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Probable Mode of Action of *Amarsundari Vati* in *Unmada* (Insanity) Based on Analysis of *Rasa Panchaka* of Ingredients- A Review

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ABSTRACT

The purpose of this review study is to examine the potential mechanism of action of *Amarsundari vati* in mental illnesses. **Background**: In Ayurvedic literature, the term "unmada" refers to wide categories of mental illnesses. Since they are responsible for almost one in three years spent living with a disability worldwide, mental disorders place a significant burden on society. The WHO estimates that about one million people die by suicide each year, giving the "global" mortality rate of 16 deaths per 100,000 people, or one death every 40 seconds. *Amarsundari vati* is a tried-and-true, clinically-validated herb-and-mineral Ayurvedic formulation that is frequently and successfully used by Ayurvedic doctors to treat psychiatric problems. **Results**: Of the 21 substances in the Rasapanchaka (Ayurvedic Principles of Drug Action), it was discovered that 13 drugs have Katu rasa, 15 drugs have Laghu-rukshaguna, 14 drugs have Ushnavirya, 11 drugs have Katuvipaka, 8 drugs have madhuravipaka, and 11 medicines are considered Kaphavatahara by Doshaharatwa. These traits are all antagonistic to the vata and kapha doshas. **Conclusion**: Of the six forms of unmada, *Amarsundari vati* may be more successful in treating Kaphajaunmada. **Clinical Relevance:** *Amarsundari vati* may be more successful in treating Kaphajaunmada, which is characterized by slow or weak voice and body movements, anorexia, desire for women (sex) and solitude, excessive sleep, vomiting, dribbling of saliva, symptoms pronounced just after intake of food, and whitish discoloration of nails, according to an analysis of the mode of action.

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INTRODUCTION

In Ayurvedic literature, the term "*unmada*" refers to various broad types of mental illnesses. The derangement of Manas (mental functioning), *Budhi* (application of learned knowledge), *Samjna* (perceptions), *Jnana* (experiences), Smriti (memory), Bhakti (emotional adhesions), *Seela* (conditioned activities), Cheshta (behaviour), and Achara (socio-cultural activities) is described in Ayurveda as unmada.[1]. Since they are responsible for almost one in three years spent living with a disability worldwide, mental disorders place a significant burden on society. 80 percent of people are going to go through a mental health episode at some point in their lives. Anxiety and depression are two of the most widespread mental illnesses. [2]. More than 10% of the world's overall disease burden is carried by low- and middle-income countries, where about 80% of people with mental disorders reside.[3] Depression is the second most common cause of YLD (years lived with disability), out of various possible explanations. Global neuropsychiatric causes of YLD include anxiety disorders, schizophrenia, bipolar disorder, prescription medication addiction, headaches, other substance misuse, Alzheimer's disease, alcohol use disorders, and epilepsy.[4] It is clear that psychiatric illnesses are frequently incapacitating, and this is demonstrated by the significantly larger percentage of the total disease burden attributable to mental illnesses. It is significant to remember that untreated mental diseases also contribute to suicide-related death. Suicide is a big source of worry on a global scale. The WHO estimates that about one million people die by suicide each year, giving the "global" mortality rate of 16 deaths per 100,000 people, or one death every 40 seconds. The last 45 years, the global suicide rate has soared by 60%. In certain nations, suicide is one of the top three killers of people between the ages of 15 and 44, and it's the second killer of those between the ages of 10 and 24. Suicide attempts, which are up to 20 times more common than successful suicide, are not included in these statistics. In 1998, suicide was predicted to account for 1.8% of the global disease burden, and by 2020, it is predicted to account for 2.4% of the disease burden in nations with market economies and former socialist regimes.[5] *Amarsundari vati* is a tried-and-true, clinically-validated 6 herbal-mineral combination that is frequently and successfully utilised by Ayurvedic doctors to treat a variety of illnesses. It has been found to be helpful in treating personality disorders, insanity, epilepsy, anaemia, itching, poison, consumption, delusion, diabetes mellitus, artificial poison, fever, scanty semen volume, infertility, poor memory, poor digestive power, and those with poor intelligence. It grants sustenance, vigour, luck, long life, and auspiciousness. However, the management of psychiatric conditions sees a

greater use. This review paper aims to investigate *Amarsundari vati's* likely mode of operation in mental illnesses.

MATERIALS AND METHODS

Data was collected by thorough literature review of *Samhitas* (classical texts), *Nighantus* (lexicons) and published research articles.

A etiopathogenesis of *Unmada*:

Unmada is a term that represents broad classes of mental ailments in Ayurvedic literature. Doshas which have undergone increase and traversing upwards through the channels of mind (*Manovahasrotas*) get localized in the mind and cause its abnormality. This disease is called *Unmada*, it is mainly a disease of the mind.

Varieties:

There are six varieties. One from each *Dosha (Vataja, Pittaja, Kaphaja*), fourth from a combination of all the three (*Sannipataja*), fifth from grief etc (*Aadhija),* sixth from poisons (*Vishaja).*

Cause:

Indulgence in foods which are incompatible, spoilt and unclean, showing disrespect to gods, preceptors (elders) or Brahmins, emotions affecting the mind like fear, joy etc and violent physical activities

Pathogenesis:

In persons who are mentally weak, doshas which have undergone increase invade *hridaya* (seat of mind), get lodged in channels of the mind and bring about the derangement of mind quickly.

General symptoms:

Improper understanding, unsteadiness of mind, non-coordination of sight, feeling of fear, irrelevant talk, feeling of emptiness of heart

Symptoms of *Vataja unmada:*

Laughing, smiling, dancing, singing, speaking, making movement of body parts and weeping at improper time and place, hardness/ roughness, emaciation, blackish red discoloration of the body, exacerbation of symptoms after digestion of food.

Symptoms of *Pittaja unmada*:

Intolerance, uncontrollability, casting away the clothes and remaining naked, threatening others, running away, feeling of burning sensation, desiring shades, cool water and food, yellowish discoloration of the body.

Symptoms of *Kaphaja unmada*:

Slow or weak voice and body movements, anorexia, desire for women (sex) and solitude, excessive sleep, vomiting, dribbling of saliva, symptoms pronounced just after intake of food, whitish discoloration of nails.

Symptoms of *Sannipataja unmada*:

There will be symptoms produced due to each Dosha. Its treatment is very difficult.

Symptoms of *Adhija unmada*:

Person talks indifferently, reveals secret, sings, laughs or weeps on his own accord and behave senselessly.

Symptoms of *Vishaja unmada*:

Patient will have red eyes, loss of strength of body, sense and complexion, helplessness, black discoloration of the face or mouth and loss of consciousness. [7]

Mental disorders: Key facts[8]

• There are many different mental disorders, with different presentations. They are generally characterized by a combination of abnormal thoughts, perceptions, emotions, behaviour and relationships with others.

• Mental disorders include: depression, bipolar affective disorder, schizophrenia and other psychoses, dementia, intellectual disabilities and developmental disorders including autism.

• There are effective strategies for preventing mental disorders such as depression.

• There are effective treatments for mental disorders and ways to alleviate the suffering caused by them.

• Access to health care and social services capable of providing treatment and social support is key. The burden of mental disorders continues to grow with significant impacts on health and major social, human rights and economic consequences in all countries of the world. Let us analyse them.

Depression

Depression is a common mental disorder and one of the main causes of disability worldwide. Globally, an estimated 300 million people are affected by depression. More women are affected than men.

Depression is characterized by sadness, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, tiredness, and poor concentration. People with depression may also have multiple physical complaints with no apparent physical cause. Depression can be long-lasting or recurrent, substantially impairing people's ability to function at work or school and to cope with daily life. At its most severe, depression can lead to suicide.

Prevention programmes have been shown to reduce depression, both for children (e.g. through protection and psychological support following physical and sexual abuse) and adults (e.g. through psychosocial assistance after disasters and conflicts).

