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Substance-related Anxiety Disorder and how Amino Acids and Herbs may be utilized in treatment.¹

ABSTRACT

There are several approaches to working with a client who is detoxing from a substance to which he or she has become addicted. One method that is rarely used is the one that incorporates amino acids and herbs. This paper will look at what is an amino acid and how amino acids work in the human body. It will also look at what is an herb and several herbs that have been used with anxiety disorders. It will also look at what is the DMS-IV-TR definition of substance-induced anxiety disorder.

ARTICLE

When a client is in rehab and in detox, one of the symptoms which may arise is anxiety. This can manifest itself in panic attacks or phobias. Because the withdrawal state for some substances (e.g., some benzodiazepines) can be relatively protracted, the onset of the anxiety symptoms can occur up to 4 weeks after cessation of substance use but is usually earlier. Many people with acute anxiety disorders become fearful of being alone or of visiting public places. Anxiety, sometimes intense anxiety, and agitation are common accompaniments of withdrawal from many substances, especially alcohol and the other central nervous system depressants. These symptoms are probably consequences, in part, of the disappearance of these substances from the serotonergic and dopaminergic neurotransmitter systems in the brain. This paper will examine the ways in which amino acids and herbs may be helpful in reducing anxiety due to substance abuse.

Substance-Induced Anxiety Disorder

Diagnostic Features

According to the DSM-IV-TR (2000), the essential features of Substance-Induced Anxiety Disorder are prominent anxiety symptoms (Criterion A) that are judged to be due to the direct physiological effects of a substance (i.e., a drug of abuse, a medication, or toxin exposure) (Criterion B). Depending on the nature of the substance and the context in which the symptoms occur (i.e., during intoxication or withdrawal), the disturbance may involve prominent anxiety, Panic Attacks, phobias, or obsessions or compulsions. Although the clinical presentation of the Substance-Induced Anxiety Disorder may resemble that of Panic Disorder, Generalized Anxiety Disorder may resemble that of Panic Disorder, Generalized Anxiety Disorder, Social Phobia, or Obsessive-Compulsive Disorder, the full criteria for one of these

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disorders need not be met. The disturbance must not be better accounted for by a mental disorder (e.g., another Anxiety Disorder) that is not substance induced (Criterion C).

A Substance-Induced Anxiety Disorder is distinguished from a primary Anxiety Disorder by considering the onset, course, and other factors. For drugs of abuse, there must be evidence from the history, physical examination, or laboratory findings of Dependence, Abuse, intoxication, or withdrawal.

Substance-Induced Anxiety Disorders arise only in association with intoxication or withdrawal states, whereas primary Anxiety Disorders may precede the onset of substance use or occur during times of sustained abstinence. Because the withdrawal state for some substances (e.g., some benzodiazepines) can be relatively protracted, the onset of the anxiety symptoms can occur up to 4 weeks after cessation of substance use but is usually earlier (DSM-IV-TR, 2000, pp479-480).

Substance-Related Disorder, Social Anxiety, and Tension Reduction

The tension-reduction hypothesis (TrH) was the first viable alternative to the psychodynamic theory of alcoholism etiology that held sway during the decades immediately preceding World War II. Inspired by anecdotal reports from both social drinkers and alcoholics that alcohol reduces anxiety, the TrH gained additional support from empirical research (e.g., Conger, 1951; Masserman & Yam, 1946) documenting alcohol's capacity to reduce experimentally-induced conflict ("anxiety") in rats and cats. The TrH did not fare so well, however, when it was tested in alcoholics. This research (Cappell, 1974; Langenbucher & Nathan, 1993) revealed that alcoholics do not respond to alcohol in a consistent manner: some experience tension relief, others an increase in tension, and still others show no effect at all.

Several studies (e.g., Abrams & Wilson, 1979; Polivy, Schueneman, & Carlson, 1976; Wilson & Abrams, 1977) have demonstrated the importance of attitudes toward the effects of alcohol on the tension-reducing effects of the drug. The results of this research suggested that the sedative effects of alcohol do tend to reduce tension and anxiety in the short run at low to moderate doses, unless the drinker's attitudes toward drinking are so conflicted (as are those of many alcoholics) that he or she experiences anxiety rather than tension relief when again beginning to drink.

A review by Schuckit and Hesselbrock (1994) summarizes findings from contemporary research on alcohol and anxiety. It was motivated by the observation that, although many alcoholics report symptoms of severe anxiety during periods of abstinence, it is unclear whether the anxiety is primarily associated with independent psychiatric syndromes, is largely associated with the abstinence syndrome, or is a combination of the two. Schuckit and Hesselbrock's extensive review led them to conclude the following:

The available data, while imperfect, do not prove a close relationship between lifelong anxiety disorders and alcohol dependence. Further, prospective studies of children of alcoholics and individuals from the general population do not indicate a high rate of anxiety disorders preceding alcohol dependence...The high rates of comorbidity (of alcohol dependence and anxiety disorder) in some studies likely reflect a mixture of true anxiety disorders among alcoholics at a rate equal to or slightly higher than that for the general population, along with temporary, but at times severe, substance-induced anxiety syndromes. (p.1723)

These conclusions, show a closer relationship between alcohol abuse and depression.

Anxiety, sometimes intense anxiety, and agitation are common accompaniments of withdrawal from many substances, especially alcohol and the other central nervous system

depressants (Schnuckit, 1994b). These symptoms are probably consequences, in part, of the disappearance of these substances from the serotonergic and dopaminergic neurotransmitter systems in the brain, with the neurotransmitter systems most profoundly affected by dependence on the CNS depressants.

Anxiety disorder is a far more common problem than was once thought. It can affect people in their teenage years through middle age and later. Anxiety disorder appears to affect twice as many women as men, though there may not actually be that wide a disparity between the sexes. Psychologists believe that men are far less prone to report or even acknowledge having a problem of this nature.

