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ANTI-CONVULSANT AND ANXIOLYTIC ACTIVITY OF SOME MEDICINAL PLANTS: REVIEW

Mr. Om Ajay Kate, Mr. Atharv Sunil Zadap, Mr. Ashok Rugharam Godara, Mr. Nishant Bhagwan Chinchore

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Abstract:

Anticonvulsants (also known as antiepileptic drugs, antiseizure drugs, or anti-seizure medications (ASM)) are a diverse group of pharmacological agents used in the treatment of epileptic seizures. Anticonvulsants are also increasingly being used in the treatment of bipolar disorder and borderline personality disorder, since many seem to act as mood stabilizers, and for the treatment of neuropathic pain. Anticonvulsants suppress the excessive rapid firing of neurons during seizures. Anticonvulsants also prevent the spread of the seizure within the brain. Conventional antiepileptic drugs may block sodium channels or enhance γ-aminobutyric acid (GABA) function. Several antiepileptic drugs have multiple or uncertain mechanisms of action. Next to the voltage-gated sodium channels and components of the GABA system, their targets include GABAA receptors, the GABA transporter type 1, and GABA transaminase. Additional targets include voltage-gated calcium channels, SV2A, and α2δ. By blocking sodium or calcium channels, antiepileptic drugs reduce the release of excitatory glutamate, whose release is considered to be elevated in epilepsy, but also that of GABA. This is probably a side effect or even the actual mechanism of action for some antiepileptic drugs, since GABA can itself, directly or indirectly, act proconvulsively. Another potential target of antiepileptic drugs is the peroxisome proliferator-activated receptor alpha.

A drug used to treat symptoms of anxiety, such as feelings of fear, dread, uneasiness, and muscle tightness that may occur as a reaction to stress. Most anxiolytics block the action of certain chemicals in the nervous system. Also called antianxiety agent and anxiolytic agent.

Keywords: *Epilepsy, gamma-aminobutyric acid, Trauma, Anxiolytic, Lavandula angustifolia, Ferulic acid.*

Corresponding author:

Om Ajay Kate,

QR code

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INTRODUCTION:

ANTICONVULSANT:

Epilepsy is a brain disorder that result from intense, improperly coordinated, confined, or broadly dispersed electrical discharges from neurons. An epileptic seizure is a period of aberrant neuronal discharge that manifests clinically as alterations in sensory perception, motor coordination, mood, or autonomic function. Numerous factors, including congenital, developmental, or inherited ones, can result in epileptic seizure disorders. Most seizures are spontaneous, without prior warning, short-lived (a few minutes or even seconds), and terminate on their own. In various human communities, epileptic seizures are regarded as the most prevalent neurologic symptoms, and they continue to be the most prevalent neurological disorder affecting people of all ages. About fifty million people worldwide suffer from epilepsy, a chronic noninfectious brain disorder Focal seizures can affect a large portion of one hemisphere or just a small portion of a lobe, but generalized seizures happen when seizure activity is widespread in both the left and right hemispheres of the brain, and the affected person falls unconscious, albeit briefly except in myoclonic seizures. High-frequency action potential bursts and excessive synchronization of a neuronal population are two concurrent characteristics that mark the beginning of seizures. Extracellular Ca++ causes an inflow of Na+, the opening of voltage-dependent Na+ channels, the formation of recurrent action potentials, and the bursting activity that arises from the neuronal membrane's comparatively protracted depolarization. Depending on the type of cell, the gamma-aminobutyric acid (GABA) receptors and Cl influx or K+ efflux mediate the hyperpolarizing potential. GABA is a specific kind of inhibitory neurotransmitter in the brain that effectively stops the brain from delivering messages. In some cases, GABA interneurons may paradoxically promote particular types of epileptic discharges. Effective anticonvulsants are those that boost synaptic GABA by inhibiting its breakdown or reuptake. These include benzodiazepines, which enhance GABA binding to the GABA receptor and increase the frequency of chloride channel openings. Seizures can be brought on by several GABA production inhibitors, such as thiosemicarbazide, 4-deoxypyridoxine, isoniazid, and L-allyglycine. The two main kinds of receptors, GABAA and GABAB, are involved in the interactions between GABA, the main inhibitory neurotransmitter. While GABAB receptors are located presynaptically and can consequently influence synaptic release, GABAA receptors are positioned postsynaptically. In the adult brain, GABAA receptors are permeable to Cl-ions; Cl-influx activation hyperpolarizes the membrane and suppresses action potentials. Barbiturates and benzodiazepines are GABAA receptor agonists, and as a result, they reduce seizure activity. Because of their presynaptic position, GABAB receptors are associated to second messenger systems but not Cl-channels, and thus attenuate transmitter release. A kind of amino acid called glutamate serves as the brain's main excitatory neurotransmitter. Under normal circumstances, glutamate produced from synapses is taken up by astrocytes and quickly transformed by glutamine synthetase into the non-excitotoxic amino acid glutamine. Epileptic seizures are mediated by the metabotropic glutamate receptor and the ionotropic N-methyl-D-aspartate (NMDA), α-amino-3-hydroxy-5-methyl-4-isoxazole propionic acid / kainate, and others. In chronic epilepsy models, excitatory glutamatergic pathways have a role in both long-term adaptive neuronal plasticity associated to epileptogenesis and acute, transitory, provoked seizures. The excitatory effects of glutamate increase sodium and calcium conductance via activating ligand-gated ion channels (NMDA and non-NMDA receptors). Glutamate and aspartate are more easily reabsorbed after synaptic release, these effect is enhanced by the neuronal excitatory amino acid carrier 1 (EAAC1) and glial glutamate transporters. Reduced glutamate transporter activity may be consistent with increased.