There are also effective treatments. Mild to moderate depression can be effectively treated with talking therapies, such as cognitive behaviour therapy or psychotherapy. Antidepressants can be an effective form of treatment for moderate to severe depression but are not the first line of treatment for cases of mild depression. They should not be used for treating depression in children and are not the first line of treatment in adolescents, among whom they should be used with caution. Management of depression should include psychosocial aspects, including identifying stress factors, such as financial problems, difficulties at work or physical or mental abuse, and sources of support, such as family members and friends. The maintenance or reactivation of social networks and social activities is important.

Bipolar affective disorder

This disorder affects about 60 million people worldwide. It typically consists of both manic and depressive episodes separated by periods of normal mood. Manic episodes involve elevated or irritable mood, over-activity, pressure of speech, inflated self-esteem and a decreased need for sleep. People who have manic attacks but do not experience depressive episodes are also classified as having bipolar disorder.

Effective treatments are available for the treatment of the acute phase of bipolar disorder and the prevention of relapse. These are medicines that stabilize mood. Psychosocial support is an important component of treatment.

Schizophrenia and other psychoses

Schizophrenia is a severe mental disorder, affecting about 23 million people worldwide. Psychoses, including schizophrenia, are characterized by distortions in thinking, perception, emotions, language, sense of self and behaviour. Common psychotic experiences include hallucinations (hearing, seeing or feeling things that are not there) and delusions (fixed false beliefs or suspicions that are firmly held even when there is evidence to the contrary). The disorder can make it difficult for people affected to work or study normally.

Stigma and discrimination can result in a lack of access to health and social services. Furthermore, people with psychosis are at high risk of exposure to human rights violations, such as long-term confinement in institutions.

Schizophrenia typically begins in late adolescence or early adulthood. Treatment with medicines and psychosocial support is effective. With appropriate treatment and social support, affected people can lead a productive life, be integrated in society. Facilitation of assisted living, supported housing and supported employment can act as a base from which people with severe mental disorders, including Schizophrenia, can achieve numerous recovery goals as they often face difficulty in obtaining or retaining normal employment or housing opportunities.

Dementia

Worldwide, approximately 50 million people have dementia. Dementia is usually of a chronic or progressive nature in which there is deterioration in cognitive function (i.e. the ability to process thought) beyond what might be expected from normal ageing. It affects memory,

thinking, orientation, comprehension, calculation, learning capacity, language, and judgment. The impairment in cognitive function is commonly accompanied, and occasionally preceded, by deterioration in emotional control, social behaviour, or motivation.

Dementia is caused by a variety of diseases and injuries that affect the brain, such as Alzheimer's disease or stroke.

Though there is no treatment currently available to cure dementia or to alter its progressive course, many treatments are in various stages of clinical trials. Much can be done, however, to support and improve the lives of people with dementia and their careers and families.

Developmental disorders, including autism

Autism and other widespread developmental diseases, such as intellectual disability, fall under the general category of "developmental disorder." Developmental disorders typically first appear in childhood but often last into age, impairing or delaying activities associated to the maturation of the central nervous system. Instead of the intervals of remission and relapse that characterise many other mental disorders, they typically take a stable course.

A person with an intellectual disability has impaired abilities in many developmental domains, including cognitive functioning and adaptive behaviour. Reduced intelligence reduces one's capacity to adjust to the demands of daily life.

Autism and other pervasive developmental disorders include impairments in social behaviour, communication, and language, as well as a limited range of interests and hobbies that are both particular to the person and are not shared by others. Impaired social behaviour, communication, and language skills, as well as a limited range of repeated interests and activities that are both particular to the individual and unique to them, are signs of pervasive developmental disorders like autism. Infantile or early childhood is the usual starting point for developmental problems. Sometimes those who have these disorders show signs of intellectual disability. The care of people with developmental problems requires significant family engagement. Finding out what affects impacted people's misery and wellness as well as what circumstances are most conducive to improved learning are crucial components of treatment. Daily routines with predictable periods for eating, playing, studying, socialising, and sleeping help reduce unneeded stress. Health services regularly monitor patients, including adults and children, who have Daily routines with predictable periods for eating, playing, studying, socialising, and sleeping help reduce unneeded stress. It is necessary for

health professionals to regularly monitor both children and adults with developmental problems. The general public has a responsibility to uphold the needs and rights of those with disabilities.

***Amarsundari vati*[9]**

Ingredients of Preparation:

*Shudh (purified)Parad, Shudh Gandhak*are blended together to form *Kajjali. Shunthi, Pippali, Marich, Amalaki, Haritaki, Bibhitak, Renuka, Pippalimool, Chitrak, Twak, Tamalpatra, Naagkeshar, Ela, Akarkarabh, Vidang, Musta, Shudh Vatsanabh* and *Loh Bhasma* is pounded to form a coarse powder and mixed with the *Kajjali. Gud (Jaggery*) is heated till it melts and *Kajjali* mixture is added to it. The mixture is stirred till a uniform blend is achieved. This formulation is called *Amarsundari vati.*

Indications of *Amarsundari vati*

- Hysteria
- Epilepsy
- Nervous Diseases
- Delirium (severe confusion and disorientation)
- Rheumatic fever, rheumatic pains
- Vataroga (Neurological disorders)
- *Vata rog* are Neurological Disorders. These are diseases of the brain, spinal cord, cranial nerves, peripheral nerves, nerve roots, autonomic nervous system, neuromuscular junction, and muscles. These disorders include epilepsy, Alzheimer disease and other dementias, cerebrovascular diseases including stroke, migraine and other headache disorders, multiple sclerosis, Parkinson's disease, neuro infections, brain tumors, traumatic disorders of the nervous system such as brain trauma, and neurological disorders as a result of malnutrition.

RESULTS

Table No. 1: SHOWING VARIOUS REFERENCES OF AMARSUNDARI VATI QUOTED IN DIFFERENT AYURVEDIC TEXT

S. NO	Kala	Text name	Ingredients	Indications
1.	10th	*Rasahrdaya Tantram*[10]	***Amarsundari Gutika*** *Abhraka Bhasma* - 1 Part *Kanta Loha Bhasma* - 1 Part *Tamra Bhasma* - 1 Part *Rajata Bhasma* - 1 Part *Swarna Bhasma* - 1 Part *Suddha Parada Bhasma* -5 Part	*Shastravarakam, Sarvrognashak*
2.	12th	*Rasa Prakash Sudhakar*[11]	***[A] Amarsundaro Rasa 1*** *Suddha Manashila* - 1 Part *Suddha Hartal* - 1 Part *Makshika Bhasma* - 1 Part *Suddha Gandhak* - 1 Part *Suddha Parada* - 1 Part *Kharpar Bhasma*- 1 Part ***Bhavana Dravya*** – *Ardraka Swarasa* *Vasa Swarasa* *Tulsi Swarasa* ***[B] Amarsundaro Rasa 2*** *Ras Sindoor*- 1 Part *Suddha Gandhak*- 3 Part *Suddha Hingul* - 1 Part *Tal Satva* - 1 Part ***Bhawana Dravya***- *Bhringraj Swarasa* *Kakarasamachi Swarasa*	*Vatakapha Roganasak* *Tridosha Roganasaka*
3.	13th	*Anandakandah*[12]	***[A] Amarsundari vati*** *Suddha Parada* - 2 Part *Suddha Rajata Bhasma*- 5 Part *Abhraka Satva Bhasma*- 3 Part *Swarna Bhasma*- 1 Part *Kanta Loha Satva Bhasma*- 1Part *Tamra Bhasma*- ½ Part ***[B] AmarsundariRasayan*** *KantaLohaBhasma,* - 1 Part *Swarna Bhasma*- 1 Part	*Rasayana, Shaktivardhak, Balvardhak* *Shubhkaraka*

