1. INTRODUCTION

**Traditional system of medicine** (also known as indigenous or folk medicine) comprises unscientific knowledge systems that developed over generations within various societies before the era of modern medicine. Practices known as traditional medicines include Herbal, Ayurveda, Siddha, Unani, ancient Irani medicine, Islamic medicine, traditional Chinese medicine, traditional Korean medicine, Acupuncture, Muti, Ifa, traditional African medicine and other Pseudo medical knowledge and practices all over the globe.

It may include formalized aspects of folk medicine, i.e. longstanding remedies passed on and practiced by lay people.

**The World Health Organization** (WHO) defines traditional medicine as:

“*The health practices, approaches, knowledge and beliefs incorporating plant, animal and mineral based medicines, spiritual therapies, manual techniques and exercises, applied singularly or in combination to treat, diagnose and prevent illnesses or maintain well-being.*”

In some Asian and African countries, up to 80% of the population relies on traditional medicine for their primary health care needs.

Over the last three to four decades, use of alternative system of medicines based on Ayurveda, Siddha, Unani etc., in India and similar traditional system in other countries has been growing in a rapid pace. Founded on ancient scriptures, these medicines are derived from natural sources namely plants, herbs and
minerals. In comparison with the modern allopathic medicines, these traditional medicines have no appreciable toxic side effects and this unique characteristic has contributed to the world wide interest in herbal medicine.2

1.1. HISTORY OF TRADITIONAL SYSTEM OF MEDICINE

Siddha medicine is a form of South Indian traditional medicine and part of the trio-Indian medicines- Ayurveda, Siddha and Unani. This system of medicine was popular in ancient India, even 200 years before Christ. Due to the antiquity of this medicinal system, the Siddha system of medicine is believed to be the oldest medicinal system in universe. The system is believed to be developed by the Siddhars, the ancient supernatural spiritual saints of India.3

It is of Dravidian origin and the entire literature is in Tamil language in the form of unpublished palm leaf literature4.

Early recognized Greek compilers of existing and current herbal knowledge include Hippocrates, Aristotle, Theophrastus, Dioscorides and Galen. These early Greek and Roman compilations became the Lun (Treatise on the Nature of Medicinal Herbs) during the Tang dynasty.

In the written record, the study of herbs dated back 5,000 years to the ancient Sumerians, who described well-established medicinal uses for plants. Ancient Egyptian medicines of 1000 BC are known to have used various herbs for medicine. The Old Testament also mentions use of herbs and cultivation.
Many herbs and minerals used in Ayurveda were described by ancient Indian herbalists like Charaka and Sushruta during 1st millennium BC.\(^5\)

**Ayurvedic medicine** is an ancient system of health care that is native to the Indian sub-continent. Even today it is very common in India, Nepal and Srilanka and is used by millions of people. Ayurveda is also gaining popularity in the western countries.\(^2\) Dioscorides, a Greek physician in the 1st Century AD, described the medicinal properties and uses of 500 species of plants in his book De Materia Medica.

Because of historical development and the fact that Europe went into intellectual decline, the book was blindly followed and accepted without question until 15\(^{th}\) century.

The first Chinese herbal book was the Shennong Bencao Jing, compiled during the Han dynasty but dating back to a much earlier period, which was later augmented as the Yaoxing Lun (treatise on the Nature of Medicinal Herbs) during the Tang dynasty. Early recognized Greek compilers of existing and current herbal knowledge include Hippocrates, Aristotle, Theophrastus, Dioscorides and Galen. These early Greek and Roman compilations became the backbone of European medical theory and were translated by Persian Avicenna (Ibn Sina, 980 – 1037), the Persian Rhazes (Razi, 865 – 925) and Jewish Maimonides.\(^6\) Translations of Greek medicinal handbooks and manuscripts into Arabic took place in the eighth and ninth centuries.
Arabic indigenous medicine developed from conflict between the magic-based medicine of the Bedouins and the Arabic translations of the Hellenic and Ayurvedic medical traditions. Spanish indigenous medicine was influenced by the Arabs from 711 to 1492. Islamic physicians and Muslim botanists like al Dinawari and Ibn al-Baitar significantly expanded on the earlier knowledge of materia medica. The most famous Arabic medical treatise was Avicenna’s the Canon of Medicine, which was an early pharmacopoeia and introduced the method of clinical trials. The Canon was translated into Latin in the 12th century and remained a medical authority in Europe until 17th century.