ETIOLOGY OF EPILEPSY: Despite the fact that the frequency of symptomatic epilepsy gradually increases with age, idiopathic epilepsy continues to be the most prevalent in all age groups. In Nigeria, between 55 and 60 percent of epilepsy cases are considered to be idiopathic. In other regions of the world, approximately 30% of seizure patients have a diagnosable neurological or systemic illness, with the remaining patients having either idiopathic or cryptogenic epilepsy. Genetics: Recent research from several studies revealed that 20% of epilepsy sufferers, especially in adolescents, have genetic variants of the condition.

INFECTIONS: Central nervous system infections, such as bacterial and viral meningitis, encephalitis, neurosyphilis, brain abscesses, and tuberculosis, continue to be the most common cause of symptomatic epilepsy. These infections were the cause of 10% to 20% of the epilepsy cases that were documented in Africa. In the tropics, where there are little medical facilities, especially in

rural and suburban areas, CNS infections are the primary cause of acute seizures. There is scant evidence that local parasites frequently cause epilepsy despite the high incidence of parasitic diseases in Nigeria. Nevertheless, there are several studies from other parts of the world, particularly other developing nations, implicating parasites in the development of epilepsy. In some regions of the world, cysticercosis is the most frequent cause of epilepsy because computed tomography (CT), which was developed in the 1970s and early 1980s, made it possible to diagnose it. The most prevalent manifestation of neuro cysticercosis is epilepsy, which frequently manifests as a single clinical symptom. As a result, prevalence estimates for idiopathic epilepsies in endemic locations cannot be trusted unless participants have undergone a CT scan. In contrast to her neighbors Cameroun and Togo, where cysticercosis was the leading cause of epilepsy cases, Nigeria has only seldom recorded occurrences of this infection. It is through cardiac embolization of the brain that Trypanosoma Cruzi, the causative agent of Chaga's disease, and epilepsy are indirectly linked. Seizures are a possibility in the late stages of the African Trypanosoma infection, sleeping sickness, as well as perhaps as a follow-up in survivors.