			Rajata Bhasma, - 1 Part *TamraBhasma,* - 1 Part *AbhrakaBhasma* - 1 Part	
4.	17th	*Yog Chintamani*[13]	***Amarsundari Gutika*** *Trikatu* - 1 Part *Triphala* - 1 Part *Renuka* - 1 Part *Granthika* - 1 Part *Anala,* - 1 Part *Mrtalauha* - 1 Part *Chaturjat*a - 1 Part *Suddha Parada* - 1 Part *Suddha* Gandhaka - 1 Part *Suddha Visa* - 1 Part *Vidanga* - 1 Part *Akallaka* - 1 Part *Musta* - 1 Part *Guda* - 26 Part	*Apasmara* *Unmad* *Sannipata Rog* *Kasa,* *Swasa* *Gudaroga* *(Arsha)* *Assi (80)* *Prakar Ke* *Vatavyadhi*
5.	19th	*Brihad Nighantu Ratnakar*[14]	Same As *Yog Chintamani*	
6.	19 th	*Brihad Rasraj Sunder*[15]	Same As *Yog Chintamani*	
7.	20th	*Bharat Bhaishajya Ratnakar*[16]	Same As *Yog Chintamani*	
8.	20th	*Ras Yog Sagar*[17]	***[A] Amarsundar*** *Same As Ras Prakash Sudhakar* ***[B] Amarsundari Guti 1-*** *Abhraka Bhasma* - 1 Part *Kanta Loha Bhasma* - 1 Part *Tamra Bhasma-* 1 Part *Rajata Bhasma* - 1 Part *Praval Bhasma* - 1 Part *Manikya Bhasma* - 3 Part *Suddha Parad* - 3 Part *Zasta Bhasma* - 1/16 Part *Hema Bhasma* - 1/16 Part ***[C] Amarsundari Guti 2-*** *Abhraka Bhasma* - *33 Ratti* *Kanta Loha Bhasma* - *20 Ratti* *Parada Bhasma* - *40 Ratti* *Tamra Bhasma* - *20 Ratti* *Praval Bhasma* - *40 Ratti* *Manikya Bhasma* - *20 Ratti*	*Divya, Jara-Mrityunasak* *Vali-Palit Roganasak*

			Sheesa Bhasms - 3 Ratti ***[D] Amarsundari Guti 3-*** *Kanta Loha Bhasma , - 1 Part* *Swarna Bhasma - 1 Part* *Rajata Bhasma - 1 Part* *Tamra Bhasma, - 1 Part* *Abhraka Bhasma - 1 Part* *Parada Bhasma - 5 Part*	*Sarvaroganasaka*
9.	21th	*Ayurveda Sara Sangraha*[18]	Same As Yog Chintamani	
10.	21th	*Ras Tantra Saar & Siddha Prayog Sangraha*[19]	Same As Brihad Nighantu Ratnakar	
11.	21th	Afi Part- 2 [20]	***Amarsundari Vati 1-*** Same As *Yog Chintamani* ***Amarsundari Vati 2-*** *1. Asoka Ghana* - 4Part *2.Kasis Bhasma*-1Part *3.Asoka Kvatha*– Q.S. (For Trituration)	

Table No. 2: INGREDIENTS FOR THE FORMULATION OF AMARSUNDARI VATI

S. No.	***Sanskrit Name***	***Parts Used***	***Quantity***
1.	*Haritaki*	*fruit*	
2.	*Amalaki Triphala*	*fruit*	1 Part
3.	*Bibhitaki*	*fruit*	
4.	*Sunthi*	*stem*	
5.	*Marica Trikatu*	*fruit*	1 Part
6.	*Pippali*	*fruit*	
7.	*Renuka*	*seed*	1 Part
8.	*Granthika*	*stem*	1 Part
9.	*Anala*	*Root bark*	1 Part
10.	*MrtaLauha*	-	1 Part

11.	*Suksmaila*	*seed*	
12.	*Tvak Chaturjata*	*stembark*	
13.	*Tvakpatra*	*leaf*	1 Part
14.	*Nagakesara*	*stamens*	
15.	*Suddha Parada*	-	1 Part
16.	*Suddha Gandhaka*	-	1 Part
17.	*Suddha Visa*	*root*	1 Part
18.	*Vidanga*	*fruit*	1 Part
19.	*Akallaka*	*root*	1 Part
20	*Musta*	*stem*	1 Part
21	*Guda*	-	26 Part

Table No. 3: LATIN NAME, FAMILY, CHEMICAL COMPOSITION

Drug name	Latin name	Family	Chemical Composition
Haritaki	*Terminalia chebula*	*Combretaceae*	*T. chebula, though, contains several phytoconstituents like tannins, flavonoids, sterols, amino acids, fructose, resin, fixed oils etc., however, it is fairly rich in different tannins (approximately 32% tannin content). Further, tannin content of T. chebula largely depends on its geographic location[21]. The chief components of tannin are chebulic acid, chebulinic acid, chebulagic acid, gallic acid, corilagin and ellagic acid. Tannins of T. chebula are of pyrogallol (hydrolysable) type. There are about 14 hydrolysable tannins (gallic acid, chebulic acid, punicalagin, chebulanin, corilagin, neochebulinic acid, ellagic acid, chebulegic acid, chebulinic acid, 1,2,3,4,6-penta-O-galloyl-b-D-glucose, casuarinin, 3,4,6-tri-O-galloyl-D-glucose and terchebulin) which have isolated from fruits of T. chebula[22]. Phytochemicals like anthraquinones, ethaedioic acid, sennoside, 4, 2, 4 chebulyl-d-glucopyranose, terpinenes and terpinenols have also been reported to be present 8,[23]. Triterpenoids and*

			their glycosides have been isolated from stem bark of T. chebula[24]. *Recent studies show that T. chebula contains more phenolics than any other plant* [25].
Amalaki	*Emblica officinalis*	*Euphorbiaceae*	*In general the average composition of Amalaki fruits are: moisture 81.2%, protein 0.5%, fat 0.1%, carbohydrates 14.1%, mineral matter 0.7%, fiber 3.4%, Ca 0.05%, K 0.02%, Fe 1.2 mg/100g, nicotinic acid 0.2 mg/g, Vitamin C 600 mg/100 gm phyllemblin, phyllemblic acid, gallic acid, emblicol, quercetin, hydroxymethyl furfural, ellagic acid, pectin, putranjivan A, two new hydrolysable tannins called emblicannin A and B, punigluconin and pendunculagin.*
Bibhitaki	*Terminalia bellirica*	*combretaceae*	*Its principle phytoconstituents are beta-sitosterol, gallic acid, ellagic acid,ethyl gallate, galloyl glucose, chebulagic acid. Four lignans includingtermilignan, thannilignan, hydroxy-3',(methylenedioxy) flavan, and anolignan-B have been found). Fruit contains terpenoids (beleric-acid and chebulagic acid), saponin (bellericoside and bellericanin) and tannins (23.60% - 37.36%), which are composed of chebulinic acid, chebulagic acid, 1, 3, 6-trigalloylglucose and 1,2,3,4,6 pentagalloylglucose, corilagin, and glucogallin etc. Bark contains beta-sitosterol, tannins, ellagic acid, gallic acid and catechol.*
Sunthi	*Zingiber officinale*	*Zingiberaceae*	*Sunthi is rich in Essential oil, pungent constituents (Gingerol and Shogaol), resinous matter, starch, etc. The Seeds of Sunthi contains Ricinine, Ricine, and lipase enzyme. Oil is rich in Glycerides like recinoleic acid, oleic acid, linoleic acid, & stearic acid. Other than this, it includes sesquiterpenoids [α-zingiberene (30–70%), β-sesquiphellandrene (15–20%), β-bisabolene (10– 15%), α-farnesene, zingiberol.*
Maricа	*Piper nigrum*	*piperaceae*	*Black pepper contains an acrid resin, an oleoresin, a volatile oil, starch, gum, a fatty oil and inorganic matter besides the alkaloids, chavicine, B-methyl-pyrroline, piperidine and piperovatine. Alkaloid Piperine (2–6%) major constituent, Piperidine, Piperonal. Essential oil from fruits contains alpha- and beta-pinene, sabinene, myrcene, limonene, terpinene, p-humulene, its oxides, selinene, camphene, linalool, terpineol and nerolidol in varying amounts, Fixedoil, Chromium*
Pippali	*Piper longum*	*piperaceae*	*Two alkaloids piperlongumine & piper longuminine, nhexadecane, n- heptadecane, n octadecane, n- nonadecane*

