

Ayurvedic Treatment of Bipolar Disorder

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Abstract The bipolar disorder is a neurological dysfunction and it cause through many unwanted thought/ideas and unnecessary burden on brain. These alterations may cause interventions in mood regulating circuits such as the limbic system, striatum system and prefrontal cortex. The exact pathophysiology of bipolar disorder is not known but some deficiencies in neurological system and brain are observed in BD patients. The three main types of bipolar disorder i.e. Bipolar I Disorder, Bipolar II Disorder, Cyclothymic disorder. The researchers are recommended some important medicinal herbs that reduce the symptoms of bipolar disorder like as Valerian, Passionflower, Ashwagandha etc. these all drugs are regulate the neurological system. After clinical trials of vitamin B complex and methylfolate on bipolar disorder patients, it proved these are useful in physical illness and it more effective with other herbal drugs. These drugs are regulating the level of Serotonin, Monoaminase and GABA.

Keywords: bipolar disorder, mania, anxiety, neurotransmitter, depression

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1. Introduction

Bipolar disorder is a chronic or occasionally brain disorders in which the extremely changes in mood, energy, consciousness, activity levels, and in the ability to carry out per day tasks [1]. It is a most common severe psychiatric disorder that affects the brain functions and depresses the self control of patients. According to WHO "The Bipolar disorder is characterized by manic or hypo manic states: the patient is either depressed, euthymic (normal in mood), or hypo manic/ manic" [2]. The 1 percent population is affected by this disorder in entire world [3]. This disorder is seen in mostly teen agers and adult persons because in this age, the adult candidates are take risk for own future. Some main organs are affected through this disorder like as- Hypothalamus, Pituitary Gland and other psychological and physiological functions [4]. Along with this disorder, some other disorder is associated like as-anxiety disorder, personality disorder, attention deficit, hyperactivity disorder etc. The bipolar disorder is based on the deficiency of neurotransmission of biogenic amine. The behavioral and physiological cause of bipolar disorder is complex and clear because they connected by a chain of interconnected neural circuits [5,6]. In this disorder, the monoaminergic neuron is entering in limbic-striatal circuits of the prefrontal cortex region that change the mood/behavioral [7]. The main causes of bipolar disorder are genetics, neuroanatomic, neurochemical, physiological, environmental and some other biologic factors [8].

2. Symptoms

Some important symptoms of bipolar disorder are [9] -

- Low self-esteem
- Pressured speech
- Activity at heightened levels
- Risk-taking behaviors
- Mood disturbance/ Loss of interest or pleasure
- Insomnia/hypersomnia
- Fatigue
- Lack of focus
- Decreased sleep
- Racing thoughts
- Goal agitation
- Weight loss/gain
- Agitation
- Worthlessness
- Suicidal ideation

3. Etiology of Bipolar Disorder

The causes of bipolar disorder are associated with several factors (Figure 1). Some major factors are- genetic factor, perinatal factor, neuroanatomic factor, psychological factors, environmental and neurochemical other biologic factors [10] -

1. Genetic factors- The bipolar disorder is a associated with genetically because the high risk of transmission of this disorder from genetic abnormalities.

- **Family Studies-** Some researchers is defined the bipolar disorder are transmit through the genetically. Closely friends/relatives of people with bipolar I disorder are approximately 7 times more likely to develop bipolar I disorder compare to the general population. If a couple parents is suffered from bipolar disorder, manic, mixed, or hypomanic

and other brain disorders so the 50% chance of transmission of this disorder in child of this family [11,12].

- **Twin Studies-** The twins child is rare but the both twins child are show some characteristics is same and these are share same environment. The possibility of twin's baby is less than 1% in pregnancy periods, and it based on zygote formation because in Monozygotic (MZ) twins share total gene, while Dizy Gotic (DZ) twins are share only 50% characteristics and it share 100% of their DNA. If a parents is affected with bipolar disorder so the chances of this disorder's is transmit in child is approximate 50% (Available at <http://bipolar.hs.columbia.edu/disgenet.htm>).