The Unani system of traditional medicine is also based on the Canon.

Translations of the early Roman-Greek compilations were made into German by Hieronymus Bock whose work published in 1546 was called Kreuter Buch. The book was translated into Dutch as Pemptades by Rembert Dodoens (1517 – 1585) and from Dutch into English by Carolus Clusius, (1526 – 1609) published by Henry Lyte in 1578 as A Nievve Herball. Each new work was a compilation of existing texts with new additions. 44 drugs, diluents, flavoring agents and emollients mentioned by Dioscorides are still listed in the official pharmacopoeias of Europe.

Francisco Hernandez, physician to Philip of Spain spent the years 1571-1577 gathering information in Mexico and then wrote Rerum Medicarum Novae Hispaniae Thesaurus, many versions of which have been published including one by Francisco Ximenez. Both Hernandez and Ximenez fitted Aztec ethno medicinal information into the European concepts of disease such as “warm”,
“cold” and “moist” but it is not clear that the Aztec’s used these categories. Juan de Esteyneffer’s Florilegio medicinal de todas las enfermedas compiled European texts and added 35 Mexican plants.

Martin de la Cruz wrote an herbal book in Nahuatl which was translated into Latin by Juan Badiano as Libellus de Medicinalibus Indorum Herbis or Codex Barberini, Latin 241 and given to King Carlos V of Spain in 1552. Fray Bernardino de Sahugun’s used ethnographic methods to compile his codices, which then became the Historia General de las Cosas de Nueva Espana, published in 1793. Castore Durante published his Herbario Nuovo in 1585 describing medicinal plants from Europe and the East and West Indies. In 1597, John Gerard published his outstanding book The Herball or General Historie of plantes which is a huge volume of 1392 pages and 2200 wood cut illustrations of plants and was widely used by physicians and became widely quoted and referenced and the book has remained in print for 400 years. Knowledge transmission and creation of indigenous medicine is generally transmitted orally through a community, family and individuals until collected. Within a given culture elements of indigenous medicine knowledge may be diffusely known by many or may be gathered and applied by those in a specific role as a healer such as a shaman or midwife. In the 17th century, Jesuits in South America discovered that a native remedy for other diseases made from an infusion of the bark of cinchona (Cinchona spp., Rubiaceae) coincidentally controlled malaria.

The isolation of antimalarial drug Quinine from the bark of Cinchona species (Cinchona.officinalis) was reported in 1820 by the French pharmacist,
Caventon and Pelletier. The bark has long been used by indigenous group in the Amazon region for treatment of fever.

The analgesic morphine, isolated in 1816 by the German pharmacist, Sertturner from the opium poppy (*Papaver somniferum*).\(^{16}\)

Other significant drugs developed from traditional medicinal plant include the anti hypersensitive agent, reserpine, isolated from *Rauwolfia serpentina* used in Ayurvedic medicine for the treatment of snakebite and other ailments\(^{17}\). Ephedrine from *Ephedra sinica*, a plant long used in traditional medicine was introduced in western medicine in 1923 and is the basis for the synthesis of anti asthma agents Salbutamol and Salmeterol\(^{18}\).

During recent years, the attention of the pharmaceutical industry has switched once more to the natural world and this may be illustrated by reference to three clinical drugs, taxol, etoposide and artemisinin.\(^{19}\) Taxol is obtained from the bark of Western pacific yew, *Taxus brevifolia*. The isolation and structure determination of Taxol followed on from experiments that showed that a crude extract was active against cancer cells in laboratory tests. Although this activity was discovered in early 1960’s, it was not until 1971 that the structure elucidation of this complex diterpene was determined. In 1979 it was reported that the mode of action was through promotion of the assembly of tubulin into microtubules. Clinical trials did not take place until the early 1980’s and it was not until the 1990’s that taxol and its semi synthetic derivative taxotere were shown to be clinically effective against breast and ovarian cancers. The long period for the
development of taxol as a clinical agent, its difficulty in procurement as a natural product and the complexity of its chemical structure all attest to the difficulties faced by the pharmaceutical industry in developing clinical agents from natural sources.

