



**EFFECT OF *PUNARNAVADI GUGGULU* IN THE MANAGEMENT OF
PREMENSTRUAL SYNDROME – A SINGLE CASE STUDY**

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ABSTRACT

Premenstrual Syndrome is an entity about which people are not much aware. No too much studies have been yet done for this particular condition. Women deals with this condition very casually. Menstruation plays an important role in women's reproductive life to get a healthy progeny. Any deviation from normalcy, indicative of any abnormality in the reproductive cycle causes a great impact on the quality of a woman's physical, emotional, social and reproductive life. Premenstrual Syndrome is the cyclical occurrence of certain symptoms just prior to menses in the luteal phase of the cycle, which get resolved spontaneously on the onset of menses or just after 2 to 3 days of menses. The symptoms do not reappear within the next 13 days or before the luteal phase. A wide range of symptoms occurs in PMS. In this study "*Punarnavadi Guggulu*" was given for Premenstrual Syndrome, which is a combination of mainly 5 drugs namely *Punarnava*, *Devdaru*, *Guduchi*, *Haritaki*, *Guggulu*, and *Erand Tail* as bhawana dravya. Diagnosis of PMS was confirmed by the complaints described by the patients and scoring was done with the help of a screening tool (based on PMTS-OR scale). Assessment was done before treatment and after the completion of observational cycle. The patient had a pre-intervention score of 40 which was a severe grade of PMS. After the intervention and the observation period, she had a score of 0 corresponding to doubtful or absent PMS with 100% relief. The patient thus had complete

cure in PMS. In present study, it was observed that *Punarnavadi Guggulu* has provided significant relief in all the symptoms of Premenstrual Syndrome.

Keywords: *Punarnavadi Guggulu*, PMS, Premenstrual Syndrome, Severity, PMDD, Emotional Symptoms, Cognitive Symptoms. PMTS-OR scale

INTRODUCTION

Premenstrual syndrome is a psycho-neuro-endocrine disorder of unknown etiology, noticed just prior to menstruation. A large number of symptoms occurs cyclically and regularly during the luteal phase of each ovulatory menstrual cycle. Symptoms are severe enough in disturbing the day to day life of the woman or she may requires medical help. There must be symptom-free period in the cycle, specifically after menstrual phase and before luteal phase. Premenstrual dysphoric disorder (PMDD) is a more severe form of PMS, when these symptoms starts disrupting daily functioning of the woman. More than 200 symptoms are included in PMS.

The cause of PMS is currently not clearly known. Several hypotheses have been put forward to explain this entity. Some current theories which explain PMS causes include:

A) Low level of endorphins in blood- Endorphins, which are feel good hormones, contribute to the feeling that is happiness and regulates the mood. The level of this 'feel good' hormone drops to the lower level during luteal phase of menstrual

cycle. Hence because of that low beta endorphins, PMS symptoms occurs.

B) Deficiency of Serotonin - Serotonin is a chemical present in brain that regulates many functions like mood and sensitivity to pain.

In support to this theory, role of serotonin in the pathophysiology of PMDD has been shown in the research investigations by using several experimental models. During the premenstrual phase, patients with PMDD have low whole blood serotonin level and low platelet serotonin uptake that controls without PMDD

C) Nutrition - Magnesium and calcium deficiency have also been postulated as the cause of PMS because supplementation with these minerals have been shown to improve some PMS symptoms.

D) Prostaglandins- According to another theory, Prostaglandin which is an inflammatory substance, is produced in the areas where PMS symptoms originates like in breast, brain, reproductive tract, kidney and gastrointestinal tract, which may play a role in symptoms like cramping, breast tenderness, constipation or diarrhoea.

E) One of the theories under research include alteration in gamma-aminobutyric acid i.e. GABA system and hypoprolactinemia. Gama-aminobutyric acid (GABA) suppresses the anxiety level in the brain. Medications that are GABA agonist, are effective⁴.

PROPOSED AYURVEDIC SAMPRAPATI:

Due to nidana atisevana (improper lifestyle, junk food, stress etc) vatadi doshas get vitiated, causes specifically kapha vata prakopa (accumulation of kleda, pratiloma gati of vata) the accumulated kapha dosha results into symptoms such as swelling of extremities, excessive sleep, vata causes backache, vata and kapha together causes bloating of abdomen, painful and tender breast, feeling of heaviness in breast, headache. Vitiated vata and kapha due to the pratiloma gati, affects the Manas giving rise to Manasika Lakshanas like depression, anxiety, confusion (due to aavaran janya samprapti), angry outburst etc and thus causing Premenstrual Syndrome.