			neicosane, n-heneicosane, - thujene, terpinolene, zingiberene, p-cymene, p-methoxy acetophenone, traces of dihydrocarveol, phenyl ethyl alcohol & two sesquiterpenes; piperine, piplartin, triacontane, dihydrostigmasterol, an unidentified setroid, reducing sugar, glycosides, sesamin & methyl- 3.4.5- trimethoxycinnamate (root); major alkaloid piperine & sesamin (stem & fruit); sesquiterpene hydrocarbon, caryophyllene, a sesquiterpene alcohol, carbonyl compound (essential oil), N-isobutyldeca- trans-2-trans- 4- dienamide, piperine, piplartine & a lignan d-sesamin, two piperidine alkaloids pipernonaline & piper undecalidine (fruit), sylvatin sesamin & diaeudesmin (seed)
Renuka	*Vitex negundo*	*Verbenaceae*	*Phenol, dulcitol, alkaloid-vitricine, B-sitosterol, camphene, a-and, B-pinenes, angoside, acunbin, casticin, artemetin, orientin etc.*
Granthika	*Piper Longum*	*Piperaceae*	*The main active constituents present in P. longum plant are alkaloids which include piperine, piper longuminine, piper longumine and methyl-3,4,5- trimethoxycinnamate. [26] The fruit part consists of volatile oil (1%), protein, starch, alkaloids, saponins, carbohydrates and amygdalin, a waxy alkaloid Nisobutyldeca-trans-2-trans-4-dienamide, alkaloids piperine, calcium, phosphorus, iron and a terpenoid substance. Lignans and esters such as sesamin,[27] pulvuatilol, fargesin, Z-12-octadecenoic-glycerolmonoester, tridecyl-dihydro-p-coumarate and eicosanyl- (E)-p-coumarate were also isolated from the fruit part of the plant.[28] The root part of the plant contains piper longumine or piplartinine, piperine and dihydrostigmasterolasarinine, pellitorine, refractomide A, brachystine, pipercide, piperderidine, piperundecalidine, iperonaline, methyl piperine, terahydropiperlongumine,[29] dehydropipernonaline piperidine, trimethoxy cinnamoyl-piperidine and piperlongumine.*
Anala	*Plumbago zeylanica Linn.*	*Plumbaginaceae*	*Plumbagin, 3-chloroplumbagin, 3, 3'-biplumbagin, Chitranone, zeylinone, isozeylinone, elliptinone, droserone,chitranone, zeylinone, isozeylinone, isoshinanolone, maritinone, 4-naphthoquinone, plumbagic acid, seselin, 5-methoxyseselin, suberosin, xanthyletin.*
Mrta Lauha	*Calcined iron*		-
Suksmaila	*Elettaria cardamomo*	Zingiberaceae	*LPHA-TERPINEOL* *45%*

	m		*MYRCENE* *27%* *LIMONENE* *8%* *MENTHONE* *6%* *BETA-PHELLANDRENE* *3%* *1,8-CINEOL* *2%* *SABINENE* *2%* *HEPTANES* *2%*
Tvak	*Cinnamomum zeylanicum*	*lauraceae*	*Cinnamon bark oil contains cinnamonaldehyde, benzaldehyde, methyl amyl ketone, phellandrene, pinene, cymene, nonyl aldehyde, carophyllene etc*
Tvakpatra	*Cinnamomum tamala*	*lauraceae*	*This fragrant spice contains a rich array of important plant-derived chemical compounds, minerals, and vitamins that are essential for optimum health and wellbeing. Fresh leaves are a storehouse of vitamin C, While it is also an impressive source of B complex vitamins that help in enzyme synthesis, nervous system function and regulating metabolism.*
Nagakesara	*Mesua ferrea*	*calophyllaceae*	*Nagakesar is replete with various biochemical components such as essential oil, fatty acids, and oleoresin. Mammeisin is its main chemical constituent which is obtained from the seeds, while stamens provide two novel flavanones mesuaferrone-A and mesuaferrol-B. It also contains mesuaxanthofle A and B, sitosterol, leucoanthocyanidin and ferruol A and B, coumarins, xanthones, pyranoxanthones, flavonoids, terpenoids and steroids.*
Suddha Parada	*mercury*		*Mercury is the only elemental metal that is liquid at room temperature. (Cesium melts at about 28.5 °C [83 °F], gallium at about 30 °C [86 °F], and rubidium at about 39 °C [102 °F].) Mercury is silvery white, slowly tarnishes in moist air, and freezes into a soft solid like tin or lead at −38.83 °C (−37.89 °F). It boils at 356.62 °C (673.91 °F).*
Suddha Gandhaka	*sulphur*		*Sulfur forms several polyatomic molecules. The best-known allotrope is octasulfur, cyclo-S_8. The point group of cyclo-S_8 is D_{4d} and its dipole moment is 0 D.[30] Octasulfur is a soft, bright-yellow solid that is odourless, but impure samples have an odor similar to that of matches.[31] It melts at 115.21 °C (239.38 °F), boils at 444.6 °C (832.3 °F)[32] and sublimes more or less between 20 °C*

			(68 °F) and 50 °C (122 °F).[33] At 95.2 °C (203.4 °F), below its melting temperature, cyclo-octasulfur changes from α-octasulfur to the β-polymorph.[34]
Suddha Visa	*Aconitum ferox*	Ranunculaceae	*Vatsnabha is good source of following photochemical- Aconite, Pseudo-aconitine, Indaconitine, Catecholamine, Isoquinolines*
Vidanga	*Embeliaribes*	*myrsinaceae*	*The main active component is Embelin, chemically 2,5-dihydroxy-3-undecyl-1, 4- benzoquinone. Embelin occurs in golden yellow needles and is insoluble in water but soluble in alcohol, chloroform and benzene. Other components are christembine, qesrcitol, vilangin and resinoid.*
Akallaka	*Anacyclusp yrenthrum*	*asteraceae*	*Various studies reported a number of chemical constituents in A. pyrethrum. The phytochemical screening of roots, leaves and flowers revealed presence of alkaloids, reducing compounds and cathechic tannins. Further, plant contains other chemicals such as gallic tannins, triterpenes, sterols, mucilage, coumarins, saccharids and holosids [14]along with some trace metals like Zn, Fe, Cu, Cd, Cr, Ni and Pb[15]. The flavonoid, total phenol and polyphenols contents are highest in flowers compared to leaves and root. The roots are rich in alkaloids while the aerial parts are rich in tannins and flavonoids. Root contains a brown acrid resin, a trace of tannic acid, inulin, gum, various salts, and lignin [16]. The roots of the plant is aphrodisiac due to presence of bio-active compound N-alkylamides [17]. Seven pure alkamides were identified by mass- and NMR-spectroscopic methods as deca-2E,4E,9-trienoic acid isobutylamide, deca-2E,4E-dienoic acid isobutylamide (pellitorine), deca-2E,4E-dienoic acid 2-phenylethylamide, tetradeca-2E,4E-dien-8,10-diynoic acid isobutylamide (anacycline),undeca-2E,4E-dien-8,10-diynoic acid isopentylamide, dodeca-2E,4E-dien acid 4-hydroxy-2-phenylethylamide and tetradeca-2E,4E,12Z-trien-8,10-diynoic acid isobutylamide.* *Various studies reported a number of chemical constituents in A. pyrethrum. The phytochemical screening of roots, leaves and flowers revealed presence of alkaloids, reducing compounds and cathechic tannins. Further, plant contains other chemicals such as gallic tannins, triterpenes, sterols, mucilage,*