The analysis of drugs approved by FDA in USA in 10 years period (1983 – 1992) conducted by Cragg and associate found that 157 of 520 (30%) approved were natural products or their derivatives\textsuperscript{20}.

The Western European phytochemical market in prescription was $2.2 billion (70% in Germany) in 1989 and is growing; the figure shows that the trade in plants used in Europe for non – conventional medicine is increasing by 15% - 20% every year with an import value of $3.6 billion in 1995.\textsuperscript{21}

In 1996, 6 of the top 20 pharmaceutical drugs sold were natural products and more than 50% of these linked directly to natural products.\textsuperscript{22} 15 drugs derived from natural products have been launched in the key markets of US, Europe and Japan and an additional 15 natural products derived compounds were in phase III trials at the end of 2003.\textsuperscript{23}

Plant constituents may be isolated and used directly as therapeutic agents or as starting materials for drug synthesis or they may serve as models for pharmacologically active compounds in drug synthesis. The general research methods includes proper selection of medicinal plants, preparation of crude extracts, biological screening, detailed chemo
pharmacological investigations, toxicological and clinical studies, standardization and use of active moiety as the lead molecule for drug design.

**Alkaloids**

Alkaloids are naturally occurring chemical compounds containing basic nitrogen atoms and are produced by a large variety of organisms including bacteria, fungi, plants and animals. Many alkaloids are toxic and often have a pharmacological effect, which makes them to be used as medications and recreational drugs. Some alkaloids have a bitter taste.

**Flavonoids**

Flavonoids are derived from 2-phenylchromen-4-one (2-phenyl-1-4-benzopyrone) and are commonly known for their antioxidant activities. Flavonoids, which are widely distributed in plants, fulfil many functions including producing yellow, red or blue pigmentation in flowers and protection from attacks by microbes and insects. Compared to other active plant compounds, they are low in toxicity. Flavonoids are referred to as nature’s biological response modifiers because of their inherent ability to modify the body’s reaction to allergens, viruses and carcinogens. They show anti-allergic, anti-inflammatory, antimicrobial and anticancer activity.

**Saponins**

Saponins are the glycosides of 27 carbon atom steroids or 30 carbon atom triterpenes in plants. They are found in various plant parts; leaves, stems roots,
bulbs, flowers and fruits. They are characterized by their bitter taste and their ability to haemolyze red blood cells. They are used medically as expectorant, emetic and for the treatment of excessive salivation, epilepsy, chlorosis and migraines. They are used in Ayurvedic medicine as a treatment for eczema, psoriasis and for removing freckles. Saponins are believed to be useful in the human diet for controlling cholesterol. Digitalis-type saponins strengthen the heart muscle causing the heart to pump more efficiently. Saponins also inhibit cancer tumour growth in animals, particularly, lung and blood cancers, without killing normal cells. Saponins are the plant’s immune system acting as an antibiotic to protect the plant against microbes and fungus.

**Anthraquinones**

Anthraquinones are aromatic organic compounds and is a derivative of anthracene. It has the appearance of a yellow or light-grey to grey-green, solid, crystalline powder. It is fairly stable under normal conditions. Anthraquinones naturally occur in some plants, fungi, lichen and insects, wherein they serve as a basic skeleton for their pigments. Anthraquinones are used in the production of dyes and are also used as a laxative.

**Cardiac glycosides**

Cardiac glycosides are drugs used in the treatment of congestive heart failure and cardiac arrhythmia. These glycosides are found as secondary metabolites in several plants and in some animals. Some of these compounds are used as arrowhead poisons in hunting.
Classification of medicinal plants

Of the 2,50,000 higher plant species on earth, more than 80,000 species are reported to have at least some medicinal value and around 5000 species have specific therapeutic value. They are classified according to the part used, habit, habitat, therapeutic value etc, besides the usual botanical classification.

