Tryptophan (Amino Acid) Helps Correct Anxiety & Poor Sleep

Chlorella Algae (RECOVERYbits) has the highest concentration of TRYPTOPHAN of any Food

The body uses **tryptophan** to help make serotonin, the neurotransmitter that produces healthy sleep and a stable mood. **Chlorella algae has the highest concentration of tryptophan in the world** and is the most natural way to achieve a healthy body, happy mind and good sleep.

Aging is often accompanied by a spectrum of mood disorders that include irritability, stress, and anxiety. These symptoms, along with more severe ones like sleep disorders, depression, aggressive behavior, reduced motivation, and suicidal thinking have all been traced to depletion of brain levels of **serotonin**, a neurotransmitter that has been called the "happiness hormone."

With the progression of age, chronic, low-grade inflammation sets the stage for degenerative disease in almost every area of the body. While this inflammation often leads to diabetes, cancer, and heart disease, it also affects the brain by interfering with the production and release of **serotonin**.

In order for your body to manufacture serotonin, it needs a sufficient supply of the amino acid, **tryptophan**. Much of what is now known about the role of serotonin in psychiatric and behavioral disturbances comes from studies of **tryptophan depletion**. Lowering tryptophan levels triggers a corresponding drop in brain serotonin production and can impact mood, impair memory, and increase aggression.

Although you can't supplement with serotonin itself, **tryptophan** is found in protein and the highest concentration of tryptophan is found in algae. **Chlorella algae has five times more tryptophan than turkey** – the food that most people associate with tryptophan and sleepiness. Increasing tryptophan helps normalize levels of serotonin and other neurotransmitters. As a result, it can reverse many of the behavioral symptoms of age, including irritability, mood disorders, poor sleep, anxiety, and stress.

Tryptophan Helps Regulate Behavior

The scientific literature is clear: Tryptophan simply makes people nicer. With the close connection between tryptophan and the neurotransmitter serotonin, it shouldn't be surprising that supplementing with tryptophan can regulate behaviors that involve serotonin signaling in the brain (such as mood, sleep, and anxiety). Studies in animals reveal marked decreases in territoriality and aggressive behavior when their diets are supplemented with tryptophan. Humans experience similar results.

A study of 10-year-old boys with elevated physical aggressiveness revealed the benefits of a single **500 milligram** dose of tryptophan. In the supplemented group, boys were able to adjust their level of response based on the level of provocation, helping them avoid potentially violent encounters. The supplemented boys were able to take more mature perspectives and to be more helpful in the group—all behaviors that could be achieved by many older adults as well.

Other studies have demonstrated that low levels of tryptophan can have a negative effect on behavior. Patients receiving interferon therapy against hepatitis C infection, for example, experience decreases in plasma tryptophan levels. As a result, those undergoing this therapy are notoriously likely to experience emotional irritability and severe depression as side effects. As another example, mice lacking the gene necessary to convert tryptophan to serotonin display extreme compulsive and impulsive behaviors, including intense aggressiveness.

People with naturally impulsive or aggressive personalities may receive the most benefit from supplementing with tryptophan, based on studies of deliberate tryptophan depletion in such patients. Those people react very poorly to low tryptophan levels, with an exaggerated impression of the intensity of fleeting angry expressions on others' faces, and an increase in their angry mood state. Similar effects of tryptophan depletion are seen in adults with attention deficit-hyperactivity disorder, which is closely associated with aggression and impulsivity.

Tryptophan Also Improves Sleep Quality

Poor sleep quality or sleep deprivation is a common cause of irritability and moodiness, especially in older people. Studies show that people who sleep poorly are more likely to consume refined sugars, to eat fewer vegetable portions, and to have more irregular meal patterns.

The two main bio-molecules that are involved in the production of normal sleep—the neurotransmitter **serotonin** and the hormone **melatonin**—are both naturally made from **tryptophan** in the body. That makes tryptophan a tremendously valuable nutrient for those whose sleep is lacking in either quantity or quality.

Studies dating back to the late 1970s have demonstrated that taking between **1 and 15 grams** of tryptophan at bedtime can help you fall sleep. Even doses as little as **250 milligrams** were found to increase the quality of sleep by lengthening the amount of time spent in the deepest stage of sleep. There are 100 milligrams of tryptophan in a single serving of RECOVERYbits® chlorella algae but since 100% of the tryptophan in algae is bio-available it feels like 250 milligrams.

Those who take tryptophan at bedtime are more likely to wake up with increased alertness, to have clearer thinking, and to perform better on attention-requiring tasks. Unlike sleeping pills or drugs, tryptophan induces sleepiness but does not impair performance or produce dependence, nor does it make it harder to be roused from sleep when necessary.

Source: http://www.lifeextension.com/Magazine/2013/5/Better-Brain-Chemistry-with-Tryptophan/Page-01

The highest concentration of tryptophan is found in chlorella algae, followed by sprirulina algae. Smaller amounts can also be found in most protein-based foods or dietary proteins. Contrary to the popular belief that turkey contains an abundance of tryptophan, turkey is typical of poultry.

Tryptophan (Trp) Content of Various Foods *

Food	Tryptophan g/100 g of food
CHLORELLA (RECOVERYbits)	1.24
SPIRULINA (ENERGYbits)	0.85
cod, atlantic, dried	0.70
Soybeans, raw	0.59
Cheese, Parmesan	0.56
Sesame seed	0.37
Cheese, cheddar	0.32
Sunflower seed	0.30
Pork, chop	0.25
Turkey	0.24
Chicken	0.24
Beef	0.23
Oats	0.23
Salmon	0.22
Lamb, chop	0.21
Perch, Atlantic	0.21
Chickpeas, raw	0.19
Egg	0.17
Wheat flour, white	0.13
Baking chocolate, unsweetened	0.13
Milk	0.08
Rice, white, cooked	0.028
Quinoa, uncooked	0.167
Quinoa, cooked	0.052
Potatoes, russet	0.02
Tamarind	0.018
Banana	0.01

Article Source: Gratefully reprinted from: https://en.m.wikipedia.org/wiki/Tryptophan
Chart source: Joanne Holden, Nutrient Data Laboratory, Agricultural Research Service

https://www.ars.usda.gov/northeast-area/beltsville-md/beltsville-human-nutrition-research-center/nutrient-data-laboratory/

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Turkey meat and drowsiness

A common assertion in the US is that heavy consumption of turkey meat results in drowsiness, due to high levels of tryptophan contained in turkey. However, the amount of tryptophan in turkey is comparable to that contained in other meats. Drowsiness after eating may be caused by other foods eaten with the turkey, particularly carbohydrates Ingestion of a meal rich in carbohydrates triggers the release of insulin. Insulin in turn stimulates the uptake of large neutral branched-chain amino acids (BCAA), but not tryptophan, into muscle, increasing the ratio of tryptophan to BCAA in the blood stream. The resulting increased tryptophan ratio reduces competition at the large neutral amino acid transporter (which transports both BCAA and aromatic amino acids), resulting in more uptake of tryptophan across the blood–brain barrier into the cerebrospinal fluid (CSF). Once in the CSF, tryptophan is converted into serotonin in the raphe nuclei by the normal enzymatic pathway. The resultant serotonin is further metabolised into melatonin by the pineal gland. Hence, this data suggests that "feast-induced drowsiness"—or postprandial somnolence—may be the result of a heavy meal rich in carbohydrates, which indirectly increases the production of melatonin in the brain, and thereby promotes sleep.