2. Personal Life Events and Environmental Factors-

Today's the people are very busy in personal life and face unwanted stress due to this, mostly person is take unnecessary pressure on mind and increase stress. Various negative thought like as failure, unsuccessful, familial problem and breakup like situation are create pressure on brain and after long time it induce bipolar, mania like brain disorder. In additions, the psychosocial stressors are the main causes of regress in bipolar patients [13,14].

3. Neurotransmitters- Some important neurotransmitters that responsible for the bipolar disorder are-

- Serotonin
- Dopamine
- GABA
- Glutamate
- cAMP
- Phosphatidylinositol Tri Phosphate

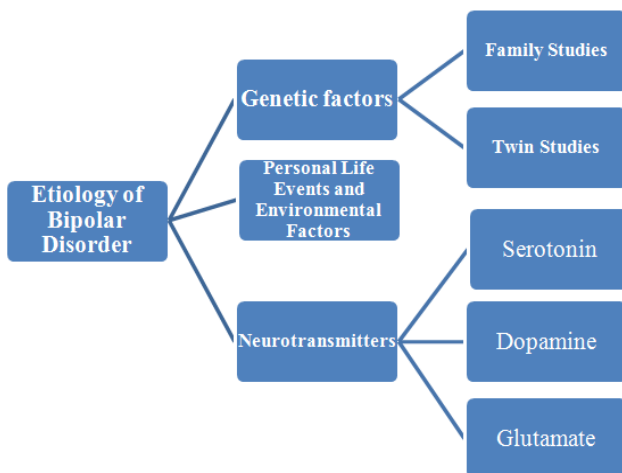


Figure 1. Factor That Involved in Bipolar Disorders

1. Serotonin- The serotonin is also called as 5-Hydroxy tryptamine (5-HT) and it is regulate the various neuronal activities and physiological function such as- Impulse generation, aggressiveness, suicidal thought etc [15]. When decrease the level of 5-HT in human body, result in it produce bipolar disorder and seen many abnormalities such as sleep disorder, aggressiveness and suicidal attempt [16]. The 5 hydroxyindolacetic acids (5HIAA) are the principal serotonin metabolite and it lower in the cerebrospinal fluid of manic and depressed patients and it cause bipolar disorder. A postmortem study of the brains

BD patients so doctors are find low level of 5-HIAA in cerebrospinal fluid [17].

2. Dopamine- The dopamine neurons are performing the main role in bipolar disorder and it shows the direct and indirect effect on brain and neurological system [18]. The dopaminergic activity is induced by increased dopamine liberation and reduced synaptic vesicle, buffering capacity or higher dopaminergic receptor sensitivity; these some events are may be associated with the development of bipolar disorder symptoms, whereas a reduction in dopaminergic activity would be correlated with depression [19].

3. Glutamate- The glutamatergic neurotransmitter is responsible for the mood stabilizing and it is participate in bipolar disorder. Some important chemical agents that induced glutamate concentration in neurons and brain like as- Valproic Acid and are stimulate the secretion of glutamate in brain and it modulate the NMDA responses [20]. Other chemicals such as Lithium, it rapidly increase the concentration of glutamate in synaptic vesicles and regulate the symptoms of bipolar disorder [21].

4. Cyclic Adenosine Monophosphate (cAMP)- The cAMP is a secondary messenger that involve in the regulation of neurological disorders. It activate the protein kinase A(PKA), in an enzyme that regulate the ion channels, cytoskeleton elements and other transcription factors, these factors are responsible for neurological disturbances [22]. In BD patients, the level of adenylate cyclase, cAMP, PKA are high [23].

5. Phosphatidylinositol Tryphosphate- The inositol tryphosphate is regulating the calcium secretion in endoplasmic reticulum because the released Ca^{+} interact with cellular protein like as Calmodulins after that it activate the calmodulin-dependent protein kinase (CaMKs) wich activate the ion channels and transcription factors [24]. Some observational study are define it, the phosphatidylinisitol (PIP2) level are increased in bipolar disorder patients. The high level of PIP2 during the BD is decreased by the use of lithium dose [25].