			coumarins, saccharids and holosids [14] along with some trace metals like Zn, Fe, Cu, Cd, Cr, Ni and Pb[15]. The flavonoid, total phenol and polyphenols contents are highest in flowers compared to leaves and root. The roots are rich in alkaloids while the aerial parts are rich in tannins and flavonoids. Root contains a brown acrid resin, a trace of tannic acid, inulin, gum, various salts, and lignin [16]. The roots of the plant is aphrodisiac due to presence of bio-active compound N-alkylamides [17]. Seven pure alkamides were identified by mass- and NMR-spectroscopic methods as deca-2E,4E,9-trienoic acid isobutylamide, deca-2E,4E-dienoic acid isobutylamide (pellitorine), deca-2E,4E-dienoic acid 2-phenylethylamide, tetradeca-2E,4E-dien-8,10-diynoic acid isobutylamide (anacycline), undeca-2E,4E-dien-8,10-diynoic acid isopentylamide, dodeca-2E,4E-dien acid 4-hydroxy-2-phenylethylamide and tetradeca-2E, 4E, 12Z-trien-8,10-diynoic acid isobutylamide. *Various studies reported a number of chemical constituents in A. pyrethrum. The phytochemical screening of roots, leaves and flowers revealed presence of alkaloids, reducing compounds and cathechic annins. Further, plant contains other chemicals such as gallic tannins, triterpenes, sterols, mucilage, coumarins, saccharids and holosids [14]along with some trace metals like Zn, Fe, Cu, Cd, Cr, Ni and Pb[15]. The flavonoid, total phenol and polyphenols contents are highest in flowers compared to leaves and root. The roots are rich in alkaloids while the aerial parts are rich in tannins and flavonoids. Root contains a brown acrid resin, a trace of tannic acid, inulin, gum, various salts, and lignin [16]. The roots of the plant is aphrodisiac due to presence of bio-active compound N-alkylamides[17]. Seven pure alkamides were identified by mass- and NMR-spectroscopic methods as deca-2E,4E,9-trienoic acid isobutylamide, deca-2E,4E-dienoic acid isobutylamide (pellitorine), deca-2E,4E-dienoic acid 2-phenylethylamide, tetradeca-2E,4E-dien-8,10-diynoic acid isobutylamide (anacycline), undeca-2E,4E-dien-8,10-diynoic acid isopentylamide, dodeca-2E,4E-dien acid 4-hydroxy-2-phenylethylamide and tetradeca-*

			2E, 4E, 12Z-trien-8,10-diynoic acid isobutylamide. Various studies reported a number of chemical constituents in A. pyrethrum. The phytochemical screening of roots, leaves and flowers revealed presence of alkaloids, reducing compounds and cathechic tannins. Further, plant contains other chemicals such as gallic tannins, triterpenes, sterols, mucilage, coumarins, saccharids and holosids [14]along with some trace metals like Zn, Fe, Cu, Cd, Cr, Ni and Pb[15]. The flavonoid, total phenol and polyphenols contents are highest in flowers compared to leaves and root. The roots are rich in alkaloids while the aerial parts are rich in tannins and flavonoids. Root contains a brown acrid resin, a trace of tannic acid, inulin, gum, various salts, and lignin [16]. The roots of the plant is aphrodisiac due to presence of bio-active compound N-alkylamides[17]. Seven pure alkamides were identified by mass- and NMR-spectroscopic methods as deca-2E,4E,9-trienoic acid isobutylamide, deca-2E,4E-dienoic acid isobutylamide (pellitorine), deca-2E,4E-dienoic acid 2-phenylethylamide, tetradeca-2E,4E-dien-8,10-diynoic acid isobutylamide (anacycline),undeca-2E,4E-dien-8,10-diynoic acid isopentylamide, dodeca-2E,4E-dien acid 4-hydroxy-2-phenylethylamide and tetradeca-2E, 4E, 12Z-trien-8,10-diynoic acid isobutylamide. Various studies reported a number of chemical constituents in A. Pyrethrum. The phytochemical screening of roots, leaves and flowers revealed presence of alkaloids, reducing compounds and cathechic tannins. Further, plant contains other chemicals such as gallic tannins, triterpenes, sterols, mucilage, coumarins, saccharids and holosids [14]along with some trace metals like Zn, Fe, Cu, Cd, Cr, Ni and Pb[15]. The flavonoid, total phenol and polyphenols contents are highest in flowers compared to leaves and root. The roots are rich in alkaloids while the aerial parts are rich in tannins and flavonoids. Root contains a brown acrid resin, a trace of tannic acid, inulin, gum, various salts, and lignin [16]. The roots of the plant is aphrodisiac due to presence of bio-active compound N-alkylamides[17]. Seven pure alkamides

			were identified by mass- and NMR-spectroscopic methods as deca-2E,4E,9-trienoic acid isobutylamide, deca-2E,4E-dienoic acid isobutylamide (pellitorine), deca-2E,4E-dienoic acid 2-phenylethylamide, tetradeca-2E,4E-dien-8,10-diynoic acid isobutylamide (anacycline),undeca-2E,4E-dien-8,10-diynoic acid isopentylamide, dodeca-2E,4E-dien acid 4-hydroxy-2-phenylethylamide and tetradeca-2E,4E,12Z-trien-8,10-diynoic acid isobutylamide. *Various studies reported a number of chemical constituents in A. Pyrethrum. The phytochemical screening of roots, leaves and flowers revealed presence of alkaloids, reducing compounds and cathechic tannins. Further, plant contains other chemicals such as gallic tannins, triterpenes, sterols, mucilage, coumarins, saccharids and holosids [14]* *along with some trace metals like Zn, Fe, Cu, Cd, Cr, Ni and Pb [15]. The flavonoid, total phenol and polyphenols contents are highest in flowers compared to leaves and root. The roots are rich in alkaloids while the aerial parts are rich in tannins and flavonoids. Root contains a brown acrid resin, a trace of tannic acid, inulin, gum, various salts, and lignin [16]. The roots of the plant is aphrodisiac due to presence of bio-active Compound N-alkylamides[17]. Seven pure alkamides were identified by mass- and NMR-spectroscopic methods as deca-2E,4E,9-trienoic acid isobutylamide, deca-2E,4E-dienoic acid isobutylamide (pellitorine), deca-2E,4E-dienoic acid 2-phenylethylamide, tetradeca-2E,4E-dien-8,10-diynoic acid isobutylamide (anacycline),undeca-2E,4E-dien-8,10-diynoic acid isopentylamide, dodeca-2E,4E-dien acid 4-hydroxy-2-phenylethylamide and tetradeca-2E, 4E, 12Z-trien-8, 10-diynoic acid isobutylamide. Further a mixture of two other alkamides were* *Various studies reported a number of chemical constituents in A. pyrethrum. The phytochemical screening of roots, leaves and flowers revealed presence of alkaloids, reducing compounds and cathechic tannins. Further, plant contains*