TRAUMA: In Nigeria, two of the most frequent causes of epilepsy are trauma and hypoxia. Due to subpar obstetric care, these risks may act singly or in concert during pregnancy, or throughout life in instances of domestic violence, workplace violence, and auto accidents. Birth trauma can result in epilepsy after severe scalp molding and hypoxia, which then have a negative impact on the hippocampus and amygdala and induce incisura sclerosis. In Africa, it accounts for 1–2% of cases of symptomatic epilepsies. The world's greatest rate of car accidents per million vehicle miles occurs in Nigeria and the East African nations, and as a result, post traumatic epilepsy is more prevalent.

TUMORS: In Africa, 3–10% of symptomatic epilepsies are caused by cerebral tumors. More occurrences of epilepsy owing to cerebral tumors are becoming visible with the introduction and installation of CT in various tertiary institutions in several African countries.

VASCULAR: Only 5% of patients with cerebral infarction have chronic seizures, which happen in 15% of individuals. Seizures can be caused by arteriovenous malformation, intracerebral hemorrhage, subdural hematoma, and inflammatory vasculitis (such as polyarteritis nodosa and lupus erythematosus).

METABOLIC: Seizures may be caused by metabolic abnormalities, such as pyridoxine insufficiency, which is connected to elevated glutamic acid and decreased gamma aminobutyric acid (GABA) levels in the brain. Alkalosis, water intoxication, hypoglycemia, hypocalcemia, hypomagnesemia, uraemia, and aminoaciduria are additional metabolic conditions that can cause epilepsy. Rarely, an insulinoma that causes hypoglycemia may also cause epilepsy.

PATHOPHYSIOLOGY OF EPILEPSY: An overly synchronized and prolonged discharge of a set of neurons is the cause of epileptic seizures. A continuous rise in neuronal excitability is the defining characteristic of all epileptic disorders. There are many different causes of abnormal cellular discharges, including trauma, oxygen deprivation, malignancies, infections, and metabolic disturbances. However, in roughly 50% of epilepsy patients, there are no definite causes established. Some types of epilepsy, There is currently little information available about a number of other kinds of epilepsy. The main neuronal migratory problems that can have hereditary or intrauterine origins are those that lead to epilepsy. Different types of agyria and pachygyria are caused by abnormal neuronal migration patterns, whereas neuronal heterotopia in the subcortical white matter is caused by milder levels of neuronal migration failure. Studies have shown that the microgyric cortex has higher levels of postsynaptic glutamate receptors and lower levels of gamma-aminobutyric acid (GABAA) receptors, which may encourage the development of epileptogenesis. Epilepsy and abnormal neural migration are two features that are frequently observed in people with tuberous sclerosis, a developmental condition inherited in an autosomal dominant manner. An X-linked dominant disease of cerebral cortical development is called periventricular heterotopia. It is known that periventricular heterotopia is caused by mutations in the filamin 1 gene, which block the movement of cerebral cortical neurons. Females with the condition exhibit seizures, whilst males with the condition experience embryonic death. However, a male patient who had bilateral periventricular and subcortical heterotopia was recently reported, raising the possibility of a new gene involved in brain development. Another abnormality of neuronal migration is the double cortex syndrome and X-linked lissencephaly.

