, an anti-inflammatory, antiviral regulator. (4)

Upregulates of BDNF and serotonin activates learning and memory. (5)

Adaptogenic properties; Environmental stressor. (6)

Increases intracellular antioxidant levels. (7)

Increases blood flow to the brain. (8)
Decreases blood pressure
Selank inhibits mast cell activity rendering it useful in Mast Cell Activity Syndrome (MCAS) and POTS. (12-13)

Selank exhibits a penchant for weight loss and lowers cholesterol versus a control group. (10)

It increases lymph flow to the gastric lining, reducing stomach ulcer size. (11)

Selank inhibits mast cell activity rendering it useful in Mast Cell Activity Syndrome (MCAS) and POTS. (12-13)

“Stacking” Selank with Semax enhances focus and concentration (14)


Official Indications from the Russian Health Ministry

- Anxiety
- Depression
- Chronic Fatigue
- Adrenal Fatigue
- Anti-viral activity
- Anti-inflammatory activity
Dose:

2-3 drops 0.15% intranasal spray 2-3 X/D
Refrigerate.

Side Effect: Rare, fatigue.