



**NEUROLINK™**

COMPREHENSIVE SUPPORT FOR NEUROLOGICAL AND COGNITIVE FUNCTION

180 VEGETARIAN CAPSULES | NPN80049254 | NEU180-CN

The neurotransmitters that facilitate psychological health—including positive mental outlook, balanced perspective, and the ability to cope with everyday stress—depend largely on the availability of their amino acid precursors and the accessory nutrients required as enzyme cofactors for their production and degradation. **NeuroLink™** is a blend of these nutrients, designed to support balanced moods, mental focus, and healthy responses to emotional stress.

The fast pace of the modern world presents human prehistoric genes with sensory and psychological inputs that can be challenging to process. Insufficient sleep, poor diet, compromised digestive function, and the myriad of psychological stressors provide fertile ground for mood disturbances, emotional instability, and difficulty with focusing and attention.

#### **NEUROLINK MAY HELP WITH:**

- promoting healthy mood balance
- restful sleep
- temporarily promoting relaxation

#### **HIGHLIGHTS**

##### **Gamma-amino butyric acid (GABA)**

GABA is the primary inhibitory neurotransmitter in the central nervous system, known largely for its calming effect.<sup>1</sup> In a study of subjects who had experienced a major depressive episode (including a subset diagnosed as bipolar), low cerebrospinal fluid (CSF) levels of GABA correlated to the severity of anxiety. CSF-free GABA was lower in those with major depressive disorder compared to healthy subjects.<sup>2</sup>

In a rat model of ADHD, low GABA levels were associated with the ADHD-like behavior.<sup>3</sup> Human studies further support this association. Significantly reduced levels of GABA were found in children ages 8-12 diagnosed with ADHD compared to healthy, age-matched controls, when GABA was measured in vivo via magnetic resonance spectroscopy.<sup>4</sup>

##### **L-Glutamine**

The amino acid L-glutamine is a precursor to GABA in the brain, via the glutamate/glutamine cycle, with glutamate serving ultimately as a precursor to GABA.<sup>5,6</sup> In addition, glutamine is a conditionally essential amino acid, meaning that during times of stress, illness, or trauma, the amount obtained from food may not be sufficient to meet the body's needs and supplementation may be beneficial.

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## Tyrosine

Tyrosine is a conditionally essential amino acid and the precursor to dopamine, a catecholamine associated with learning, attention, and mood. Research has established a connection between ADHD and disturbances in catecholamine transmission. Patients with ADHD show depleted levels of dopamine and norepinephrine, and some of the stimulatory pharmaceuticals designed to reduce symptoms of ADHD target pathways that suggest the abnormal neurotransmitter function seen in ADHD is primarily catecholaminergic in origin.<sup>7</sup>

## 5-hydroxytryptophan (5-HTP)

5-HTP is the precursor substance to the neurotransmitter serotonin, commonly regarded as the “feel good” chemical—one that facilitates a positive mental outlook and may help reduce symptoms of depression, seasonal affective disorder, chronic pain, and premenstrual syndrome.<sup>12</sup> 5-HTP is produced from the essential amino acid, tryptophan, which is relatively low in the food supply, even in protein-rich foods.

5-HTP has a short half-life, which underpins the divided doses recommended for this product, as this can be effective at maintaining clinically relevant levels. According to the authors of a study that supports 5-HTP administered three times daily (TID), “With less frequent dosing, plasma levels tend to have higher peaks and lower troughs.”<sup>15</sup>

## Inositol

Inositol is a carbohydrate synthesized from glucose (via glucose-6-phosphate), and is recognized for its calming effect, which can be helpful for modulating multiple mood disturbances. In a small, double-blind controlled crossover study involving subjects with panic disorder with or without agoraphobia, inositol supplementation was more effective than placebo in reducing frequency and severity of both panic attacks and agoraphobia. It may also be beneficial for obsessive-compulsive disorder (OCD).<sup>19-20</sup>

## Vitamin B6 (as Pyridoxal-5-Phosphate)

NeuroLink™ includes vitamin B6 because this is required for the biosynthesis of several neurotransmitters, including GABA, dopamine, norepinephrine, and serotonin. B6 is a cofactor for over 100 enzymes, mostly related to protein and amino acid metabolism, including aromatic L-amino acid decarboxylase (AADC), which catalyzes the conversion of 5-HTP to serotonin, and L-DOPA (from tyrosine) to dopamine.<sup>15,21,22</sup> People with inborn errors of this enzyme exhibit combined deficiency of serotonin, dopamine and catecholamines, along with extraneurological symptoms.<sup>23</sup> Even in individuals without this congenital deficiency, low enzyme activity may benefit from supplemental B6, particularly when combined with the amino acid substrates needed for neurotransmitter production. Supplemental B6 may also be important for patients taking pharmaceutical drugs known to deplete this nutrient, such as oral contraceptives.<sup>24</sup> The form of B6 in this formula, pyridoxal-5-phosphate, is the bioactive form required for all transamination reactions and many decarboxylase enzymes.