ANTICONVULSANT DRUGS: Anticonvulsants in particular are used in pharmacological therapy to manage the majority of epileptic seizures. Anticonvulsant medications are used as the mainstay of treatment for seizures, despite the fact that there are several anticonvulsant therapeutic options for distinct seizure types and epileptic disorders. The conventional anticonvulsants carbamazepine, valproic acid/valproate semisodium, phenytoin, and phenobarbital, as well as more recently gabapentin, oxcarbazepine, lamotrigine, or topiramate, can be used to treat newly diagnosed epilepsy patients who require treatment. The intensity and frequency of the seizures, as well as the patient's age, general health, and medical history, all affect the recommended treatment. To select the most effective treatment, an accurate identification of the epilepsy type is necessary. Traditional antiepileptic medications may inhibit sodium channels or enhance GABA activity. Various antiepileptic medications have a variety of possibly ambiguous methods of action. Given that GABA can either directly or indirectly act pro convulsively, this may be a side effect of several antiepileptic medications or perhaps their real mode of action. Due to the prolonged therapy given to patients with epileptic conditions, the majority of these anticonvulsants currently in use have unpredictable pharmacological actions and undesirable side effects, such as chronic toxicity and birth defects, and yet patients continue to experience health problems. To treat epilepsy, which is a long-term procedure, it is vital to find novel medications with minimal or no adverse effects and predictable pharmacological action. These medications are also usually tapered off gradually over a period of around six months. Biochemical and biological diversity are abundant in nature. Before any other contemporary therapeutic strategy was used to treat epilepsy, numerous phytochemicals from plants have been known about and used traditionally. In effect, the present interest in traditional medicine has sped up the development and research of numerous treatments used by different ethnic groups worldwide. Table 1 summarizes the information on the types of extracts, as well as the mechanisms of action, techniques, and references pertaining to the plants that have been studied or reported to have anticonvulsant effects in animal models.

Table 1: Medicinal plants with anticonvulsant effect

S/N	Name of Plant	Family	Mechanism of Action
1	Angelica archangelica Linn. roots	Apiaceae	Block glutamatergic excitation
2	Centella asiatica. Leaves, methanol, hexane, chloroform, ethyl acetate, butanol	Apiaceae	Increased AChE activity, elevated levels of Ach
3	Curcumin	Zingiberaceae	Increased brain norepinephrine level, reduced total nitrite levels of brain, reduced AChE activity
4	Cymbopogon winterianus Jowitt	Poaceae	GABAergic mechanisms, deteriorated autoregulation of glutamate release
5	Lavandula angustifolia	Lamiaceae	Modulate glutamate activation expression, reduction of the ACh-evoked release, direct interaction with the NMDA receptor complex
6	Ocimum basilicum	Lamiaceae	Modulate glutamate activation expression, reduction of the ACh-evoked release, direct interaction with the NMDA receptor complex
7	Withaniasomnifera methanolic extract	Solanaceae	Ameliorated spatial memory deficit in Ymaze0

ANXIOLYTIC ACTIVITY: More people suffer from anxiety than diabetes, chronic obstructive pulmonary disease, or arthritis combined. A considerable decrease in quality of life relates to the untreated 20 percent lifetime prevalence of anxiety disorders. The amygdala, insula, and dorsomedial prefrontal cortex are all involved in the hyperactive fear circuit seen in people with anxiety disorders. Various empirical investigations have demonstrated that. Selective serotonin reuptake inhibitors, a class of medicines commonly used to treat anxiety, work by blocking the activity of these circuits in response to threatening stimuli. Benzodiazepines, azapirones, and selective serotonin and norepinephrine reuptake inhibitors can be added to this list. Nevertheless, benzodiazepines are suggested for up to 94% of those suffering from anxiety disorders. These drugs improve gamma-aminobutyric acid (GABA) inhibition of neuronal activity. Thispoints to the involvement of GABA (A) ionotropic receptors in the central nervous system (CNS) in the medicines' actions. The primary therapeutic benefits of this drug are sedation, hypnosis, anterograde amnesia, reduced anxiety, anticonvulsant action, and centrally mediated muscular relaxation. Benzodiazepines can help reduce the symptoms of anxiety disorders, but they also come with a host of unwanted side effects and can even become habit-forming. This has led to the bulk of their indications being reserved for "last resort" medications. Therefore, scientists have been hunting for a natural supplement that can change neurotransmitters while reducing the risk of adverse effects in individuals with anxiety. Anxiety disorders can be helped by using alternative treatments, provided they are both safe and supported by scientific evidence. Over the past two decades, there has been a dramatic increase in the worldwide use of herbal medicines. According to the WHO, eighty percent of the world's population relies on herbal medicines as their first line of treatment. Because of their lower side-effect risks, increased safety, and simplified administration, herbal formulations are chosen over raw plant components and extracts. Since these formulations effectively improve patients' health, they are routinely prescribed for various diseases and disorders that diminish individuals' standard of living. Recent research has shown that herbal medications may effectively treat anxiety disorders with fewer side effects than conventional treatments. This paper provides an up-to-date look at the preclinical research on the potential of various phytoconstituents to reduce anxiety via various signaling pathways. It also provides context for the various anxiolytic phytoconstituents by discussing the historical application of medicinal plants to treat anxiety. Phytoconstituents' status in human medicinal studies is discussed in further detail. This piece aims to justify using phytoconstituents as a therapeutic alternative by reviewing their pharmacology and antianxiety potential.