1. Based on part used
   i) Whole plant: *Boerhavia diffusa, Phyllanthus niruri*
   ii) Root: *Dasamula*
   iii) Stem: *Tinospora cordifolia, Acorus calamus*
   iv) Bark: *Saraca asoca*
   v) Leaf: *Indigofera tinctoria, Lawsonia inermis, Aloe vera*
   vi) Flower: *Biophytum sensitivum, Mimusops elenji*
   vii) Fruit: *Emblica officinalis*
   viii) Seed: *Datura stramonium*

2. Based on habit
   i) Grasses: *Cynodon dactylon*
   ii) Sedges: *Cyperus rotundus*
   iii) Herbs: *Vernonia cineria*
   iv) Shrubs: *Solanum species*
   v) Climbers: *Asparagus racemosus*
   vi) Trees: *Azadirachta indica*
3. Based on habitat
i) Tropical:  *Andrographis paniculata*
ii) Sub-tropical: *Mentha arvensis*
iii) Temperate: *Atropa belladona*

4. Based on therapeutic value

<table>
<thead>
<tr>
<th>Category</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antimalarial</td>
<td><em>Cinchona officinalis, Artemisia annua</em></td>
</tr>
<tr>
<td>Anticancer</td>
<td><em>Catharanthus roseus, Taxus baccata</em></td>
</tr>
<tr>
<td>Antiulcer</td>
<td><em>Azadirachta indica, Glycyrrhiza glabra</em></td>
</tr>
<tr>
<td>Antidiabetic</td>
<td><em>Catharanthus roseus, Momordica charantia</em></td>
</tr>
<tr>
<td>Anticholesterol</td>
<td><em>Allium sativum</em></td>
</tr>
<tr>
<td>Antiinflammatory</td>
<td><em>Curcuma longa, Desmodium gangeticum</em></td>
</tr>
<tr>
<td>Antiviral</td>
<td><em>Glycyrrhiza glabra</em></td>
</tr>
<tr>
<td>Antibacterial</td>
<td><em>Plumbago indica</em></td>
</tr>
<tr>
<td>Antifungal</td>
<td><em>Allium sativum</em></td>
</tr>
<tr>
<td>Antiprotozoal</td>
<td><em>Ailanthus sp., Carapichea ipecacuanha</em></td>
</tr>
<tr>
<td>Antidiarrhoeal</td>
<td><em>Psidium guajava, Curcuma longa</em></td>
</tr>
<tr>
<td>Hypotensive</td>
<td><em>Coleus forskohlii, Allium sativum</em></td>
</tr>
<tr>
<td>Tranquilizer</td>
<td><em>Rauwolfia serpentina</em></td>
</tr>
<tr>
<td>Anaesthetic</td>
<td><em>Erythroxylum coca</em></td>
</tr>
<tr>
<td>Spasmolytic</td>
<td><em>Atropa belladona, Hyoscyamus niger</em></td>
</tr>
<tr>
<td>Diuretic</td>
<td><em>Phyllanthus niruri, Centella asiatica</em></td>
</tr>
<tr>
<td>Astringent</td>
<td><em>Piper betle, Abrus precatorius</em></td>
</tr>
<tr>
<td>Anthelmentic</td>
<td><em>Quisqualis indica, Punica granatum</em></td>
</tr>
<tr>
<td>Cardiotonic</td>
<td><em>Digitalis sp., Thevetia sp.</em></td>
</tr>
</tbody>
</table>
Antiallergic : *Nandina domestica, Scutellaria baicalensis*

Hepatoprotective : *Silybum marianum, Andrographis paniculata*

### 1.2. ANXIETY

Anxiety is a cardinal symptom of many psychiatric disorders and an almost inevitable component of many medical and surgical conditions. It is defined as a feeling of uncertainty, apprehension or tension. It is a subjective human phenomenon. The heightened level arousal and subjective feeling of fear is the feature of all major categories of anxiety disorder. It is regarded as a particular form of behavioral inhibition that occurs in response to environmental events.

Human anxiety disorders are broadly grouped according to symptomatology and responsiveness to pharmacological and psychological treatment. Generalized anxiety disorder and panic disorder are the two primary classifications of pathological anxiety in humans. The distinguishing feature of generalized anxiety disorder is a pervading sense of unrealistic worry about everyday life situations. In contrast, panic attacks constitute the primary symptom of panic disorder. These events are characterized as sudden, extreme fear accompanied by autonomic nervous system arousal.