4. Types of Bipolar Disorder

The different types of bipolar disorder are based on the severity and duration of the altered mood. The 3 main types of bipolar disorder are-

1. Bipolar I Disorder- In these types of bipolar disorder at least one manic episode or more major depressive episodes are shown [27]. From one week to one month, patient is suffered from this type of disorder. This is an initial step of bipolar disorder and it neither lifetime response.

2. Bipolar II Disorder- It is characterized with predominantly depressive episode along with hypomanic episodes. The hypomania episodes is short than the manic episodes. In this episode, the suicidal thought is very quickly generate in mind [28].

3. Cyclothymic disorder- In these types of disorder, the chronic fluctuation in mood because these are associated with both hypomania and depression. Through the cyclothymic disorder impair the personal life of patients, however; the feeling of patients on the top at one day and the next day feeling is down [29].

5. Treatments

Various herbs that contain bioactive substance and these medicinal plants are used for the treatment of various types of diseases [30]. Various important chemical agents are also used in the treatment of chronic disease like as Cancer, Tuberculosis, Cardiac Disease and many brain disorders.

Some important medicinal plants are (Figure 2) -

1. St John's wort (SJW) - It contains two main bioactive substances i.e.; Hyperforin and hypericin. These substances are also used in the treatment of brain disorders like as Anxiety, Mania, Bipolar Disorder, Depression etc. It is effective against brain disorder and it performs the effect as imipramine 150 mg/day and fluoxetine 20 mg/day [31]. The St John's wort is also used in primary care of psychiatric disorder, Exp. An experiment on 80 patients with brain disorders specially bipolar disorder. When all result examine, so 71% patients are treat with primary care to 900 mg /day Hypericum extract. It has minor side effect with higher dose like as phototoxic rash, SSRI like effect [32].

2. Valerian- The biological source of Valerian is Valeriana officinalis. It is mostly found in North America, Europe and Asia. It also used in the treatment brain disorder from ancient time about 1000 years ago. It contain many chemical compounds are arginine, glutamine, alanine, and γ amino butyric acid (GABA) [33]. It is help in the transmission of GABA and serotonin in neuronal junction and prevents the effect of bipolar disorders and it shows the minimum side effect on body. According to recent study, they perform the function as well as benzodiazepines, and do not cause any side effect, due to this effect it is used in the treatment of severe bipolar disorder [34].

3. Lemon balm- It is a perennial shrub and it obtained from the fruits of Melissa officinalis. It is belonging to the family of Lamiaceae, it is mostly found in the Europe. It has much therapeutics effect and it's used in the treatment of sedation, spasm, bipolar disorders [35]. According to previous research, a single dose of lemon balm is improved brain function because they inhibit the GABA transaminase and monoamine oxidase A (MAO-A) [36].

4. Passionflower (Passiflora incarnata)- It is a natural plant that is also found in Brazil, Argentina and USA. It is also used in the treatment of anxiety and insomnia alongwith bipolar disorder. The mechanism of action of passionflower is equal to the benzodiazepine and they act on the GABAergic receptor, it also act as an agonist for this receptor. The passionflower is act as similar to oxazepam effect but it showed slower action on patients, therefore it try on anxiety patients for treatment [37].

5. Ginkgo (Ginkgo biloba)- The Ginkgo biloba is a medicinal plant that mostly cultivated in china. This medicinal herb used in the treatment various disease from the ancient time. The leaf extract is also used for the treatment of brain disorder because it contains various important chemical constituents that modulate the cholinergic and monoaminergic pathway. It stabilizes the mood and regulates bipolar disorder. Along with this

effect it also used in various disorders like as menopause, anxiety and skin disease. Some minor side effect of ginkgo is gastrointestinal disturbances, headaches and dizziness [38].