Anxiety disorder can be either acute or chronic. Acute anxiety disorder manifests itself in episodes commonly known as panic attacks. A panic attack is an instance in which the body's natural "fight or flight" reaction occurs at the wrong time. This is a complex involuntary physiological response in which the body prepares itself to deal with an emergency situation. Stress causes the body to produce more adrenal hormones, especially adrenaline. The increased production of adrenaline causes the body to step up its metabolism of proteins, fats, and carbohydrates to quickly produce energy for the body to use. In addition, the muscles tense, and heartbeat and breathing become more rapid. Even the composition of the blood changes slightly, making it more prone to clotting.

In the face of a threat such as an assault, an accident, or a natural disaster, this type of reaction is perfectly normal and helpful for survival. At other times, the symptoms caused by a surge in adrenaline can be distressing and frightening. A person having a panic attack often is overwhelmed by a sense of impending disaster or death. Symptoms which may accompany a panic attack include shortness of breath; a smothering, claustrophobic sensation; heart palpitations; chest pain, dizziness, hot flashes and / or chills; trembling; nausea; feeling of unreality; and a distorted perception of the passage of time. Eventually, the disorder can have other cumulative effects, generalized aches and pains, muscular twitching and stiffness, depression, insomnia, nightmares and early waking, decreased libido, and abnormal feelings of tension with an accompanying inability to relax. Women may experience changes in the menstrual cycle and increased premenstrual symptoms.

Panic attacks are usually abrupt and intense. They can occur at any time of the day or night, lasting from several seconds up to half an hour. To the panic sufferer, it often feels as though they are much longer. A person having a panic attack often believes that he or she is experiencing a heart attack or a stroke. The attacks themselves are very unpredictable; some people experience one every few weeks, while others may have several a day. They are often triggered by stress (conscious or unconscious) or certain emotions, but may also occur in response to certain foods, drugs, or illness. Food allergies and hypoglycemia are both common among people with this disorder, and can promote panic attacks. An attack may follow ingestion or overindulgence in caffeine-based stimulants such as tea or coffee. Some attacks occur with no apparent cause. The unpredictability of the attacks makes them even more distressing.

Many people with acute anxiety disorder become fearful of being alone and of visiting public places because they fear having a panic attack. Of course this only adds to the level of anxiety and leads to their being abnormally restricted. Many psychologists believe that at least in some cases, panic attacks are self-induced; that is, the fear of a panic attack is the very thing that brings one about.

For years, panic attacks were dismissed as a psychosomatic phenomenon. However, repeated studies have shown that this disorder has a real, physical basis. Experts believe that panic attacks are caused principally by a malfunction in brain chemistry, wherein the brain sends and receives false "emergency signals." Hyperactivity in certain areas of the brain causes the release of norepinephrine, which causes the pulse, blood pressure, and breathing to

become more rapid, producing the classic symptoms of a panic attack. According to Mayo Clinic researchers, between 10 and 20 percent of Americans will have a panic attack at some time in their lives. Panic attacks are now recognized as a potentially disabling, but treatable condition.

Anxiety disorder may be hereditary to some extent, as it seems to run in families. Some cases may be linked to a relatively harmless abnormality of heart function called mitral valve prolapse. Anxiety disorder manifests itself in different ways, but doctors agree that conflict, whether internal or interpersonal, promotes a state of anxiety.

Supplements That May Be Helpful

Amino Acids

Amino acids are the building blocks of every living cell. They are the basis of life itself. Amino acids are the single most important nutrient in the body. They are the building blocks of protein needed to create cells, enzymes and hormones. If an amino acid is missing, a weakness can develop. Proteins play an essential role in bodily functions. A proper balance of amino acids can benefit the blood, the skin, and the immune and digestive systems.

In nutritional research amino acids have been neglected, but today amino acids are being recognized as a great power in restoring and maintaining good health. Amino acids aid in the assimilation and utilization of other nutrients including vitamins and minerals. Amino acids as therapy has benefited many ailments such as arthritis, anxiety, cancer, chronic fatigue, candidiasis, behavioral disorders, attention deficit disorder, autoimmune diseases, chemical sensitivity, learning disorders, eating disorders, hypoglycemia, diabetes, cardiovascular diseases, seizures, headaches, and chronic pain.

Amino acids are divided into essential and nonessential subtitles, but those labels can be misleading, because they are both necessary. Most of the 22 identifiable amino acids can be manufactured by the body in the liver. Eight cannot and must be supplied in the diet-- isoleucine, leucine, lysine, methionine, phenylalanine, threonine, tryptophan, and valine. The other amino acids, cysteine and tyrosine, should be classified also as essential as they are derived from the essential amino acids, methionine and phenylalanine. Also the nonessential amino acids histidine and arginine should be considered essential during growth periods, since they cannot be made by the body fast enough to meet the requirements of the rapid growth of young children.

Chromium picolinate.

Because it is involved in the metabolism of glucose, chromium (sometimes also called glucose tolerance factor or GTF) is needed for energy. It is also vital in the synthesis of cholesterol, fats, and proteins. This essential mineral maintains stable blood sugar levels through proper insulin utilization, and can be helpful both for people with diabetes and those with hypoglycemia. Studies have shown that low plasma chromium levels can be an indication of coronary artery disease. Additional chromium is needed during pregnancy because the developing fetus increases demand for this mineral. Chromium supplements can help an expectant mother maintain healthy blood sugar levels during pregnancy.

The average American diet is chromium deficient. Only one in ten Americans has an adequate amount of chromium in his or her diet. There are five main reasons for this: (1) the form of chromium in many foods is not easily absorbed; (2) not enough foods containing chromium are consumed; (3) much of the chromium content is lost during processing; (4) many people do not like the foods that are the best sources of chromium; and (5) high quantities of sugar in the diet cause a loss of chromium from the body. Researchers estimate that two out of every three Americans are hypoglycemic, pre-hypoglycemic, or diabetic. The ability to maintain normal blood sugar levels is jeopardized by the lack of chromium in our soil and water supply

and by a diet high in refined white sugar, flour, and junk foods.