#### 1.2.1. Effects Responsible For Anxiety

##### 1.2.1.1. Physical effects

Physical effects of anxiety may include heart palpitations, muscle weakness, tension, fatigue, nausea, chest pain, shortness of breath, stomach aches or headaches. The body prepares to deal with a threat; blood pressure and heart
rate are increased, sweating is increased, blood flow to the major muscle groups is increased and immune and digestive system functions are inhibited. External signs of anxiety may include pale skin, sweating, trembling and pupillary dilation. Someone who has anxiety might also experience it as a sense of dread or panic. Although panic attacks are not experienced by every person who has anxiety they are a common symptom. Panic attacks usually come without warning and although the fear is generally irrational, the perception of danger is very real.

1.2.1.2. Emotional effects

Emotional effects may include “feelings of apprehension or dread, trouble concentrating, feeling tense or jumpy, anticipating the worst, irritability, restlessness, watching and waiting for signs and occurrences of danger, nightmares/bad dreams and obsessions about sensations.

1.2.1.3. Cognitive effects

Cognitive effects of anxiety may include thoughts about suspected dangers, such as fear of dying.

1.2.1.4. Behavioral effects

Behavioral effects may include withdrawal from situations where unpleasant effects of anxiety have been experienced in the past. It can also be affected in ways which include changes in sleeping patterns, nail biting and increased motor tension, such as foot tapping.
1.2.2. Classification of anxiety disorder

1.2.2.1. Generalized anxiety disorder (GAD)

Generalized anxiety disorder is a chronic disorder characterized by excessive long-lasting anxiety and worry about nonspecific life events, objects and situations. GAD sufferers often feel afraid and worry about health, money, family, work or school, but they have trouble both identifying the specific fear and controlling the worries. Their fear is usually unrealistic or out of proportion with what may be expected in their situation. Sufferers expect failure and disaster to the point that it interferes with daily functions like work, school, social activities and relationships. Those suffering from GAD show strained look, pale skin with increased sweating from the hands and feet.

1.2.2.2. Panic disorder

Panic disorder is a type of anxiety characterized by brief or sudden attacks of intense terror and apprehension that leads to shaking, rapid heartbeat, trembling, confusion, dizziness, nausea and difficulty in breathing. Panic attacks tend to arise abruptly and peak after 10 min, but may last for hours. Panic disorders usually occur after frightening experiences or prolonged stress, but they can be spontaneous as well. A panic attack may lead an individual to be acutely aware of any change in normal body function, interpreting it as a life threatening illness hyper vigilance followed by hypochondriasis. In addition, panic attacks lead to sufferer to expect future attack, which may cause drastic behavioral changes in order to avoid these attacks.
1.2.2.3. Phobia

Phobia is an irrational fear and avoidance of an object or situation. Phobias are different from generalized anxiety disorders because phobia has a fear response identified with a specific cause. The fear may be acknowledged as irrational or unnecessary, but the person is still unable to control the anxiety that results. Stimuli for phobia may be as varied as situations, animals or everyday objects. For example, agoraphobia occurs when one avoids a place or situation to avoid an anxiety or panic attack. Agoraphobics will situate themselves so that escape will not be difficult or embarrassing and will change their behavior to reduce anxiety.

1.2.2.4. Social Anxiety Disorder

Social Anxiety Disorder is a type of social phobia characterized by a fear of being negatively judged by others or a fear of public embarrassment due to impulsive actions. This includes feelings such as stage fright, a fear of intimacy and a fear of humiliation. This disorder can cause people to avoid public situations and human contact to the point that normal life is rendered impossible.

1.2.2.5. Obsessive-Compulsive Disorder (OCD)

Obsessive-Compulsive Disorder is an anxiety disorder characterized by thoughts or actions that are repetitive, distressing and intrusive. It affects around 3% of the population worldwide. OCD sufferers usually know that their compulsions are unreasonable or irrational, but they serve to alleviate their anxiety. Often, the logic of someone with OCD will appear superstitious, such as an insistence in walking in a certain pattern. OCD sufferers may obsessively clean personal items or hands or constantly check locks, stoves or light switches.
1.2.2.6. Post-Traumatic Stress Disorder (PTSD)

Post-Traumatic Stress Disorder is anxiety that results from previous trauma such as military combat, rape, hostage situations or diagnosis of a serious life threatening illness.

