



What Does GABA Do In The Brain?

GABA is gamma amino butyric acid, and is an inhibitory neurotransmitter that is essential for the proper function of your brain and the central nervous system, and has the effect of reducing excessive brain activity and promoting a state of calm.

For many people, the rush of daily life, with its problems, worries and external stimuli, can over-stimulate the brain to the extent that it can all seem too much for them. They feel anxious and overwhelmed, and wish that they could just go into a quiet corner to get away from it all. Most people have felt like that at some time, but the demands of life do not allow them that luxury. They just have to bear it and get on with life.

That is where GABA can come in. It can be used to bring your nervous system back to base, and make you feel more relaxed, calmer and more able to meet these challenges that life often throws at you. When you feel that you just can't relax or concentrate on what you are doing, GABA can help you. If you look around you and everybody else seems OK, without apparently feeling the stress and irritability that you feel, and then perhaps your problem is due to a GABA deficiency. GABA is the principal inhibitory neurotransmitter in your brain, and a deficiency would certainly give you the symptoms that you are feeling. Let me explain why.

As your brain becomes excited, it can run out of control and needs some form of modification or inhibition to keep it acting as normal. Without this you would become increasingly more restless and irritable, and ultimately have seizures. GABA is not only the main inhibitor in your brain, but also helps in the production of endorphins that provide you with a sense of well being. That sense of calm you feel when endorphins are produced, for example during exercise or sexual intercourse, is commonly referred to as the 'endorphin effect'.

GABA is at its highest concentration in specific areas of the brain, including the hypothalamus, the hippocampus and the central brain area, and is present in up to 40% of all synapses, the small gaps between neurons across which brain cells can communicate with each other.

It is produced during the Krebs or Citric Acid Cycle that is responsible for cell respiration or the production of energy from carbohydrates. It is synthesized from alpha-keto glutarate, which is produced just before the Succinyl Co-A stage of the Krebs Cycle in the brain. Vitamin B6 is involved in its metabolism, and a Vitamin B6 deficiency can lead to a deficiency in GABA that might result in seizures.



Basically GABA works by inhibiting the firing of neurons in your brain, and thus reducing general brain activity. The GABA receptor allows more chloride ion to enter the brain cell, thus helping to maintain the electrical charge within the cells. Benzodiazepines (e.g. diazepam) work by increasing the effectiveness of GABA in opening the chloride ion cells to allow more chloride ion to enter the neurons, and caffeine does the opposite, and inhibits this property of GABA. Thus diazepam works as a minor tranquilizer and caffeine as a stimulant.

Alcohol has a similar effect to the benzodiazepines, increasing the release of chloride into the neurons, and is the major way in which alcohol affects the brain. In fact, tolerance to drugs and withdrawal symptoms can be explained by the receptors adapting to the drug. They may increase in number, which means that more of the drug is needed to work on them, and they can become hypoactive in the event of the drug being withdrawn, that enhances the symptoms that the drug was intended to treat.

So basically, that is the way that GABA works. In simple terms it increases the flow of chloride electrolyte to the brain, and in so doing affects our mood. This effect is enhanced by prescription drugs such as Valium and Ativan, which are used by those that suffer the effects of a GABA deficiency. However, these drugs have side effects, not the least of which is dependency due to the GABA receptors becoming modified to suit the drug. There is a more natural way to overcome many stress problems and symptoms of mood swings.

Knowing what causes these symptoms, it makes sense to eat foods that stimulate the creation of neurotransmitters to replace those that are deficient. Since GABA is produced in the Krebs Cycle and complex carbohydrates produce glutamine that is an important part of that Cycle, and is also the precursor to GABA, then the consumption of such foods should in theory produce more GABA. In this case the theory works, and you should eat foods rich in complex carbohydrates such as whole grains, brown rice and oats as part of your diet.

Other foods that are high in glutamine or its precursors, glutamic acid and glutamate, include citrus fruits, beef liver, broccoli, halibut and lentils. A useful supplement to take is L-theanine, an amino acid found in green tea, and available in supplement form. L-theanine can calm your nerves while maintaining clarity of thought. In other words it calms you down, but doesn't make you drowsy and allows you to enjoy your day with anxiety.

Your doctor can determine whether or not you have a neurotransmitter deficiency through a simple urine test, and might also test your saliva for hormone content. A GABA supplement might be indicated, and if so it other beneficial effects on your body other than its effect on your brain cells.

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It improves your sleep cycles and promotes vivid dreaming, and can also have a positive effect on your blood pressure. It is also an effective pain killer, and can provide relief from such conditions as back pain and arthritis. Its stimulating effect on the anterior pituitary gland to secrete Human Growth Hormone might also be regarded as a benefit by many. Increasing the level of HGH in your blood can lead to fat loss and improved anabolic activity (increase in muscle tissue). This can be of benefit to older people whose level of HGH secretion has dropped off, and who find it more difficult to lose fat.

GABA is a substance that has many known benefits and no known side effects other than a slight tingling and increase in heart rate when the supplement is first used. It has a definite benefit for people to whom the world seems too hectic and overwhelming.



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