A deficiency of chromium can lead to anxiety, fatigue, glucose intolerance (particularly in people with diabetes), inadequate metabolism of amino acids, and an increased risk of arteriosclerosis. Excessive intake (the level depends upon individual tolerance) can lead to chromium toxicity, which has been associated with dermatitis, gastrointestinal ulcers, and kidney and liver impairment.

Supplemental chromium is best absorbed by the body when it is taken in a form called chromium picolinate (chromium chelated with picolinate, a naturally occurring amino acid metabolite). Picolinate enables chromium to readily enter into the body's cells, where the mineral can then help insulin do its job much more effectively. Chromium picolinate has improved glucose levels. It also promotes the loss of fat and an increase in lean muscle tissue. Studies show it may increase longevity and help to fight osteoporosis. Chromium polynicotinate (chromium bonded to niacin) is an effective form of the mineral as well.

DL-Phenylalanine (DLPA)

Phenylalanine is vital for the production of adrenaline. It also enhances vitamin C absorption and uses vitamin C and B6 for its metabolism. It is necessary for the growth and formation of skin and hair pigment. It aids in waste elimination of the kidneys and bladder. Phenylalanine is being investigated as a treatment for mental disorders. It is often used for disorders such as arthritis, migraine headaches, low back pain, whiplash, AIDS, PMS and Parkinson's disease, for strengthening the immune system, suppressing appetite, strengthening weak blood vessels, and treating eye problems.

L-Glutamine

Glutamine/glutamic acid, along with glucose, is one of the principle fuels for the brain cells. It stimulates mental alertness, improves intelligence, normalizes physical equilibrium, detoxifies ammonia from the brain, improves and soothes erratic behavior in elderly patients, improves the ability to learn, aids in retaining and recall in memory, helps with behavioral problems and autism in children, stops sugar and alcohol cravings, may improve IQ in mentally-deficient children, enhances peptic ulcer healing, and may be used to treat schizophrenia and senility.

Glutamine is the most abundant free amino acid found in the muscles of the body. Because it can readily pass the blood-brain barrier, it is known as brain fuel. In the brain, glutamine is converted into glutamic acid--which is essential for cerebral function-- and vice versa. It also increases the amount of Gamma-aminobutyric acid (GABA), which is needed to sustain proper brain function and mental activity. It assists in maintaining the proper acid/alkaline balance in the body and is the basis of the building blocks for the synthesis of RNA and DNA. It promotes mental ability and the maintenance of a healthy digestive tract.

When an amino acid is broken down, nitrogen is released. The body needs nitrogen, but free nitrogen can form ammonia, which is especially toxic to brain tissues. The liver can convert nitrogen into urea, which is excreted in the urine, or nitrogen may attach itself to glutamic acid. This process forms glutamine. Glutamine is unique among the amino acids in that each molecule contains not one nitrogen atom but two. Thus, its creation helps to clear ammonia from the tissues, especially brain tissue, and it can transfer nitrogen from one place to another.

Glutamine is found in large amounts in the muscles and is readily available when needed for the synthesis of skeletal muscle proteins. Because this amino acid helps to build and maintain muscle, supplemental glutamine is useful for dieters and bodybuilders. More important, it helps to prevent the kind of muscle-wasting that can accompany prolonged bed rest or diseases such as cancer and AIDS. This is because stress and injury (including surgical trauma) cause the muscles to release glutamine into the bloodstream. In fact, during times of

stress, as much as one third of the glutamine present in the muscles may be released. As a result, stress and/ or illness can lead to the loss of skeletal muscle. If enough glutamine is available, however, this can be prevented.

Supplemental L-glutamine can be helpful in the treatment of arthritis, autoimmune diseases, fibrosis, intestinal disorders, peptic ulcers, connective tissue diseases such as polymyositis and scleroderma, and tissue damage due to radiation treatment for cancer. L-glutamine can enhance mental functioning and has been used to treat a range of problems, including developmental disabilities, epilepsy, fatigue, impotence, depression, schizophrenia, and senility. It preserves glutathione in the liver and protects that organ from the effects of acetaminophen overdose. It enhances antioxidant protection. L-glutamine decreases sugar cravings and the desire for alcohol and is useful for recovering alcoholics.

Many plant and animal substances contain glutamine, but it is easily destroyed by cooking. If eaten raw, spinach and parsley are good sources. Supplemental glutamine must be kept absolutely dry or the powder will degrade into ammonia and pyroglutamic acid. Glutamine should not be taken by persons with cirrhosis of the liver, kidney problems, Reye's syndrome, or any type of disorder that can result in an accumulation of ammonia in the blood. For such individuals, taking supplemental glutamine may only cause further damage to the body. Be aware that although the names sound similar, glutamine, glutamic acid (also sometimes called glutamate), glutathione, gluten, and monosodium glutamate are all different substances.

L-tyrosine

Tyrosine is important to overall metabolism. It is a precursor of adrenaline and the neurotransmitters norepinephrine and dopamine, which regulate mood and stimulate metabolism and the nervous system. Tyrosine acts as a mood elevator; a lack of adequate amounts of tyrosine leads to a deficiency of norepinephrine in the brain, which in turn can result in depression. It also acts as a mild antioxidant, suppresses the appetite, and helps to reduce body fat. It aids in the production of melanin (the pigment responsible for skin and hair color) and in the functions of the adrenal, thyroid, and pituitary glands. It is also involved in the metabolism of the amino acid phenylalanine.

Tyrosine attaches to iodine atoms to form active thyroid hormones. Not surprisingly, therefore, low plasma levels of tyrosine have been associated with hypothyroidism. Symptoms of tyrosine deficiency can also include low blood pressure, low body temperature, (such as cold hands and feet), and restless leg syndrome.

Supplemental L-tyrosine has been used for stress reduction, and research suggests it may be helpful against chronic fatigue and narcolepsy. It has been used to help individuals suffering from anxiety, depression, low sex drive, allergies, and headaches, as well as persons undergoing withdrawal from drugs. It may also help people with Parkinson's disease.