			other chemicals such as gallic tannins, triterpenes, sterols, mucilage, coumarins, saccharids and holosids along with some trace metals like Zn, Fe, Cu, Cd, Cr, Ni and Pb[35]. The flavonoid, total phenol and polyphenols contents are highest in flowers compared to leaves and root. The roots are rich in alkaloids while the aerial parts are rich in tannins and flavonoids. Root contains a brown acrid resin, a trace of tannic acid, inulin, gum, various salts, and lignin [36]. The roots of the plant is aphrodisiac due to presence of bio-active compound N-alkylamides[37].
Musta	*Cyperus rotundus*	*cyperaceae*	*This incredible herb shows the presence essential oils, flavonoids, terpenoids, Alpha-cyperone, Alpha-rotunol, Calcium, Camphene, Copaene, Cyperene, Cyperenone, Cyperol, CyperoloneCyperotundoneDcopadiene, D-epoxyguaiene, C. rotunduskone, Myristic-acid, Oleanolic-acid, Oleanolic-acid-3-oneohesperidoside, Oleic-acid, P-cymol, Patchoulenone, D-fructose, D-glucose, Flavonoids, Gamma-cymene, Isocyperol, Isokobusone, Kobusone, Beta-cyperone, Beta-pinene, Beta-rotunol, Beta-selinene, Limonene, Linoleic-acid, Linolenic-acid, Magnesium, Manganese, Pectin, Polyphenols, Rotundene, Rotundenol, Rotundone, Selinatriene, Sitosterol, Stearic-acid, Sugeonol, Sugetriol etc. The tubers also contain carbohydrates, fat, sugar, gum, essential oil, albuminoid matter, starch fiber and ash.*
Guda	*jaggery*		*Sucrose - 60-85%,Glucose 5-15%,Protein - 0.4%,0.1 g of fat,0.6 to 1.0 g of minerals which includes,8 mg of calcium, 4 mg of phosphorus, and 11.4 mg of iron.*

Table No. 4: ANALYSIS OF RASAPANCHAKA OF AMARSUNDARI VATI

S. No.	***Drug (Sanskrit Name)***	***Rasa***	***Guna***	***Virya***	***Vipaka***	***Doshaghnata***
1.	*Haritaki[38]*	*Madhura, Amla, Katu, Tikta, Kashaya*	*Laghu, Ruksha Sara*	*Ushna*	*Madhura*	*Tridoshahara*
2.	*Amalaki[39]*	*Madhura, Amla, Katu, Tikta, Kashaya*	*Laghu, Ruksha Sara*	*Sheeta*	*Madhura*	*Tridoshahara*
3.	*Bibhitaki[40]*	*Kashaya*	*Laghu Ruksha, Sara*	*Ushna*	*Madhura*	*Kaphapittahara*

4.	*Sunthi*[41]	*Katu*	*Guru, Ruksha, Teekshna*	*Ushna*	*Madhura*	*Kaphvatshamaka*
5.	*Marica*[42]	*Katu*	*Laghu, Teekshna, Sookshma*	*Ushna*	*Katu*	*Vatkphashamaka*
6.	*Pippali*[43]	*Katu*	*Laghu, Snigadha, Tikshana*	*Unushanshita*	*Madhura*	*Kaphvatshamaka*
7.	*Renuka*[44]	*Katu,Tikta*	*Laghu,Ruksha*	*Ushna*	*Katu*	*Balances Vata And Kapha*
8.	*Granthika*[45]	*Katu*	*Laghu,Ruksha*	*Ushna*	*Katu*	*Balances Vata And Kapha*
9.	*Anala*[46]	*Katu*	*Laghu,Rukshna ,Teekshna*	*Ushna*	*Katu*	*TridoshaShamaka*
10.	*Mrta Lauha*[47]	*Tikta Kashaya, Madhura*	*Sita, Ruksha, Guru*	*Sheeta*	*Madhura*	*Tridosha Shamaka*
11.	*Suksmaila*[48]	*Katu, Madhura*	*Laghu,Ruksha*	*Sheeta*	*Katu*	*Balances Kapha And Vata Dosha*
12.	*Tvak*[49]	*Katu, Tikta, Madhura*	*Laghu,Ruksha, Teekshna*	*Ushna*	*Katu*	*Balances Kapha And Vata Dosha, Increases Pitta*
13.	*Tvakpatra*[50]	*Katu,Tikta, Madhura,*	*Laghu,Ruksha, Teekshna*	*Ushna*	*Katu*	*Kapha-VataShamaka*
14.	*Nagakesara*[51]	*Kashaya, Tikta*	*Laghu, Rukshna, Teekshna*	*Ushna*	*Katu*	*Balances Kapha And Pitta Dosha*
15.	*Suddha Parada*[52]	*Shadaras*	*Sara, Guru, Snighda*	-	-	*Tridosha Shamaka*
16.	*Suddha Gandhaka*[53]	*Katu*	*Sara, Snighda*	*Ushna*	*Madhura*	*Tridosha Shamaka*
17.	*Suddha Vis*[54]	*Madhura*	*Rukshya*	*Ushna*	*Madhura*	*Vatakaphashamaka*
18.	*Vidanga*[55]	*Katu, Kashaya*	*Laghu, Ruksha, Teekshna*	*Ushna*	*Katu*	*Kaphavatshamaka*
19.	*Akallaka*[56]	*Katu*	*Ruksha, Teekshna*	*Ushna*	*Katu*	*Kaphavatshamaka*
20	*Musta*[57]	*Tikta, Katu, Kashaya*	*Laghu, Ruksha*	*Sheeta*	*Katu*	*Kaphapittashamaka*
21	*Guda*[58]	-	-	-	-	*Vatapittaghna*

PROBABLE PHARMACODYNAMICS OF AMARSUNDARI VATI

Table No. 5: STUDY OF RASA IN COMBINATION

Rasa	No of Drugs	Percentage (%)
Madhura	7/21	33.33
Amla	2/21	9.52
Lavana	-	-
Katu	13/21	61.90
Tikta	7/21	33.33
Kashaya	7/21	33.33

Table No. 6: STUDY OF GUNA IN COMBINATION

Guna	No of Drugs	Percentage (%)
Laghu	14/21	66.66
Ruksha	15/21	71.14
Sara	4/21	19.04
Guru	2/21	9.52
Teekshna	8/21	38.09
Sookshma	1/21	0.47
Snighda	2/21	9.52

Table No. 7: STUDY OF VIRYA IN COMBINATION

Virya	No of Drugs	Percentage (%)
Ushna	14/21	66.66
Shita	4/21	19.04

Table No. 8: STUDY OF VIPAKA IN COMBINATION

Vipaka	No of Drugs	Percentage (%)
Madhura	8/21	38.09
Katu	11/21	52.38

Table No. 9: STUDY OF DOSHAGNATA IN COMBINATION

Doshagnata	No of Drugs	Percentage (%)
Kaphavatahara	11/21	52.38
Tridoshahara	5/21	23.80
Kaphapittahara	3/21	14.28

RESULTS AND DISCUSSION

In *Ayurvedic* literature, the term "*unmada*" refers to a broad category of mental illnesses. There are numerous different types of mental diseases, each with a unique presentation. They typically exhibit a variety of deviant thoughts, perceptions, emotions, behaviours, and connections with other people. Nearly one in three years of disability worldwide are caused by mental disorders, which place a heavy burden on society. 80 percent of people are going to go through a mental health episode at some point in their lives. It is significant to remember that untreated mental diseases also contribute to suicide-related death. Suicide is a big source of worry on a global scale. The WHO estimates that over one million people die by suicide each year, giving it a "global" mortality rate of 16 per 100,000 or one death every 40 seconds.