6. Saffron and other herbs- The saffron is a dried stigma and it also obtained from styletops of *Crocus sativus* Linn. And it belongs to the Iridaceae family. The stigma extract of saffron is more effective than the effect of fluoxetine and imipramine. The saffron is mostly used in regulating of brain disorder but it show the better effect with some other medicinal plants such as- lavender, *Echium vulgare*, and *Rhodiola rosea* [39]. The imipramine is more effective than the levender. The precautions is important when we used any types of medicinal herb because some herb is act as poison and it very dangerous for health, and some drugs are interact with other chemical drugs and cause dangerous effect on living beings [40].

7. Vitamins- The vitamins are play an important role in brain disorders. Vitamin B, D and folic acid are used in bipolar disorder and these are maintaining the brain abnormalities. These traces elements are very essential for body growth and some biological reactions but due to poor diet and many chronic diseases are depleted of nutrients in body. The deficiency of Vitamins B12, D and folate is responsible for bipolar disorder [41]. After metabolism, the folic acid and folate are converted into the L-methylfolate that essential for the treatment of depression and bipolar disorder. The folate is show the better effect when it taken with the combination of fluoxetine [42].

8. Yoga- The yoga is a best technique for fitness and improved brain functions. Te yoga is maintained the physical fitness and neurological functions [43]. Those persons are daily attending the yoga class, they perform the best physical fitness and they are more energetic and alert with improved mood [44]. The kundalini, Shavasana and Sudarshan Kirya, is the best yoga techniques for maintaining the brain disorder like as- anxiety, depression, hostility, fatigue, bipolar disorder and confusion [45]. The yoga techniques are maintaining the neurological function and improve in the mood changing [46].

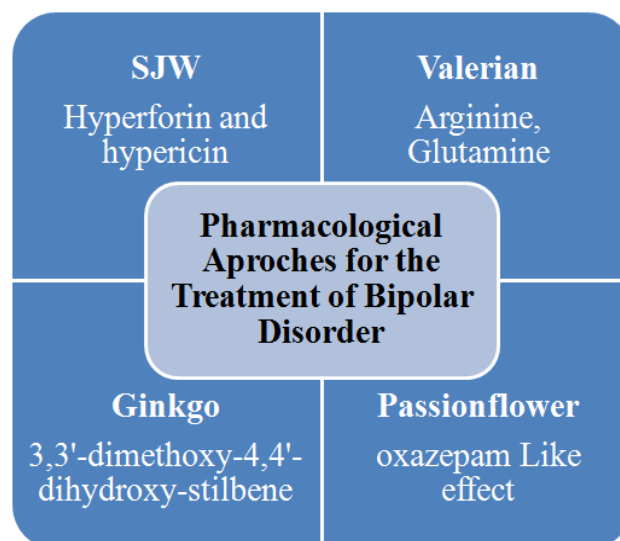


Figure 2. Treatment of Bipolar Disorder

6. Conclusion

The bipolar disorder is associated with alterations in intracellular substances involved in the regulation of neurotransmitters, chemical changing, gene expression, neuronal survival and neuronal death. Various types of pharmacological and non pharmacological treatments are available for curing and maintaining the bipolar disorder. Many drugs, yoga and physical exercise are known to control and maintaining the bipolar disorder. Preventions for this disorder, we advised to used the some Ayurvedic medicinal herb that found is easily in all over world, and I recommend to higher authorities that evaluate the medicinal plants and find new other medicine for this disorder they continue further study on plants and discover new medicines.

Conflict of Interest

The authors declare no conflict of interest to this review.

Authors Contribution

Ravi Kumar designed the study and managed all procedure of this study and prepared manuscript. All the authors participated in writing and giving feedback on the manuscript. All authors have read and approved the final manuscript.

Abbreviations

MZ: Monozygotic, DZ: Dizy Gotic, HT: 5-Hydroxy tryptamine, GABA: Gama Amino Butiric Acid, BD: Bipolar Disorder, 5HIAA: 5 hydroxyindolacetic acids, NMDA: N-Metyl D-Aspartate, CaMKs: calmodulin-dependent protein kinase, MAO-A: monoamine oxidase A

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