Natural sources of tyrosine include almonds, avocados, bananas, dairy products, lima beans, pumpkin seeds, and sesame seeds. Tyrosine can also be produced from phenylalanine in the body. Supplements of L-tyrosine should be taken at bedtime or with a high-carbohydrate meal so that it does not have to compete for absorption with other amino acids.

Persons taking monoamine oxidase (MAO) inhibitors, commonly prescribed for depression, must strictly limit their intake of foods containing tyrosine, as it may lead to a sudden and dangerous rise in blood pressure. Anyone who takes prescription medication for depression should discuss necessary dietary restrictions with his or her physician.

L-glycine

Glycine retards muscle degeneration by supplying additional creatine, a compound that is present in muscle tissue and is utilized in the construction of DNA and RNA. It improves glycogen storage, thus freeing up glucose for energy needs. Glycine is essential for the

synthesis of nucleic acids, bile acids, and other nonessential amino acids in the body. It is used in many gastric antacid agents. Because high concentrations of glycine are found in the skin and connective tissues, it is useful for repairing damaged tissues and promoting healing.

Glycine is necessary for central nervous system function and a healthy prostate. It functions as an inhibitory neurotransmitter and as such can help prevent epileptic seizures. It has been used in the treatment of manic (bipolar) depression, and can also be effective for hyperactivity. Having too much of this amino acid in the body can cause fatigue, but having the proper amount produces more energy. If necessary, glycine can be converted into the amino acid serine in the body.

Gamma-aminobutyric acid (GABA)

Gamma-aminobutyric acid (GABA) is an amino acid that acts as a neurotransmitter in the central nervous system. It is essential for brain metabolism, aiding in proper brain function. GABA is formed in the body from another amino acid, glutamic acid. Its function is to decrease neuron activity and inhibit nerve cells from overfiring. Together with niacinamide and inositol, it prevents anxiety-and stress-related messages from reaching the motor centers of the brain by occupying their receptor sites.

GABA can be taken to calm the body in much the same way as diazepam (Valium), chlordiazepoxide (Librium), and other tranquilizers, but without the fear of addiction. GABA has been used in the treatment of epilepsy and hypertension. It is also useful for enlarged prostate, probably because it plays a role in the mechanism regulating the release of sex hormones. GABA is effective in treating attention deficit disorder and may reduce cravings for alcohol. It is also thought to promote growth hormone secretion.

Too much GABA, however, can cause increased anxiety, shortness of breath, numbness around the mouth, and tingling in the extremities. Further, abnormal levels of GABA unbalance the brain's message-delivery system and may cause seizures.

Inositol

Inositol also known as phytic acid is a compound consisting of the B vitamin inositol plus six phosphate groups (IP6). Found naturally in many foods, including wheat, rice, and legumes, it is a powerful antioxidant that has many positive effects on the body. Laboratory studies suggest it may fight cancer, prevent and treat heart disease, prevent kidney stones and liver disease, and also reduce cholesterol levels and prevent the inappropriate formation of blood clots, a major cause of heart attacks. IP6 inhibits the activity of free radicals in the body, which slows the type of abnormal cell division associated with cancer and tumor growth. It works best very early in the development of malignant tumors, before the malignancy can even be recognized by the immune system. The cells are then normalized and begin to grow in the usual manner again.

IP6 contains a substance designated beta-1, 3-D-glucan, which helps to maintain a strong immune system in people undergoing chemotherapy and radiation. IP6 protects the heart by preventing the formation of blood clots in blood vessels and reducing the levels of cholesterol and triglycerides (fats) in the bloodstream. It protects the liver by preventing fatty deposits from accumulating there. Studies have shown that a diet high in IP6 is associated with a lower incidence of cancer of the breast, colon, and prostate.

Significant amounts of IP6 are found in foods such as beans, brown rice, whole-kernel corn, sesame seeds, wheat bran, cornbread, grape juice, raisins, and mulberries. It can also be taken in supplement form. Some studies have shown that IP6 may interfere with the body's absorption of minerals, so supplements should not be taken within one hour of meals. IP6 from Jarrow Formulas and Cell Forte with LP-6 from Enzymatic Therapy are recommended sources of IP6.

Melatonin

Melatonin has been promoted as a sleep aid to encourage and establish a restful sleep. It has also been found to contain powerful antioxidant capabilities. A study done at the University of Texas in San Antonio, showed the effects of adding melatonin to white blood cells and then exposing them to radiation. Another group of white blood cells did not have the melatonin added. The ones exposed without the melatonin showed chromosome damage. The more melatonin added, the more the protection from damage. There seems to be protection from melatonin in its ability to neutralize free radicals protecting the body from damage. It may also help by activating enzymes to heal the damaged cells faster. There are many immune-related conditions that may benefit from melatonin's super antioxidant properties including heart disease, arteriosclerosis, cancer tumors, Alzheimer's emphysema, cataracts, aging, and some neurological problems.

Herbs

Herbs are not only used to season food and beverages, they also provide us with minerals and offer medicinal uses. You may already be familiar with some of the many common herbs -- cayenne, chamomile, cinnamon, garlic, gingerroot, peppermint-- that are used frequently in beverages and food. Over the centuries, herbal practitioners have found that some herbs enhance one another's properties. These are often combined for treating specific ailments. In general, herbs are whole-plant medicines and are less toxic and have fewer side effects than pharmaceutical medicines. Whole-plant medicines use primarily purified active ingredients.

Bilberry

The herb bilberry (*Vaccinium myrtillus*), a European relative of the American blueberry, contains natural antioxidants that keep capillary walls strong and flexible. They also help to maintain the flexibility of the walls of red blood cells and allow them to pass through the capillaries better. Bilberry contains anthocyanidins, phytochemicals that help to lower blood pressure, inhibit clot formation, and enhance blood supply to the nervous system. Studies indicate that anthocyanidins can provide up to fifty times the antioxidant protection of vitamin E and ten times the protection of vitamin C. In addition, this herb protects the eyes and may enhance vision; supports and strengthens collagen structures; inhibits the growth of bacteria; acts as an anti-inflammatory; and has anti-aging and anticarcinogenic effects. Tests have shown that the compound glucoquinine, found in bilberry leaves, helps to lower blood sugar levels.