Amarsundari vati is a popular *herbo-mineral Ayurvedic* remedy used to treat mental illnesses in Ayurveda. This review paper makes an effort to assess *Amarsundari vati's* likely mode of operation in mental situations. Analysis of the *Rasapanchaka* (*Ayurvedic* Principles of Drug-Action) reveals that of the 21 ingredients, 13 have *Katu Rasa*, 15 have *Laghu-rukshaguna*, 14 have *Ushnavirya*, 11 have *Katuvipaka*, 8 have *Madhura vipaka*, and 5 have *Tridoshara* according to *Doshaharatwa,* while 11 have *Kaphavatashamaka*. These characteristics all work against the *Kapha Vata Dosha*. Therefore, *Amarsundari vati* might manage *Kaphaja* and *Vatajaunmada* more successfully. Anorexia, a desire for women (sex) and solitude, excessive sleep, vomiting, dribbling saliva, symptoms that appear right after eating, and whitish discoloration of nails are among the psychological diseases that make up *Kaphajaunmada,* with depression serving as a classic example. In order to control *Jatharagni, Dhatvagni,* and *Bhutagni,* which corrects metabolism at the cellular level, and to produce the right production of *Dhatus* and *Upadhatus* as well as *Strotoshodhan* by eliminating *Ama, Haritaki, Anala*, and *Ela* each have *Deepana* and *Amadoshanashak* qualities. With the help of *Sara Guna* and *Virechak, Haritaki, Amalaki, Vibhitaki, Suddha*

Parada, and *Suddha Gandhaka* are able to control the Doshas through *Samshodhana karma*. *Samshodhana Karma* thus eliminates *Strotas* and controls *Tridosha* function. When used as an adjuvant treatment, antioxidant supplementation therapy benefits individuals with stress-induced psychiatric disorders.[59]

Antioxidants have been shown to be able to reduce reactive oxygen species (ROS) and reactive nitrogen species (RNS) in the body by scavenging free radicals and inhibiting the OS pathway. This additional protection against neuronal damage brought on by oxidative or nitrosative stress sources in the brain should lead to the remission of depression or anxiety symptoms.[60] Therefore, the anti-oxidant properties of the majority of the ingredients will also be influencing how the formulation works to treat psychiatric illnesses.

CONCLUSION

Analysis of mode of action leads us to the inference that *Amarsundari vati* may be more effective in the management of *Vataja & Kaphajaunmada*, characterised by slow or weak voice and body movements, anorexia, desire for women (sex) and solitude, excessive sleep, vomiting, dribbling of saliva, symptoms pronounced just after intake of food, whitish discoloration of nails constitute *Kaphajaunmada*, a classical example being depression.

REFERENCES

1. Vaidya Jadavji Trikamji Acharya. Charaka Samhita by Agnivesa. Chowkhamba Krishnadas Academy, Varanasi. 2006; P.223.
2. https://www.who.int/mental_health/advocacy/ wb_background_paper.pdf dt 26.3.2019
3. Jacob K S, Patel V. Classification of mental disorders: a global mental health perspective. The Lancet 2014;383:1433-35.
4. Global Burden of Disease Study 2013 Collaborators. Global, regional, and national incidence, prevalence, and years lived with disability for 301 acute and chronic diseases and injuries in 188 countries, 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013. The Lancet 2015;386:743- 800.
5. World Health Organization [Internet]. Mental health: suicide prevention (SUPRE). [Internet]. Available from http://www.who.int/mental_health/prevention/suicide/suicideprevent/en/index .html dt 26.03.2019
6. Rajput P, Mamidi P. An Open Label Pilot Study of Kalyanaka Ghrita in the Management of Obsessive Compulsive Disorder. [Internet] 2018. [Cited 2019 March 26] 8(3):118-25.
7. https://www.who.int/news-room/fact/sheets/detail/ mental-disorders
8. Vagbhata (2006). Ashtanga Hridaya Translated by Prof. K. R. Srikantha Murthy. Chaukhambha Krishnadas Academy, Varanasi.
9. Ayurvedic Formulary of India, Part- 2, First edition ,Govt. of India ministry of health and family welfare Dept. of Indian system of medicine and Homoeopathy, New Delhi-2011 , page no. 301,302.
10. Bhagwata Govinda Padacharya, Rasa Hridaya Tantra, Mugdhavabhodhinihindi commentary by Acharya Chaturbhuja Mishra, 2nd ed. Kalera, Ajmer, Krishna Gopal Ayurveda Bhawan, 2002. pp. 249.

11. Acharya yashodhar, siddhipradhindicommenteries, Rasa Prakash Sudhakar, chaukhambhaorientelia Varanasi, edition reprint 2009, pp. 201, 202.
12. Chaubey, Dattaram, (1917) Yoga Chintamani by Shri Harsakirti Suri, 1st edition, Khemraj Shrikrishnadas Shri Venkateshwar press, Bombay. pp. 117.
13. Brihat Nighantu Ratnakara, sasthambhag, Chaukhambha publications Varanasi, first, edition 1968, vatavayadirogadhikar, page. no. 489.
14. Pandit Dattaram Chaube, Brihat Rasaraja Sundaram, 3rd Edition, geruprakaranam Varanasi, Chowkhamba Orientalia, 2000, Pg 460.
15. Shree Nagindas Chaganlal Shah Rasavaidya (1921). Bharat bhaishajya Ratnakar (Volume l) B. Jain publishers, New Delhi. Vatvyadhirogadhikar pp.36
16. Hariprapanna Sharma, Rasayogasagar, Chaukhambha Surbharti Prakashan Varanasi, 2004 vol 1 .edition, July 1984. unmadrogadhikar, chap26,pageno.76
17. Ayurved- Sarsangrah – Ramdayaal Joshi RamnarayanVaidya –Shree Baidyanath Ayurved Bhavanpvt. 2009 pp. 364.
18. Rasa Tantra Sara &Sidha Prayoga Sangrah/Krishna Gopal Ayurveda Bhawan (Dharmarth Trust)/21st publication/year2012, rasaprakaran page. no. 230.
19. Ayurvedic Formulary of India, Part- 2,First edition, Govt. of India ministry of health and family welfare Dept. of Indian system of medicine and Homoeopathy, New Delhi-2011 , page no. 301, 302.
20. Nighantu Ratnakar NidanasahaChikitsa by Krishnashastri Navare Nirnaya Sagar Publication Mumbai page no. 436.
21. Kumar K. J. Effect of geographical variation on contents of tannic acid, gallic acid, chebulinic acid and ethyl gallate in *Terminalia chebula*. Natural Products 2006; 2(3-4):170-75.
22. Juang L J, Sheu S J, Lin T C. Determination of hydrolyzable tannins in the fruit of *Terminalia chebula* Retz. by high-performance liquid chromatography and capillary electrophoresis. J Sep Sci 2004;27(9):718–24.
23. Srivastava A, Chandra A, Singh M, Jamal F, Rastogi P, Rajendran S M, Bansode F W, Lakshmi V. Inhibition of hyaluronidase activity of human and rat spermatozoa *in vitro* and antispermatogenic activity in rats *in vivo* by *Terminalia chebula*, a flavonoid rich plant. Reproductive Toxicol 2010;29:214–24.
24. Kundu A P, Mahato S B. Triterpenoids and their glycosides from *Terminalia chebula*. Phytochemistry1993; 32(4): 999- 1002.
25. Saleem A, Husheem M, Harkonen P, Pihlaja K. Inhibition of cancer cell growth by crude extract and the phenolics of *Terminalia chebula* Retz. Fruit. J Ethnopharmacol 2002;81:327.
26. Chatterjee A, Dutta C P. The structure of piperlongumine, a new alkaloid isolated from the roots of *Piper longum*. Sci Cult, 1963; 29: 568-70.
27. Atal C K. Occurrence of sesamin in *Piper longum* Linn. Indian J Chem, 1966; 4: 252.
28. Tabuneng W, Bando H, Amiya T. Studies on the constituents of the crude drug" *Piperis Longi Fructus*." On the alkaloids of fruits of *Piper longum* L. Chemical and pharmaceutical bulletin, 1983 Oct 25; 31(10): 3562-5.
29. Madhusudhan P, Vandana KL. Tetrahydropiperine, the first natural aryl pentanamide from *Piper longum*. Biochemical systematics and ecology, 2001 May; 29(5): 537-8.
30. Sulphe Rettig, S. J.; Trotter, J. (15 December 1987). *"Refinement of the structure of orthorhombic sulfur, α-S8" (PDF)*. Acta Crystallographica Section C. **43** (12): 2260–2262. *doi:10.1107/S0108270187088152*.
31.^ A strong odor called "smell of sulfur" actually is given off by several sulfur compounds, such as hydrogen sulfide and organosulfur compounds.
32.^ Tucker, Roy P. (1 January 1929). "Notes on the Sublimation of Sulfur between 25° and 50°C". Industrial & Engineering Chemistry. **21** (1): 44–47. doi:10.1021/ie50229a014. ISSN 0019-7866.
33.^ Jump up to:[a] [b] [c] Greenwood, Norman N.; Earnshaw, Alan (1997). Chemistry of the Elements (2nd ed.). Butterworth-Heinemann. *pp. 645–665*. ISBN 978-0-08-037941-8
34. Munson, Ronald A. (February 1968). "The synthesis of iridium disulfide and nickel diarsenide having the pyrite structure" (PDF). Inorganic Chemistry. **7** (2): 389–390. doi:10.1021/ic50060a047.
35. Hanane E, Aminata S, Fatima E, Amar B, Alaoui EBM, Touriya Z: Phytochemical study of Anacyclus pyrethrum (L.) of Middle Atlas (Morocco), and in vitro study of antibacterial activity of pyrethrum. Adv Nat Appl Sci 2014; 8:131-140.