Table 2: Different types of anxiety disorders

Type	Description
Generalized anxiety disorders (GAD)	The anxiety symptoms are usually persistent and constant. Patients of this disorder could experience excessive anxiety for a long duration, commonly over six months and the symptoms could occur without any specific triggers.
Panic disorder	This disorder specifically refers to the suffering from panic attacks and also the fear of repetitive attacks. Commonly found in agoraphobia patients (the fear of difficulty in leaving a confined venue). Panic attacks are sudden upsurges in anxiety level usually with unexplained reasons.
Social phobia	This refers to the fear of staging in social situations where one experiences public observation among people or performs in front of the public. The fears are often unexplained and persistent. The fear could also be attributed to the possible humiliation in front of others due to poor performance or awkward social interactions.
Specific phobias	Persistent fear towards a specific object, either tangible or intangible. This leads to undeniable avoidance or thought of escape from the object or endurance of the object in immense levels of anxiety.
Posttraumatic stress disorder (PTSD)	PTSDs develop due to experience of severe trauma or life-threatening events. Specific symptoms include flashbacks to traumatic events triggered during similar situations, as well as avoidance of these situations. The fear of re-experiencing the event is also

	associated with feelings of helplessness or horror.
Obsessive–compulsive disorder (OCD)	Person with OCD would experience compulsive impulses of removing an obsession. One common example is the obsession with impurities or contamination. The person would have compulsion or urge in sterilizing the environment to remove the contamination. Another example is the obsession with orderliness. The person would manipulate the surroundings including visual presentations to ease their obsession.

PATHOPHYSIOLOGY OF ANXIETY: Anxiety and the potential health problems it can bring on are theorized to have their origins in central nervous system modulation issues. Anxiety disorders have been linked to the chronic dysregulation of brain networks, including cortical and subcortical areas, and this has been observed in animals and humans (amygdala, hippocampus, thalamus, prefrontal, and cingulate cortex). Weaker inhibitory GABAergic transmission in the brain has been linked to anxiety. Ligands regulate chloride selectivity at the GABAA receptor. The protein consists of five different subunits that form a hetero-oligomer and can traverse the neuronal membrane. Most GABAA receptors have a trimeric structure with two identical subunits and a single, non-identical subunit. The subunit increases the likelihood of channel opening in response to GABA by interacting inside the interface between the subunits, whereas the subunit allows GABA binding and confers sensitivity to benzopyrene (BZD). At least two GABA molecules are required to activate this chloride/bicarbonate-permeable channel, inducing an inflow of negatively charged chloride ions and temporarily reducing the neuron's ability to generate action potentials, resulting in phasic inhibition. Drugs that bind to the GABAA receptor have an anxiolytic effect via enhancing GABA's neuronal inhibitory effects by facilitating chloride channel opening.