Ginkgo biloba

Ginkgo biloba is an herb with powerful antioxidant effects in the brain, retina, and cardiovascular system. It is well known for its ability to enhance circulation, and a study reported in the Journal of the American Medical Association showed that it has a measurable effect on dementia in people with Alzheimer's disease and people recovering from strokes. Other studies indicate that it can improve both long-and short-term memory and enhance concentration. Ginkgo biloba has also been used to treat hearing problems, impotence, and macular degeneration.

Anyone who takes prescription anticoagulant (blood-thinning) medication or who uses over-the-counter pain killers regularly should consult a health care provider before using ginkgo biloba, as the combination may result in internal bleeding.

Milk thistle

Milk thistle was used in Europe as a well known remedy for liver problems and as a

digestive aid. The early Roman writer Pliny the Elder (AD. 23-79) explains how the juice of milk thistle mixed with honey was used for carrying off bile. In 1597, Gerarde, an herbalist, said that milk thistle was one of the best remedies for melancholy and liver-related diseases. It was also given to nursing mothers to improve milk production, but there has been no research substantiating this treatment.

The liver is an extremely important organ in the body. It works to filter toxic material from the body preventing accumulation which can lead to disease and even death. The vital functions of the liver are often overlooked but nevertheless extremely important. And so it is essential to keep the liver working properly. Milk thistle has been proven to be very beneficial to liver function. Observations have shown that milk thistle extract can help reverse both acute and chronic liver problems such as cirrhosis and viral hepatitis. The bioflavonoid content may account for antioxidant properties in milk thistle. It has also been found to help heal the liver from damage occurring from alcohol toxicity. It has been used to treat many different liver ailments such as fatty liver disorders, chronic hepatitis, inflammation of the bile ducts, hardening of the liver and cirrhosis. It is also thought to actually help liver regeneration when part of the liver is removed.

Milk thistle has a complex of compounds known as silymarin including silybin, silydianin and silychristin. These substances are actually known to protect the liver against some toxins and help increase the function of this important organ. It seems to occupy the receptors sites to protect the cell membranes. It not only works to treat serious liver conditions, but it also prevents damage from occurring. It also contains amines, thyramine, and histamine, which are known to help stimulate the production and flow of bile. Researchers have found that silymarin works almost exclusively on the kidneys and liver. It probably moves in a cycle from blood plasma to the liver bile and concentrates in the liver cells. It counteracts the destructive activity of poisons or toxins that enter the body. The properties of milk thistle have been confirmed in animal studies to be a protection in liver disorders. Rats and dogs injected with liver destructive toxins were protected with silymarin. Other studies indicate that milk thistle is beneficial for severe liver disorders such as hepatitis and cirrhosis, as well as general liver restoration, protection and strengthening. Milk thistle stimulates protein synthesis.

Catnip

Catnip tea has been used in Europe and China for centuries, perhaps even thousands of years. Catnip was used by Native Americans for soothing colic in infants. It was used to induce sweating without increasing body heat, cure colds and fevers, and as a sedative for pain, restlessness, convulsions, and insomnia. It was official in the U.S. Pharmacopoeia from 1842 to 1882 and in the National Formulary from 1916 to 1950.

The leaves and flowering tops of *Nepeta cataria* are harvested between June and September for use in the preparation of catnip products. Iridoids, tannins, and the volatile oil nepetalactone are the major active ingredients. Catnip essential oil has sedative, carminative, and antispasmodic effects. It's a good source of iron, selenium, potassium, manganese, and chromium.

Catnip is also used to improve circulation and may help regulate blood pressure. Studies have proven the effectiveness of catnip. It is effective in calming the nerves, anemia, and menstrual problems. It also contains some antibiotic properties. It is a mild tonic used for colds, flu, and fevers. It also helps stimulate the appetite. Catnip is a member of the mint family and has similar properties to other mints such as calming the stomach and aiding in digestion. Dry leaves are smoked to treat bronchitis and asthma. A topical poultice of catnip is used to relieve swelling. Catnip is available as capsules, dried leaf, tea, and tincture. Catnip is available as capsules, dried leaf, tea, and tincture.

Chamomile

The early Egyptians used chamomile for its healing properties for ailments such as ague and malarial chills. Chamomile is native to Europe and the Mediterranean regions. The Romans used chamomile for its healing benefits in treating digestive problems and as a sedative. In the well known story of Peter Rabbit, Peter's mother gave him chamomile tea to calm his nerves. The European countries have used chamomile for centuries for colic in infants and vomiting because of its antispasmodic properties.

Chamomile is one of the best known herbs around and is good to have on hand for emergencies. Its sedative qualities are helpful for nervousness and cramps. Chamomile tea is often used to help calm the nerves and reduce stress. A volatile oil compound in chamomile is thought to be responsible for its mild sedative effects. It is also known to be a safe and mild sedative to induce sleep.

One of the most common uses of chamomile is to aid digestion. Recent research has found chamomile to contain properties which aid digestion and relieve indigestion. It works by relaxing and calming the smooth muscle lining of the digestive tract. It actually works as an antispasmodic in relaxing the digestive tract. It is also effective for treating colitis, as well as being used externally for hair, skin, and inflammation. Chamomile contains a natural hormone similar to thyroxine which helps strengthen the hair and skin. Research done in Germany has also found anti-inflammatory properties in chamomile for skin ailments. It helped reduce redness, swelling, and inflammation. This may aid conditions such as burns, wounds, eczema, allergic reactions, and other skin problems. The anti-inflammatory and anti-allergic components are attributed to the flavonoids apigenin and luteolin found in chamomile. Animal studies also show that chamomile has antihistaminic effects, as well as anti-ulcer and antibacterial properties. It can help cleanse the liver and promote natural hormone.

Cramp bark

Cramp bark is considered a very valuable herb for its use as a female regulator and to relieve cramps during menstruation. Early American practitioners used cramp bark to relieve cramps which is where it got its name. It has been recommended by herbalists to help with pregnancy after-pains, cramps, and especially for the nervous discomforts of pregnancy.

