bioteen™
Teen Health

CLARICALM

PRODUCT OVERVIEW

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Being 'in the zone' when it comes to work or studying is literally one of the best feelings in the world. Basically, you become fully immersed in a feeling of energized focus, full involvement, and enjoyment in the process of the activity. At Bioteen, we've experienced this for ourselves and want to bring that feeling to everyone, especially teens who already have so much on their plate when it comes to their academic endeavors.

To help facilitate this 'energized focus' state of mind, we have developed a range of cognitive health supplements that use clinically proven ingredients to target the biological pathways that when given in the right doses, will have this effect. Including our study and calming booster: ClariCalm.

Let's explore how the ingredients in Bioteen's ClariCalm improve energy supply to the brain, assist with neurotransmitter formation and enhance relaxing brainwave formation.

Energy supplying

Did you know that the brain uses 20-25% of an average adult's energy, at rest? That is quite a lot of energy for an organ that only accounts for about 2% of your body weight. While there are a number of nutrients needed to maintain brain health, its preferred primary source of energy is glucose. As humans, we don't really consume glucose as it is (even sugar is a combination of glucose and fructose), but rather depend on a varied diet that has a sufficient amount of carbohydrates that when broken down, provide the body with the much-needed glucose.

The supply of glucose (or glucose containing foods) can have an immediate and long-term effect on cognitive performance. Ideally you want a constant supply to prevent a blood sugar dip (1, 2). The reason why you want to avoid these dips is because the average teen's brain can use up to 120g of glucose per day, which is about 30% higher than the amount an adult needs (3). Due to this higher rate of glucose metabolism, teen's may be at a higher risk of the negative impacts of blood sugar dips (4) and so having a constant supply is crucial (1). In order to have this constant supply, we need to focus on foods that have a slow and steady release of glucose (aka low GI/ glycemic index choices). That's why Palatinose™ is ideal, it provides a stable supply of glucose which is still completely absorbed, meaning it gives as much energy as other carbohydrate sources. Slow release carbs have been associated with an improved mood (because your teen isn't feeling hangry)(4) as well as improved concentration and memory (5,6).

Neurotransmitter formation

Neurotransmitters are chemical signaling molecules that allow brain cells (or neurons) to communicate with each other which is vital for all the brain's functions, including the ability to concentrate and learn. The types of neurotransmitters created can affect how a person feels and behaves.

For example:

- Excitatory neurotransmitters excite the neuron, cursing it to fire its message
- Inhibitory neurotransmitters inhibit/ relax the neuron, preventing it from firing

To reduce anxious feelings and get you into 'the zone', we need to downregulate some of the excitatory pathways and focus on increasing the inhibitory neurotransmitters. To do this, we have included L-Theanine (in the form of Suntheanine™), GABA and vitamin B in Bioteen's ClariCalm.

Let's start with L-theanine. It works in two main ways to calm you down, firstly it has a similar shape to the main excitatory neurotransmitter glutamate and because of this it can bind to glutamate receptors and block glutamate from exciting the neuron. Secondly, it is a precursor to GABA (or gamma aminobutyric acid) which is the main inhibitory neurotransmitter in the body accounting for about 40% of the inhibitory processing in the brain (7).

In addition to helping to calm you down, having enough glucose available (in the form of Palatinose™) is also important for the formation of the neurotransmitter acetylcholine, which has been found to be associated with improved concentration and memory (8).

Another very important nutrient that is a rate limiting cofactor in the synthesis of the neurotransmitters dopamine, serotonin and GABA is vitamin B6. Some research shows that even a mild deficiency of vitamin B6 can lead to a down regulation in the production of GABA (remembering that GABA is a calming neurotransmitter, and we want more of it to keep things cool and calm). In addition to this, vitamin B6 also plays a role in brain glucose regulation and as we have learned above, ensuring that the brain has enough energy is a crucial part of being able to concentrate and feel great (9).

Brain wave enhancement

Brain waves are electrical impulses that are classified into four groups according to their frequency: alpha, beta, theta, and delta waves (10).

Each wave type is associated with a different state of mind with alpha waves indicating reduced levels of anxiety and a state of wakeful relaxation whereas beta waves are associated with increased levels of stress and anxiety (9). It appears that Suntheanine® (L-theanine) has a direct effect on the brain, actively increasing alpha and decreasing beta wave activity. The huge benefit here is that while it relaxes the mind, it doesn't cause drowsiness, which is the reason why it makes the perfect addition to a study aid.

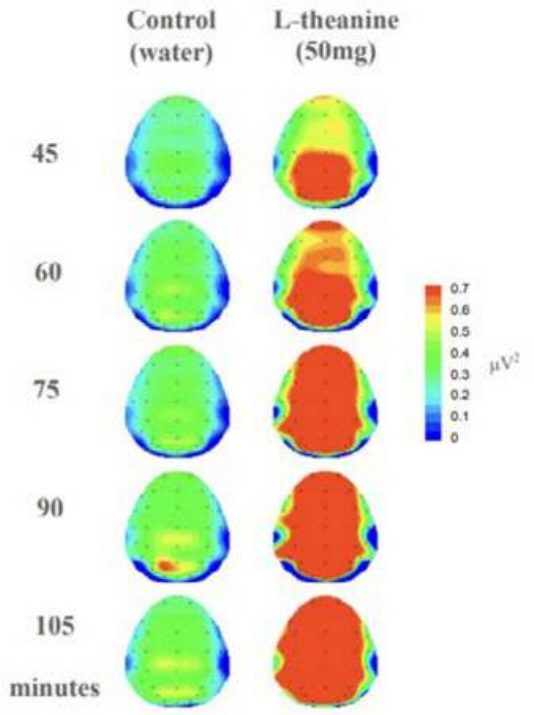

Fig. 2. Schematic electroencephalogram showing the top view of the scalp.
The red area denotes alpha brain activity at various times post-consumption.
Source: Nobre et al [46]

In addition to the effects that L-theanine has on brain waves, oral GABA (which is also present in Bioteen's ClariCalm) also appears to cross the blood brain barrier (BBB) to some degree. Here it directly exerts calming effects on the brain thus also affecting brain waves in a similar fashion (11). Some research shows that the stress protective effects of GABA can be seen in as little as 30 minutes (12), showing us that including GABA can be a quick and efficient way to bring on a state of calm, ideal for concentration.

The bottom line

The bottom line is that using the right nutraceuticals and ingredients can be a viable way to help your teen concentrate and learn more effectively, whilst remaining calm. We have highlighted these two specific ingredients for Bioteen's ClariCalm booster because we believe that when used alone, they are useful, but together they are unstoppable.

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