1.2.2.7. Separation Anxiety Disorder

Separation Anxiety Disorder is characterized by high levels of anxiety when separated from a person or place that provides feelings of security or safety. Sometimes separation result in panic and it is considered a disorder when the response is excessive or inappropriate. PTSD often leads to flashbacks and behavioral changes in order to avoid certain stimuli.

1.2.3. Various factors responsible for the cause of anxiety

1.2.3.1. Environmental and external factors

- Trauma from events such as abuse, victimization or death of a loved one.
- Stress in a personal relationship, marriage, friendship and divorce.
- Stress at work.
- Stress from school.
- Stress about finances and money.
- Stress from a natural disaster.
- Lack of oxygen in high altitude areas.

1.2.3.2. Medical factors

Anxiety is associated with medical factors such as anemia, asthma, infections and several heart conditions. Some medically-related causes of anxiety include:
Stress from a serious medical illness.
- Side effects of medication.
- Symptoms of a medical illness.
- Lack of oxygen from emphysema or pulmonary embolism.

1.2.3.3. Substance use and abuse

It is estimated that about half of the patients who utilize mental health services for anxiety disorders such as GAD, panic disorder, or social phobia are doing so because of ethanolic or benzodiazepine dependence. More generally, anxiety is also known to result from:
- Intoxication from an illicit drug, such as cocaine or amphetamines.
- Withdrawal from an illicit drug such as heroin or from prescription drugs like vicodin, benzodiazepines or barbiturates.

1.2.3.4. Genetics

Family history of anxiety increases the likelihood that a person will develop it. That is, some people may have a genetic predisposition that gives them a greater chance of suffering from anxiety disorders.

1.2.3.5. Brain chemistry

People with abnormal levels of certain neurotransmitters in the brain are more likely to suffer from generalized anxiety disorder. When neurotransmitters are not working properly, the brain’s internal communication network breaks down and the brain may react in an inappropriate way in some situations. This can lead to anxiety.
1.2.4. Symptoms of Anxiety

People with anxiety disorders present a variety of physical symptoms in addition to non-physical symptoms that characterize the disorders such as excessive, unrealistic worrying. The following is a list of physical symptoms associated with GAD:

- Trembling
- Churning stomach
- Nausea
- Diarrhea
- Headache
- Backache
- Heart palpitations
- Numbness or “pins and needles” in arms, hands or legs
- Sweating/flushing
- Restlessness
- Easily tired
- Trouble concentrating
- Irritability
- Muscle tension
- Frequent urination
- Trouble in sleeping
- Being easily startled

Post-Traumatic Stress Disorders have a range of symptoms that are unique to this form of anxiety. Frequent symptomatic behaviors include:
Flashbacks or nightmares of re-experiencing the trauma
Avoidance of people, places and things that are associated with the original event
Difficult in concentrating or sleeping
Closely watching surroundings (hyper vigilance)
Irritability and diminished feelings or aspirations for the future

1.2.5. Treatment

Mental disorders plague millions of people around the world. Depression and anxiety are two of the most common mental disorders, affecting nearly 55 million people in the United States. The complexities of the central nervous system make diagnoses, treatment and amelioration of these debilitating illnesses exceptionally difficult. Advancement in this area would be invaluable contributions in the effort to reduce the global impact of anxiety-based conditions. The universality of herbal remedies in many cultures makes them an appropriate treatment to explore. Postulations have implicated a dysregulation of specific neurotransmitters such as serotonin, dopamine and gamma-amino butyric acid (GABA) as potential causes for both depression and anxiety disorders.

It falls under two categories namely

- Psychological
- Psychopharmacological
1.2.5.1. Psychological Treatment

a. Cognitive-behavioral therapy

In this therapy specific techniques were adopted to reduce or replace the maladaptive behavior pattern.

b. Behavioral therapy

This therapy focuses on using techniques such as relaxation training; progressive desensitization in order to reduces anxiety responses.

1.2.5.2. Psychopharmacological Treatment

In this therapy anti-anxiety drugs or anxiolytics were used to relieve the anxiety. The anxiolytics were minor tranquilizers with a significant anti-convulsant activity.

Classification of anxiolytic drugs.