ANXIOLYTICS DRUGS AND MECHANISM OF ACTION: Anxiolytics, the class of drugs used to treat anxiety, used to be called minor tranquilizers. Pharmaceuticals are prescribed to people with neuroses and mild depression to alleviate symptoms such as anxiety, sleeplessness, and difficulty concentrating. Because of their potential for habituation and addiction, these medicines are reserved for usage in exceptional circumstances. Many neurotransmitters, including serotonin, GABA, and nor-epinephrine, contribute to the regulation of anxiety. When serotonin is secreted from nerve terminals, it attaches to a certain receptor, which then controls certain brain functions. Anxiety is brought on by a lack of serotonin. Autonomic arousal processes of anxiety disorders, in particular panic attacks, are modulated by decreased levels of nor-epinephrine in the brain. The selective method for treating anxiety disorders involves the use of drugs like selective serotonin reuptake inhibitors and selective noradrenaline reuptake inhibitors. Benzodiazepines, barbiturates, benzodiazepine antagonists, and other hypnotic agents are some of the many antianxiety medications available. Anxiety medications work by activating the GABA receptor, which opens the chloride channel and increases the penetration of chloride ions through it. However, the negative charge generated by the chloride channels is neutralized by the presence of potassium ions, which maintains the body's typical physiology. However, when an antianxiety drug opens GABA channels, chloride channels penetrate deeper inside the cell, resulting in a greater negative charge and a correspondingly greater polarization; since this polarization is significantly longer than usual, it is also known as hyperpolarization. The postsynaptic potential is shifted away from the action threshold, and action potential is suppressed when hyperpolarization delays the depolarization stage. These additional effects of benzodiazepine medications are evaluated together with their antianxiety effects.

METHODOLOGY: By using phrases like "folk use," "anxiolytic," "antianxiety phytoconstituents," "phytotherapy," "medicinal plants," and "sedative mechanism," this study hopes to collect several research papers and reviews on the subject. The most up-to-date information on phytoconstituents that reduce anxiety was gathered through qualitative and quantitative assessments of data from PubMed, Science Direct, direct journal contents, clincialtrial.gov, plantlist.org, and scholarly books and journal articles found in libraries. The review's authors carefully sifted through more than 280 publications published in the last 66 years, and only those papers directly relevant to the review's stated goal were included. Our criteria encompass conventional and alternative treatments for anxiety disorders, focusing on the therapeutic potential of plant compounds known as phytoconstituents. Studies that looked at the anxiolytic properties of

phytoconstituents in vitro or in vivo, or those used synthetically produced active compounds having an anticonvulsant effect, were omitted. Using this technology, scientists have isolated 40 potent ingredients from medicinal plants used for centuries in alternative anxiety treatments. All medicinal plants' most up-to-date scientific names were gleaned from Plantlist.org. Finally, clincialtrial.gov was searched for reports of ongoing trials of phytoconstituents in the clinical study and finished trials of phytoconstituents to assess their efficacy and safety in treating anxiety.

Table 3: Summary of anxiolytic phytoconstituents with their proposed biological target

S/N	Phytoconstituents	Medicinal plants	Plant part related to anxiety	Experimental model	Therapeutic target/Mode of action
1	Cinnamic acid	Cinnamomum cassia	Ethanolic extract of stem barks of C. cassia possesses anxiolytic activity	Elevated plus maze test, Locomotor activity test, Horizontal wire test	Involvement of 5-HT1A and GABAA receptors in the anxiolytic-like effects
2	Caffeic acid	Coffea arabica	Extract Coffee arabica leaves	Automatic hole board, Tail Suspension Test, and memory-Maze test	Activates the GABA-A
3	Ferulic acid	Zea mays	Ethanol extract of Zea mays husk	Elevated plus maze model	Mitigation of NMDA receptor pathway
4	Sinapic acid	Camelina sativa	Seed Extract of Camelina sativa	Y maze test and elevated plus maze test	GABAA-benzodiazepine receptor – Cl − channel complex
5	Obovatol	Magnolia obovata	leaves of plant	Y maze test and elevated plus maze test	Acting on GABA-benzodiazepine receptor

NUTRITIONAL APPROACHES FOR ANXIETY

Amino acids

The amino acid glutamate is the principle excitatory neurotransmitter and also used to make the neurotransmitter gamma-aminobutyric (GABA). L-tryptophan and L-tyrosine are precursors for the neurotransmitters, serotonin, dopamine, and norepinephrine. The ability of the body to produce these neurotransmitters is directly linked to the levels of these amino acids consumed in the diet.