It is recognized as a uterine sedative and an antispasmodic to relax the uterus and ovaries. It has been used to treat women when threatening miscarriage due to nervous afflictions. It can be used to treat cramps anywhere in the body. In Russia, the berries, fresh or dried, are used as a pulse regulator to treat high blood pressure, heart problems, coughs, colds, lungs, kidneys, and bleeding ulcers. Externally a decoction of flowers has been used for eczema and other skin conditions.

Kava kava

Many island communities in the Pacific such as Polynesia, Micronesia, and Melanesia used kava kava in their ceremonial drinks as a mild sedative and relaxant. The natives used it to relax the body and mind and to promote a restful sleep. It is considered to be an important herb for pain relief. It is beneficial for insomnia and nervous conditions.

This herb is recommended as a strong muscle relaxant. It is considered to be one of the most powerful of the herbal muscle relaxants. Kava kava is used as an analgesic sedative, for rheumatism, for insomnia, and to relax the body. It has antiseptic properties to help with bladder infections. Polynesians used kava kava in their ceremonial drinks as a mild sedative, tonic, and stimulant. It is considered to be an important herb for pain relief. It is beneficial for insomnia and nervous conditions.

Research done has found kava kava to contain anticonvulsant and muscle-relaxing properties in animal studies. This may be beneficial for people with stress-related muscle

tension or seizures. Individuals who drink kava kava relate feeling a sense of tranquillity and sociability. It helps achieve a feeling of well-being and relaxation. Kava kava seems to have an advantage over drugs often prescribed for anxiety and insomnia in that it does not seem to lose effectiveness over time. Several studies done have shown significant benefit for individuals suffering from anxiety. This is extremely promising for individuals requiring long-term therapy for anxiety disorders. Kava is not addictive and is free of associated complications unlike many of the medications routinely prescribed. The chemical constituents are thought to contain properties such as anesthetic, analgesic, anticonvulsive, antifungal, and sleep inducing. Another benefit of kava may be as an analgesic for pain relief. The chewed leaves cause numbness in the mouth. This anesthetic activity is similar to cocaine and lasts longer than benzocaine.

Linden flower

The flowers of the linden tree have been used for diaphoretic effect since the Middle Ages. They have also been used as a tranquilizer and to treat a variety of ailments. The linden is native throughout Europe; it's found both in the wild and under cultivation. The tree has smooth gray bark and heart-shaped leaves. Five-gray bark and heart-shaped leaves. Five-petaled, yellow-white flowers are collected to be dried and preserved for use.

Linden extract contains flavonoid compounds, including kaempferol and quercetin; p-coumaric, caffeic, and chlorocetin; p-coumaric, caffeic, and chlorogenic acids; and amino acids. The plant contains 0.02% to 0.1% volatile oils, including citral, eugenol, and limonene. The ratio of tannins to mucilage polysaccharides contained in various *Tilia* species accounts for differences in the flavor of teas made from this herb. Quercetin, p-coumaric acid, and kaempferol may cause diaphoretic action. Some species of *Tilia* may possess ligands, which may interact with benzodiazepine receptors. This may explain its anxiolytic effect. The extract of the *Tilia* species has been found to possess antibacterial activity. Linden is used to induce diaphoresis and to treat various nervous disorders, feverish colds, throat irritation, nasal congestion, infections, and cold-related coughs.

Passion flower

Passion flower is obtained from leaves, fruits, and flowers of *Passiflora incarnata*. It contains indole alkaloids, including harman and harmine, flavonoids, and maltol. Indole alkaloids are the basis of many biologically active substances, such as serotonin and tryptophan. The exact effect of these alkaloids is unknown; however, they can cause central nervous system (CNS) stimulation via monoamine oxidase (MAO) inhibition, thereby decreasing intracellular metabolism, of norepinephrine, serotonin, and other biogenic amines. Flavonoids can reduce capillary permeability and fragility. Maltol can cause sedative effects and potentiate hexobarbital and anticonvulsive activity. Passion flower is available as fruits, flowers, extracts, capsules, tincture, and tea, and in a variety of combination products.

Passion flower is used as a sedative, hypnotic, and analgesic. It's also used as an antispasmodic for treating muscle spasms caused by indigestion, asthma, menstrual cramping, pain, or migraine. It's mainly used for insomnia and nervousness.

Passion flower helps soothe and relax the nervous system, and it is useful for agitation, unrest, and exhaustion. It has been found to help individuals who want to wean themselves from synthetic sleeping pills and tranquilizers.

Skullcap

Skullcap was used by the Cherokee tribe as an emmenagogue and was used historically as an anticonvulsant. Chinese physicians have used an Asian skullcap as a tranquilizer, sedative, and to treat convulsion. In the 1700s it was used as a treatment for rabies by some physicians. It was later recommended by eclectic physicians for insomnia, nervousness,

malariam, and convulsions. It was officially listed in the U.S. Pharmacopoeia from 1863 to 1916 and in the National Formulary from 1916 to 1947. It has the ability to calm the nerves and help with all nervous system conditions. It has also been used to treat infertility, fatigue, inflamed tissues, digestion, coughs, and headaches. Some herbalists consider skullcap to be one of the best nervine herbs available. It has been used as a nerve tonic and can promote a feeling of well being and promote a relaxed sleep. Some recommend skullcap for problems associated with drug and alcohol withdrawal. It may help to lessen the severity of symptoms. Traditional uses have included infertility, regulating sexual desire, and as a remedy for cramps and pain.

Research done in Europe and Russia have proven the benefits of skullcap as a tranquilizer and mild sedative. It is recommended for use in nervous conditions to induce sleep and relaxation. There is some evidence that the Asian skullcap contains components that inhibit the enzyme sialidase which is known to increase in certain disease states such as cancer, infections, and inflammations. Another study done in vitro found antibacterial and antifungal activity in skullcap. There is also some early evidence of skullcap in treating high blood pressure. It is used and prescribed widely in Europe. Studies in Japan using animals showed that skullcap could increase levels of good cholesterol levels and prevent bad cholesterol levels from rising in rabbits fed a high cholesterol diet. This may suggest skullcap as a heart disease and stroke preventative.