## Medicinal Ingredients (per capsule):

L-Tyrosine.....	200 mg
GABA (4-Aminobutanoic acid).....	125 mg
Inositol (Myo-Inositol).....	100 mg
L-Glutamine.....	100 mg
Taurine (2-aminoethanesulfonic acid).....	100 mg
L-5-HTP ( <i>Griffonia simplicifolia</i> -Seed).....	25 mg
Vitamin B6 (Pyridoxal-5-phosphate).....	5 mg

**Non-Medicinal Ingredients:** Hypromellose, microcrystalline cellulose, magnesium stearate (vegetable source). **Recommended Dose:** Adults: Take 2 capsules three times per day with a meal, or as directed by your health care practitioner. NeuroLink™ should be taken in divided doses, on an empty stomach, to facilitate uptake and reduce the potential competition between the ingredients and dietary amino acids for absorption and assimilation.

## REFERENCES

For a list of references cited in this document, click the following research link: [http://mkt.s.designsforhealth.com/techsheets/NeuroLink\\_References.pdf](http://mkt.s.designsforhealth.com/techsheets/NeuroLink_References.pdf)

The fast pace of the modern world presents us with sensory inputs that can overstimulate the brain, making it difficult to maintain balanced moods, emotional stability, and proper focus and attention. The myriad of psychological stressors we face can be challenging to process in a calm and collected manner. The neurotransmitters that facilitate psychological health—including positive mental outlook, balanced perspective, and the ability to cope with everyday stress—depend on the availability of the nutrients they're made from. **Neurolink™** is a blend of these nutrients, designed to support balanced moods, mental focus, and healthy responses to emotional stress. These nutrients are present in food, but during periods of heightened stress, additional supplementation can be helpful to ensure that the body has adequate amounts to meet its needs.

### Highlights

#### ◆ *Calm response to stress*

- ◆ **GABA (gamma-Aminobutyric acid)** – the primary calming neurotransmitter in the central nervous system. It may be helpful for mitigating occasional feelings of anxiousness, and facilitating proper focus.
- ◆ **L-Glutamine** – an amino acid building block for GABA. Glutamine is a conditionally essential amino acid, meaning that during times when a healthy response to stress is needed, the amount obtained from food may not be sufficient, and supplementation may be beneficial.
- ◆ **Taurine** – a compound derived from the amino acid cysteine; supports a calm response to stress
- ◆ **Inositol** – a unique carbohydrate, recognized for its calming effect, which can be helpful for maintaining balanced emotions in occasional stressful situations and for supporting restful sleep (along with GABA)

#### ◆ *Focus, attention and a positive mental outlook*

- ◆ **Tyrosine** – the precursor to dopamine, a neurotransmitter associated with learning, attention and mood. Healthy dopamine levels support the ability to apply focus and attention, and maintain a positive mental outlook. Tyrosine is also an essential component of thyroid hormone, with the thyroid gland being a key regulator of the body's metabolism. Appropriate amounts of thyroid hormone may support steady energy levels, and help maintain a healthy body weight.
- ◆ **5-HTP (5-hydroxytryptophan)** is the precursor to the neurotransmitter serotonin, commonly referred to as the “feel good” hormone—one that facilitates a positive mental outlook. 5-HTP is produced from the essential amino acid tryptophan, which is relatively low in the food supply, even in protein-rich foods.

#### ◆ *Supportive nutrient*

- ◆ **Vitamin B-6** – required enzyme cofactor for the synthesis of several neurotransmitters, including GABA, dopamine, norepinephrine and serotonin

**Recommended Dose: Adults:** Take 2 capsules, 3 times per day, with a meal, or as directed by your health care practitioner. To minimize the risk of gastrointestinal side effects, start dosing at 1 capsule 2-3 times per day and slowly increase to effective dose over a 2 week period. Take 30-45 minutes before bedtime. Use for a minimum of 1 week to see desired effects. Consult a health care practitioner for use beyond 3 weeks. **Does not contain gluten.**