Benzodiazepines

Chlordiazepoxide
Diazepam
Clonazepam
Alprazolam

Carbamates

Meprobamate

Beta-adrenoreceptor antagonist

Propranolol
Azapirones

Buspirone

Gepirone

Antihistamines

Hydroxyzine

Barbiturates

Phenobarbitone

Mepobarbitone

Thiopentone

Miscellaneous

Tricyclic antidepressants

1.2.5.3. Complementary treatments for anxiety disorders

Several new anxiety treatments are showing promising results as complements to both therapy and medication. In mild anxiety disorder cases, these treatments may provide sufficient relief on their own.

- **Exercise** – Exercise is a natural stress buster and anxiety reliever. Research shows that as little as 30 min of exercise three to five days a week can provide significant anxiety relief. To achieve the maximum benefit, aim for at least an hour of aerobic exercise on most days.

- **Relaxation techniques** – When practiced regularly, relaxation techniques such as meditation, progressive muscle relaxation, controlled breathing and visualization can reduce anxiety and increase feelings of relaxation and emotional well-being.
• **Biofeedback technique**— Using sensors that measure specific physiological functions such as heart rate, breathing and muscle tension. Biofeedback teaches to recognize the body’s anxiety response and learn how to control them using relaxation.

• **Hypnosis** – Hypnosis is sometimes used in combination with cognitive-behavioral therapy for anxiety. While in a state of deep relaxation, the hypnotherapist uses different therapeutic techniques to help to face fears and look at them in new ways.

Cognitive behavioral therapy (CBT) has proven to be the most effective, long-term treatment for anxiety related disorders. With the lifetime prevalence of anxiety disorders reaching 16.6% worldwide, great strides have been made with ongoing research into its causes and treatments. In addition to antidepressants, serotonin specific reuptake inhibitors (SSRIs) and benzodiazepines have also been prescribed to patients suffering from GAD. However, while often effective, both of these classes of drugs come with many unwanted side effects such as suicidal ideation, decreased alertness, sexual dysfunction and dependency. Additionally, the costs of these medications pose problems to patients who must take them on daily, long-term basis as a result there has been increased interest in the use of complementary and alternative medicines (CAM) as a natural method for treating numerous types of anxiety. Herbs such as passion flower, Kava, St. John’s Wart and valerian root, as well as the amino acid lysine and the cation magnesium, have been used for centuries in folk and traditional medicine to calm the mind and positively enhance mood. However, the efficacy and safety of utilizing CAMs to treat anxiety, both as a symptom and as a disorder, has only just began to be rigorously tested in clinical trials within the last 10 to 15 years. A number of
reviews of the clinical effectiveness of herbal and nutrient treatments for depression, anxiety disorders and sleep disturbance have been published over the past decade.

As herbal medicines are provided by biodiversity, it is of incalculable value to human health.

India is one of the 12 leading biodiversity centers with the presence of over 45,000 different plant species.

Thus, India can be major player in global market for herbal based products by utilizing the following factors:

- Its heritage
- Wide diversity in soil and climatic conditions
- Rich flora and fauna

In 1998, annual turnover of Indian herbal industry was about 2,300 crores against the pharmaceutical industry’s turn over 14,500 crores with growth rate 15%.

Herbal drugs can also be useful as a starting material for semi-synthetic products of other drugs. There are 130 pure chemical substances extracted from around 100 species of higher plants, all over the world. The main examples are plant steroids for the manufacture of oral contraceptive and other hormones.
Traditional Indian practice held that certain drugs should be formulated through the addition of chosen substances that enhances the bioavailability of the drug. Recent work has confirmed this bioavailability enhancer ability of pepper due to active component piperine. The anti T.B. drug, Rifampicin has to be given at higher dose required in order to compensate for losses on the way to target site. Formulation of piperine with Rifampicin will save the drugs and counter the effects.

Herbal drugs are the backbone of the traditional medicine. 3, 300 million people in the under developed countries utilize herbal drugs on a regular basis. To keep this ever-increasing trend alive, it is imperative to obtain and maintain the herbal raw materials and finished products. Therefore, WHO has evolved internationally recognized guidelines to support the policies on herbal drugs to study their potential usefulness including evaluation, purity, safety and efficacy.

In the light of the above points and since the ethanomedicinal information suggests that the plant *Flacourtia Indica* Linn is used in psychopathy\textsuperscript{24}, the present work was carried out.