L-tryptophan, L-tyrosine and L-phenylalanine Dietary deficiency in L-tryptophan, L-phenylalanine, or L-tyrosine leads to low serotonin synthesis due to the lack of availability of these building blocks and this dietary deficiency is associated with. Dietary supplementation with increased L-tryptophan is known to increases serotonin synthesis in rats and humans verifying a nutritional approach to the treatment of anxiety. 5-hydroxytryptophan (5-HTP), the tryptophan precursor, elevates the levels of serotonin synhtesized in humans and 5-HTP and tryptophan elevate brain serotonin levels are known to enhance a sense of well being. Lastly, the increase in nutritional D, L-phenylalanine and L-tyrosine is known to increases synthesis of dopamine and norepinephrine further supporting the role of nutrition in fighting anxiety.

L-lysine and L-arginine Interestingly, L-lysine deficiency is known to increase the risk of anxiety in humans. In clinical trials, supplementation of the diet with the amino acid nutrient arginine reduces synthesis of the stress hormone, cortical, in humans

and may in this way be involved in the health of HPA-axis.

Minerals

Magnesium In a placebo controlled clinical study, when magnesium was taken orally along with calcium supplements, anxiety in human subjects was decreased compared to placebo. Similarly, supplementation with magnesium and vitamin B6 was shown to reduces premenstrual-related anxiety and GAD in women. Animal research supports this observation with a mouse-model of magnesium deficiency that leads to anxiety behavior in mazes. Most interesting is that the anxiety in these mice is reversed with diazepam treatment, and with magnesium supplementation supporting the observation that nutrients can perform as well as anxiolytic drugs.

Selenium In clinical trials people given daily oral supplementations of 100 mg of the nutrient, selenium, for 5 weeks reported less anxiety. Further, selenium added to the diet also reduced the anxiety in hospitalized patients who are elderly, cancer patients, and/or HIV patients.

Fatty acids

Omega-3 fatty acids Dietary omega-3 fatty acids has been shown to both improve mood and reduced the risk of anxiety. In one clinical study, students studying for exams were given 2.5 g/day of omega-3 (n-3) polyunsaturated fatty acids and the students receiving these supplements had a 20% reduced rate of in anxiety. In a three month clinical study, omega-3 fatty acid supplementation reduced anxiety in patients who had been substance abusers suggesting a role for nutrition in managing hospital and withdrawal related anxiety.

Vitamins

Vitamin C is a cofactor for enzymes involved in biosynthesis and supplementation with this vitamin reduces anxiety by limiting the oxidative stress from metabolites and also by limiting cortisol. One clinical study with humans showed that high dose vitamin C improves mood. Vitamin E also reduces anxiety in humans and vitamin D reduces anxiety in people with fibromyalgia-associated anxiety.

SUMMARY AND CONCLUSION: Epilepsies are the group of disorders. There is an immediate need to fully understand the mechanism of action of the each AEDs individually in order to understand the path physiology of the seizures and for the better treatment of the epilepsies. From the currently available evidence based on assessed data one can conclude that GBP, LEV, LTG. OXC, PGB, TPM, TGB and ZNS were *found* to be appropriate for adjunctive treatment of refractory partial seizures. In adults, GBP, LEV, LTG, OXC and TPM can also be used, for the treatment of refractory partial seizures in children.

Anxiety is a generalized mood of fear, worry and or uneasiness that results from bad felling about something that happens or may happened. It can be stimulated from environment factors, or result from bad habits or social situations. There are different types of anxiety that could be mild or sever depending on the level of the disorders. Anxiety, as with other medical problems, can be diagnosed and treated by different therapies, such as cognitive-behavioral therapy, panic disorder, and drug therapy. Using drugs is a common but harsh way to treat anxiety disorders. However more natural treatments including amino acid, minerals, and fatty acids can reduce anxiety.

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