Currently available research shows very few studies of this entity in Ayurveda. Efforts have been made to understand the problem on the basis of doshic imbalance. Primarily an imbalance of Vata dosha resulting from bad lifestyle choices is seen to at the root of this pathology. Vimudha Vaata especially Apana exerts an influence on the other

Vayus of the body, thereby disrupting their functions. Simultaneous accumulation of *Kleda* and the organ or system having a *Kha Vaigunya* then expresses the symptoms related to PMS. Punarnavadi Guggulu was chosen to deal with the problem because of its Vata Shamana and Shothaghna properties. It is also indicated in Kapha Amayas as per Bhaishajya Ratnawali .

ESTIMATED SAMPRAPATI GHATAK:

- Dosha: Tridosha specifically Kapha, Vata
- Dushya: Ras, Rakta, meda, udak
- Srotas: Rasavaha, Artavavaha, manovaha
- Marga: Abhyantar
- Mahabhuta: Jala, vayu
- Udbhavasthana: Ama-Pakvashaya
- Vyaktasthana: Sarva sharir, Manah

CASE REPORT:

CHIEF COMPLAINTS WITH DURATION

Abdominal Bloating, Tension, Angry Outburst, Mood Swings, Crying Spell, Headache

All the symptoms were appearing 3-4 days prior to her menses till 1st day of menses since 3 years.

ASSOCIATED COMPLAINTS –

Nausea and vomiting occasionally, Diarrhoea occasionally

which tend to resolve spontaneously after 1st day of menses

HISTORY OF PRESENT ILLNESS -

A 28-year-old female patient, came to O.P.D No. 104 of Parul Ayurveda Hospital, Dept of Stri Roga Evum Prasuti Tantra on 11/06/2021. She was alright 3 years back. She then started having cyclical episodes of Abdominal bloating, tension, angry outbursts, mood swings, crying spell, headache in the premenstrual phase. She also occasionally suffered from nausea, vomiting and diarrhoea which resolved spontaneously after 1st day of menses. All the symptoms appeared 3-4 days prior to her menses and resolved spontaneously after the 1st day of menses. The symptoms steadily increased in intensity over 3 years. As a result, her work and performance during that period was getting hampered and her overall progress was diminishing because of this problem. So, the patient approached PAH for Ayurvedic management.

HISTORY OF PAST ILLNESS:

Medical history – No H/o- DM, HTN, thyroid dysfunction

Surgical history – No surgical history

Drug history – No drug history

Family history – Mother is suffering with diabetes mellitus

Father is suffering with diabetes mellitus and hypercholesterolemia. Family history of PMS – No family history of PMS, neither in mother nor in siblings.

Personal history:

Marital history – married since 5 years, Occupation – Student, Food habit – food from outside usually fermented food from hotels, Diet – mixed , Appetite – good, Bowel – regular, Micturition – 4-5 times/day & 1 time/night, Sleep – sound sleep of 6-7 hours/night, Habits – Tea intake 2 times/day, Other – occasional suppression of urge for micturition for 1-2 hrs, food from outside usually fermented food from hotels, Sedentary lifestyle - Absence of Physical Excercises, Inadequate Physical Activities, Day sleeping, Stress

MENSTRUAL HISTORY:

Menarche – 16 years

LMP – 26/05/2021

Previous LMP – 24/04/2021

Parameters	Menstrual history
1. Regularity	Regular
2. Quantity	3-4 pads/day
3. Consistency	Normal
4. Smell	No foul smell
5. Duration	4-5 days
6. Interval	32 -34 days
7. Pain	Mild pain +
8. Colour	Reddish

OBSTETRIC HISTORY:

Marital life – 5 yrs

Active marital life – 5 yrs

- Parity - 1, Abortion - 0, Live - 1, Death – 0
- Nature of delivery - FTND at hospital
- Uneventful

CONTRACEPTIVE HISTORY: Condom use and Calender method.

ON EXAMINATION:

- General condition – good
- Pulse rate – 76 bpm
- B.P – 110/70 mm Hg
- R.R – 18/min
- H.R – 76 bpm
- Height – 155 cm, Weight – 53 kg, BMI – 22.1

SYSTEMIC EXAMINATION:

- Respiratory system: B/L chest clear, Air Entry Bilaterally Equal
- Cardiovascular system: S1 S2 clear, heard
- CNS: Patient is conscious and well oriented. All superficial reflexes are intact.