Fennel

Fennel is native to southern areas of Europe and Asia Minor. It is now cultivated in the United States and Great Britain. It was used in many ancient civilizations. Fennel was used in ancient Egypt to aid digestion and flatulence. In Italy it was used to bring surgical patients out of anesthesia. Hypocrites and Dioscorides recommended fennel to increase milk production in nursing mothers. The ancient Greeks used it for weight reduction. Culpepper also recommended fennel for losing weight. Fennel helps with weight reduction by suppressing the appetite. It aids in stabilizing the nervous system and may be used as a sedative for small children. Fennel is used to expel phlegm from the throat, eliminate toxins from the body, and purify the blood. It is known to fortify the immune system and to be good for the eyes. Fennel also aids digestion, improves night vision, relieves gas, expel worms, improves the quality of milk in nursing mothers, and cleans the bladder and liver. Fennel has been used to stimulate menstruation. It helps to soothe the smooth muscles of the digestive tract aiding in digestion and related problems. Research has found the seeds to have estrogenic effects of the genital organs of female and male rats. It has been found to promote the production of milk in nursing mothers. It is good for digestion, colic, and other stomach complaints. It contains essential oils similar in composition of catnip and peppermint.

Lemon balm

Lemon balm is native to southern European countries, where it's planted in gardens to attract bees. It gives off a delicate lemon scent when the leaves are bruised. Lemon balm has been used for the treatment of wounds. It's also effective for the treatment of influenza, insomnia, anxiety, depression, and nervous stomach. The action of lemon balm is a result of volatile oil consisting of 0.2% to 0.2% citral a (gerinal) and b (neral), limonene, small amounts of flavonoids, tannins, proteocatechuic and caffeic acids, and urosolic and promolic acids. The latter may account for its use as a carminative to settle the stomach. The volatile oil components account for the herb's diaphoretic effects. Limonene, oleaholic acid, and geranial have demonstrated sedative actions. Citral has an estrogenic effect. Rosmarinic acid and the tannins have antiviral actions.

Because lemon balm has antiviral activity, it's used in the treatment of herpes simplex cold sores. It's also used to treat upset stomach and insomnia. Lemon balm is used to treat

palpitations related to anxiety or nervousness, vomiting, migraine, and high blood pressure. Lemon balm also exerts an antithyroid effect, and may be useful in treating some psychiatric disorders.

Anyone using lemon balm needs to take it orally; brewed tea is more effective and is well tolerated. People should also be aware of the sedative effects and avoid driving or other hazardous activities.

Willow bark

Willow was recognized for its medicinal value by Dioscorides, the Greek physician, during the first century A.D. He recommended the use of willow bark for pain and inflammation. Early Chinese physicians also used willow bark for pain and inflammation. Egyptians considered the willow to be a sign of joy and celebration. Native Americans also recognized the value of willow and used it to treat pain, fevers, and inflammation. They passed on their knowledge to the colonists who moved to the New World. Willow is valued as a nerve sedative because it has no depressing after effects. It works in a manner similar to aspirin but is gentle on the stomach.

Traditionally, a bitter drink was made by steeping willow bark and twigs in water. This drink was used for fevers and chills and as a substitute for chinchona bark. Willow bark extract is helpful in cleansing and healing eyes that are inflamed or infected. It has been called one of the essential first aid plants. It has strong but benign antiseptic properties and is good for infected wounds, ulcerations, and eczema. The bark contains the glycoside salicin which is an effective pain killer. Aspirin is a synthetic derivative of this component. Willow is most often used for minor aches and pains in the body.

Salicylic acid was the natural source of synthetic aspirin. Aspirin and willow share many similar analgesic properties. The activity of salicylates reduces pain by acting on sensory nerves and inhibiting the synthesis of the prostaglandins which are involved with inflammation.

Feverfew

Feverfew has been used for the treatment of various ailments for thousands of years. Dioscorides, an ancient Greek herbalist, recommended the use of feverfew almost 2,000 years ago. He valued the herb for childbirth, fevers, melancholy, and congestion of the lungs. He also suggested it for "all hot inflammations and swellings," which may refer to arthritis. John Hill, M.D. suggested in 1772 that feverfew be used to treat painful headaches. Many believed that feverfew got its name from its use as a remedy for bringing down fevers, but this has been found to be incorrect. Actually the name feverfew came from the traditional Old English name for feverfew, featherfew. Featherfew came from the feather shaped leaves of the feverfew plant.

Feverfew has long been used as a natural remedy for pain relief and is considered an excellent remedy for migraines. Feverfew was used to treat any kind of pain. The herb also helped with chills and fever. It aids in relieving colds, dizziness, tinnitus, and inflammation from arthritis. It works gradually and with a gentle action that allows the body to heal itself.

Research done in 1959 by M. Soucek, Herout, and Sorm isolated a sesquiterpene lascone, parthenolide, from the feverfew plant. This is thought to be the major active component in feverfew that helps to prevent migraines. Other sesquiterpene lactones found in the plant may also be responsible for its activity. Various studies have found a wide range of the active constituent, parthenolide, from feverfew samples around the world. There must be adequate amounts of parthenolides in order to receive beneficial effects from the feverfew. According to the above study, it appears that the amounts vary considerably. Clinical studies done using feverfew have used preparations ranging from 0.4% to 0.66%.

Probably the most popular use of feverfew is in the prevention of migraine headaches.

Those given the placebo had an increase in frequency and severity of headaches, nausea, and vomiting. Those given the feverfew capsules had no increase in frequency or severity of migraines. A randomized, double-blind, placebo-controlled, crossover study involved 72 volunteers with one group receiving capsuled, dried feverfew leaves and the other group a placebo. The group taking feverfew showed less severity of attacks and a reduction in symptoms associated with migraines such as vomiting. There was a definite improvement in the group using feverfew with no serious side effects. Some forms of migraines are thought to be associated with abnormal platelet behavior. Feverfew has been found to help restrain the release of serotonin from platelets preventing a migraine from occurring.

