

Stress, sleep, caffeine and green tea; the L-theanine connection By Marcus Webb

It's funny how we in the Western world feel that we have discovered something very special when those in China have been taking it for granted for over 4,000 years. I am, of course, talking about green tea drinking. Many people switch to green tea for health reasons and because of its apparent stress busting and calming effects on the nervous system. However, don't be fooled; like all tea's, green tea does contain caffeine but significantly less than a strong coffee. It's been estimated that 100ml of green tea contains around 32mg of caffeine compared to 100ml of espresso coffee that packs 212mg. When it comes to regular filter coffee the caffeine level falls to 40mg per 100ml. If you want to reduce the caffeine in your green tea don't throw your leaves away after the first brew. Using the green tea leaves a second time will drop the caffeine to 12mg and if you brew them a third time to just 4mg. Alternatively, use a decaffeinated version. In general, green tea drinkers may be benefiting from the rather unique blend of compounds found in the tea leaves. These range from a group of antioxidants known as polyphenols (also found in broccoli, spinach and carrots) through to some 20 individual amino acids 60% of which are the green tea specific amino acid known as L-theanine. One of the interesting aspects of L-theanine is its ability to survive the brewing process, a characteristic that imparts a special flavour and sweetness to freshly made cup of green tea. The young tea buds tend to contain the highest amounts of L-theanine and other health promoting compounds.

Green tea does present us with a rather conflicting cupper. On one hand, it can deliver some 32mg of caffeine per 100ml but on the other hand people readily report how effective it is as a natural calming agent. How can a caffeine based beverage calm you down? The answer followed on from some ground breaking Japanese research that was looking into the anti-anxiety effects of L-theanine. The researchers showed that L-theanine acted as an antagonist to caffeine. In other words, the natural balance of caffeine and L-theanine in green tea offered all the calming effects of L-theanine that, at the same time, offset the agitating, 'hyper' effects of the accompanying caffeine. Nature had the balance worked out well! What's more, the calming effects of L-theanine were not associated with any drowsiness or impairment of clarity of thought. The Japanese researchers appeared to have solved the conflicting issue surrounding the caffeine content and had opened the doors to new work on the influences of L-theanine on the brain and in cases of stress, anxiety and its ability to positively influence disturbed sleep.

Over time, research work on L-theanine demonstrated that it helped to protect nerve cells in the within the brain by lengthening the life of the cells despite the exact neuroprotective mechanism being unclear. L-theanine was also linked to increased alpha brain wave production. Our brains generate four main wave patterns, each associated

with certain mental states. Delta waves tend to be dominant during deep sleep with theta waves being the main level of neuronal activity during phases of light sleep. When we are awake and excited our brains typically generate lots of beta waves but what we really want, especially in cases of stress and anxiety, are alpha waves. These brain wave patterns occur in states of being awake but relaxation. This may sound a rather conflicting state of being but you can be awake and have a good feeling of overall well-being; thanks to the alpha waves. Studies have shown that L-theanine use can ease states of stress and anxiety by encouraging a more relaxed and positive mood through the generation of alpha wave dominance. Researchers have also discovered that one of the key features that allows L-theanine to offer such impressive effects is its ability to cross the normally impenetrable blood-brain barrier. This highly selective membrane keeps many substances from entering the brain but L-theanine appeared to be able to cross it freely.

Another key effects of taking L-theanine is an increased production of another brain derived amino acid called GABA. GABA is a naturally occurring brain chemical with established calming effect. Studies clearly showed that by taking L-theanine GABA levels were naturally boosted and a state of alert calmness ensued. In addition, increased GABA is also associated with a better mood and creating a sense of well-being. Supporting this levels of the brain chemical dopamine are also increased. L-theanine appears to enhance the actions of both GABA and dopamine in a natural and side effect free fashion resulting in an overall improvement in emotional well-being and improved sleep.

L-theanine is available as a dietary supplement. To date, no adverse side effects have been associated with its normal use that ranges from 100-200mg taken 1-2 times a day. However, it is recommended that you consult your doctor or health professional before using L-theanine supplements in combination with prescribed medications or if pregnant or breast feeding.

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Resources:

History and background research on L-theanine: www.l-theanine.com

Suppliers of L-theanine supplements: www.elthea100.co.uk, www.nutricentre.com, www.theanine.co.uk