36. Subasri G, John A S: Screening of phytochemical compounds, trace metals and antimicrobial activity of *Anacyclus pyrethrum*. Int J Adv Scienti Res 2016; 2: 32-37.
37.Cherrat A, Amalich S, Regragui M, Bouzoubae A, Elamrani M, Mahjoubi M, Bourakhouadar M, Zair T: Polyphenols content and evaluation of antioxidant activity of *Anacyclus pyrethrum*(L.) Lag. from Timahdite a Moroccan Middle Atlas region. Int J Adv Res 2017; 5: 569-577.
38. Shri Bhavamishra (2006). Bhavprakasha Nighantu. Haritakyadivarga, Commentary by Prof. K. C. Chunekar. Edited by Late Dr. G.S. Pandey Chaukhamba Bharati Academy,Varanasi; 5.
39. Shri Bhavamishra (2006). Bhavprakasha Nighantu. Haritakyadivarga, Commentary by Prof. K. C. Chunekar. Edited by Late Dr. G.S. Pandey Chaukhamba Bharati Academy,Varanasi; 10.
40. Shri Bhavamishra (2006). Bhavprakasha Nighantu. Haritakyadivarga, Commentary by Prof. K. C. Chunekar. Edited by Late Dr. G.S. Pandey Chaukhamba Bharati Academy,Varanasi; 9.
41. Shri Bhavamishra (2006). Bhavprakasha Nighantu. Haritakyadivarga, Commentary by Prof. K. C. Chunekar. Edited by Late Dr. G.S. Pandey Chaukhamba Bharati Academy,Varanasi; pp.12.
42. Shri Bhavamishra (2006). Bhavprakasha Nighantu. Haritakyadivarga, Commentary by Prof. K. C. Chunekar. Edited by Late Dr. G.S. Pandey Chaukhamba Bharati Academy, Varanasi; pp. 16.
43. Shri Bhavamishra (2006). Bhavprakasha Nighantu. Haritakyadivarga, Commentary by Prof. K. C. Chunekar. Edited by Late Dr. G.S. Pandey Chaukhamba Bharati Academy,Varanasi; pp.15.
44. Shri Bhavamishra (2006). Bhavprakasha Nighantu. guduchyadivarga, Commentary by Prof. K. C. Chunekar. Edited by Late Dr. G.S. Pandey Chaukhamba Bharati Academy,Varanasi; pp.329.
45. Shri Bhavamishra (2006). Bhavprakasha Nighantu. Haritakyadivarga, Commentary by Prof. K. C. Chunekar. Edited by Late Dr. G.S. Pandey Chaukhamba Bharati Academy,Varanasi; pp.19.
46. Shri Bhavamishra (2006). Bhavprakasha Nighantu. Haritakyadivarga, Commentary by Prof. K. C. Chunekar. Edited by Late Dr. G.S. Pandey Chaukhamba Bharati Academy,Varanasi; pp.21.
47. Shri Bhavamishra (2006). Bhavprakasha Nighantu. Haritakyadivarga, Commentary by Prof. K. C. Chunekar. Edited by Late Dr. G.S. Pandey Chaukhamba Bharati Academy, Varanasi 595.
48. Shri Bhavamishra (2006). Bhavprakasha Nighantu. Karpuradivarga, Commentary by Prof. K. C. Chunekar. Edited by Late Dr. G.S. Pandey Chaukhamba Bharati Academy, pp.212.
49.Shri Bhavamishra (2006). Bhavprakasha Nighantu. Karpuradivarga, Commentary by Prof. K. C. Chunekar. Edited by Late Dr. G.S. Pandey Chaukhamba Bharati Academy, pp.216.
50. Shri Bhavamishra (2006). Bhavprakasha Nighantu. Karpuradivarga, Commentary by Prof. K. C. Chunekar. Edited by Late Dr. G.S. Pandey Chaukhamba Bharati Academy, pp.218.
51. Shri Bhavamishra (2006). Bhavprakasha Nighantu. Karpuradivarga, Commentary by Prof. K. C. Chunekar. Edited by Late Dr. G.S. Pandey Chaukhamba Bharati Academy, pp.219.
52. Shri Bhavamishra (2006). Bhavprakasha Nighantu. Dhatuvadivarga, Commentary by Prof. K. C. Chunekar. Edited by Late Dr. G.S. Pandey Chaukhamba Bharati Academy, pp.601.
53. Shri Bhavamishra (2006). Bhavprakasha Nighantu. Dhatuvadivarga, Commentary by Prof. K. C. Chunekar. Edited by Late Dr. G.S. Pandey Chaukhamba Bharati Academy, pp.604.
54. Shri Bhavamishra (2006). Bhavprakasha Nighantu. Dhatuvadivarga, Commentary by Prof. K. C. Chunekar. Edited by Late Dr. G.S. Pandey Chaukhamba Bharati Academy, pp.618.
55. Shri Bhavamishra (2006). Bhavprakasha Nighantu. Haritakyadivarga, Commentary by Prof. K. C. Chunekar. Edited by Late Dr. G.S. Pandey Chaukhamba Bharati Academy, pp.50.
56. Shri Bhavamishra (2006). Bhavprakasha Nighantu. Haritakyadivarga, Commentary by Prof. K. C. Chunekar. Edited by Late Dr. G.S. Pandey Chaukhamba Bharati Academy, pp.130
57. Shri Bhavamishra (2006). Bhavprakasha Nighantu. karpuradivarga, Commentary by Prof. K. C. Chunekar. Edited by Late Dr. G.S. Pandey Chaukhamba Bharati Academy, pp.232.
58. Shri Bhavamishra (2006). Bhavprakasha Nighantu. Ekshuvarga, Commentary by Prof. K. C. Chunekar. Edited by Late Dr. G.S. Pandey Chaukhamba Bharati Academy, pp.779.
59. Xu Y, Wang C, Klabnik JJ, O'Donnell JM. Novel Therapeutic Targets in Depression and Anxiety: Antioxidants as a Candidate Treatment. CurrNeuropharmacol. 2014; 12(2):108-19.
60. Vagbata Ashtanga Hridaya with the Sarvanga Sundari commentary of Indu, edited by Vaidya B.H.P, reprint ed. Chaukambaorientalia. 1995, Sutra Sthana 5/37-39.