Feverfew may be a useful treatment in cases of rheumatoid arthritis because of its ability to inhibit the formation of inflammation promoting compounds such as prostaglandins and leukotrienes. It seems to have similar properties to nonsteroidal anti-inflammatory agents (NSAIDs) which include aspirin but may actually be more effective with less potential complications. Some of the studies involving feverfew and migraines have shown that feverfew may also lower blood pressure.

St. John's wort

St. John's wort is a perennial shrub with multiple, bright, yellow flowers. It is often found in open fields throughout Europe and the United States that are sunny and dry. It is often found growing in the wild in Northern California and Southern Oregon, but it has been used for thousands of years to heal and strengthen the body.

Many in ancient Greece and throughout the middle ages felt that St. John's wort contained magical properties. Dioscorides, Pliny, and Hippocrates all used this herb medicinally for many ailments, and folklore suggests it as a remedy against evil spirits and demons. The flowers "bleed" a bright red juice when pressed between the fingers which has led to the belief that it symbolizes the blood of Christ or the blood of St. John.

Nicholas Culpepper mentioned St. John's wort in his book, The Complete Herbal, published in 1649. He suggested using it for conditions such as malaria, alexipharmic (an antidote or defensive remedy against poison, venom, or infection), worms, injuries, bruises, open obstructions, swelling, and sciatica. It was used in Europe during Crusade battles to treat war injuries.

St. John's wort has been used to rid the chest and lungs of mucus in cases of bronchitis and other related problems. It is used to treat nervous system conditions such as neuralgia, as well as anxiety and nervous tension. It can help relieve pain, reduce swelling, treat abscesses, burns, bruises, and insect bites and ease the pain of rheumatism and arthritis. A German patent for an ointment containing an extract of St. John's wort shortens the healing time for burns by acting as a strong antiseptic. According to the report, first-degree burns healed in 48 hours when treated with the ointment, while second- and third-degree burns healed three times faster than burns treated by conventional methods and did so without forming scars.

St. John's wort is used extensively in Europe and Russia and is currently official in the pharmacopoeias in many Eastern European countries. Studies have found that it contains diuretic properties, strengthens the capillaries, dilates coronary arteries, prevents tumors, helps with diarrhea and viruses, and kills germs. It has antifungal properties and is effective for nervous disorders. St. John's Wort contains bioflavonoids including rutin, quercetin, and hyperoside which may explain its effect on the arteries and capillaries. It is also a very promising herb for the immune system and to protect the circulatory system.

In fact, St. John's wort is currently being studied as a treatment against HIV infection. It has been shown in studies to contain anti-HIV activity. One study showed significant improvement in T-cell count of HIV patients when taking hypercin daily. Their T-cell counts increased 13 percent after one month. Another study followed 18 HIV patients, of which 16

stayed with the program. Of those 16, only 2 acquired an infection during the 40 months of observation. This is significant since infections often occur in HIV patients because of a compromised immune system. T-cell counts were stable or even increased during the observation period. St. John's wort is known to combat all sorts of infections; bacterial, fungal, and viral in vitro.

European physicians, though, most commonly recommend St. John's wort for cases of mild to moderate depression. In fact, its greatest role has been as an antidepressive agent. There have been at least 28 controlled studies in Europe. One German study conducted by Muldner and Zoller involved 15 depressed women who were given a standard extract of St. John's wort. The group was found to have less anxiety, show more interest in their surrounding and to have fewer symptoms associated with clinical depression. It also relieved symptoms of anxiety, insomnia, and feelings of worthlessness.

Recommendations

1. Include in the diet apricots, asparagus, avocados, bananas, broccoli, balackstrap molasses, brewer's yeast, brown rice, dried fruits, dulse, figs, fish (especially salmon), garlic, green leafy vegetables, legumes, raw nuts and seeds, soy products, whole grains, and yogurt. These foods supply valuable minerals such as calcium, magnesium, phosphorus, and potassium, which are depleted by stress.
2. Try eating small, frequent meals rather than the traditional three meals a day.
3. Limit your intake of animal protein. Concentrate on meals high in complex carbohydrates and vegetable protein.
4. Avoid foods containing refined sugar or other simple carbohydrates. For a nutritional treatment plan to have maximum benefits, the diet should contain no simple sugars, carbonated soft drinks, tobacco, or alcohol.
5. Do not consume coffee, black tea, cola, chocolate, or anything else that contains caffeine.
6. Keep a food diary to detect correlations between your attacks and the foods you eat. Food allergies and sensitivities may trigger panic or anxiety attacks.
7. Learn relaxation techniques. Biofeedback and meditation can be very helpful.
8. Regular exercise. Any type of exercise will work-a brisk walk, bicycle riding, swimming, aerobics, or whatever fits your individual lifestyle.
9. Be sure to get adequate rest. If sleep is a problem you might want to try
10. To help manage an acute attack, use breathing techniques. Inhale slowly through the nose to a count of four, hold your breath for a count of four, exhale from the mouth slowly to a count of four, and then do nothing for a count of four. Repeat this sequence until the attack will pass after a few minutes. Although it is rare, some may last up to a few hours.
11. Call a trusted friend or family member. Talking things over can diffuse anxiety.
12. If the self-help recommendations in this section do not help, and particularly if panic or anxiety is interfering with your life, consult your health care provider. If an underlying physical problem is ruled out, expect to be referred to a mental health professional for evaluation and treatment.

Conclusion

I have found this study to be very enlightening as to what Substance Abuse Anxiety Disorder is and how it affects a client who is in the process of withdrawal. I found that there is much information on amino acids that is available for clients who have this disorder. People who are going through the process of recovery might want to discuss using some or all of these drugs in the detoxing process. I can see this as an alternative to using prescription drugs as clients go through the withdrawal process. I would not recommend their use without a doctor's authorization.

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