- GIT: Soft abdomen, bowel sound heard, no pain & tenderness, TL scar present

PER SPECULUM EXAMINATION:

- Cervix healthy
- No any kind of discharge was present
- Foul smell - absent

PER VAGINAL EXAMINATION:

- Uterus anteverted, anteflexed, normal size
- Freely mobile
- Fornices non-tender

INVESTIGATIONS:

Done on 17/06/2021 – (Before treatment)
 CBC: Hb – 11.3 g/dl, TLC Count – 8100/cmm, Platelet count – 167000/cmm
 USG (Abdomen-Pelvis) – Bladder distended, uterus- normal in size, B/L ovaries normal in size No any significant abnormality detected. (To rule out pelvic pathology)

ASHTAVIDHA PARIKSHA:

1.	Nadi	Vata-pitta
2.	Mala	Saama, Samhat
3.	Mutra	Prakrita
4.	Jivha	Niraama
5.	Shabda	Spashta
6.	Sparsha	Anushna sheeta
7.	Druk	Samyak
8.	Akruti	Madhyama

DASHVIDHA PARIKSHA:

1.	Prakruti	Pitta kapha
2.	Vikruti	Kapha
3.	Sara	Madhyama
4.	Samhanana	Madhyama
5.	Pramana	Madhyama
6.	Satmya	Sarvarasa
7.	Satva	Madhyama
8.	Vaya	Madhyama
9.	Vyayamshakti	Madhyama
10.	Aharashakti	Madhyama

ASSESSMENT CRITERIA¹³:**PMTS-OR**

(PREMENSTRUAL TENSION SYNDROME- OBSERVER RATING SCALE)

Observations

Symptoms	Baseline Scoring	1 st follow up Scoring (with treatment)	2 nd follow up Scoring (with treatment)	3 rd follow up Scoring (without treatment)
	BP – 110/70 Pulse – 76 Temp. – 97 RR - 18	BP – 110/78 Pulse – 78 Temp. – 97.4 RR - 20	BP – 110/70 Pulse – 76 Temp. – 97 RR – 18	BP – 110/70 Pulse – 78 Temp. – 98 RR – 19
Date -	11/06/2021	29/07/2021	27/08/2021	21/09/2021
LMP -	26/05/2021	24/07/2021	23/08/2021	20/09/2021
1. Depressed mood (0-4)	3	2	1	0
2. Anxiety/Tension (0-4)	4	3	2	0
3. Affective Lability (0-4)	3	2	1	0
4. Irritability/Hostility (0-4)	3	2	0	0
5. Decreased Interest in Usual Activities (0-4)	3	2	0	0
6. Concentration Difficulties (0-4)	4	2	0	0
7. Marked Lack of Energy (0-4)	3	2	0	0
8. Eating Habits (0-2)	2	2	2	0
9. Sleeping Habits (0-2)	1	1	0	0
10. Overwhelmed (0-4)	4	3	2	0
11. Painful or Tender Breasts (0-4)	4	4	3	0
12. Swelling of Abdomen, Ankles Or Fingers (0-4)	0	0	0	0
13. Headache (0-4)	4	4	3	0
14. Low backache (0-4)	2	2	1	0
TOTAL SCORE	40	31	15	0

Note – 0 score - No; 1 score – Doubtful; 2 score – Mild; 3 score – Moderate; 4 score- Severe.

ASSESSMENT OF SEVERITY –

Scoring of Symptoms	Severity
0-13	Doubtful
14-26	Mild
27-39	Moderate
40-52	Severe

ASSESSMENT OF RESULTS -

Percentage of relief was assessed by comparing the total score before and after treatment and the relief was graded as under.

Percentage Relief	Grading of Relief
0%	No Improvement
1-25%	Mild Improvement
26-50%	Moderate Improvement
51-75%	Marked Improvement
76-100%	Complete Improvement/Cured

INTERVENTION:

Name of the drug	Dose	Anupana	Duration	Time
<i>Punarnavadi Guggulu</i>	4 Tablets (500 mg each) Twice a day	Lukewarm water	for consecutive 2 cycles (from 1 st day of menses throughout the cycles)	After meal

Follow up

Every 2nd day of menses upto 3 cycles (2 interventional and 1 observational cycle)

OBSERVATION:

The patient presented with a PMS score of 40 measured on the modified PMTS-OR Scale. After 1 month of treatment with Punarnavadi Guggul her score came down to 31 and 2months later, her score was 15. After one more month of observation without medicines, the patient had a score of zero. These findings indicate a significant relief in PMS. The carry forward effect of the medicine was evident from the zero score at the end of 3 months. Currently, ie. after 7 months of beginning

treatment, the patient continues to be free from the symptoms of PMS.

DISCUSSION:

In the current case, suppression of urge for micturition, sedentary lifestyle and a tendency to overthinking and stress of academics seem to have contributed to the development of PMS. Eating South Indian food from hotels frequently was also a part of her lifestyle. Such food can contribute to Tridosha Prakopa.

As per many on going research studies, Premenstrual Syndrome is associated with Inflammation, Oxidative Stress and Antioxidant Status²⁰

Punarnava has Vata Kapha Nashak, Shothghna, Rasayan. Mutral properties.

The study by Meera Sumanth proved that Punarnava improved stress tolerance²¹

Anti-depressant activity¹ of Punarnava was also proved in the study of Dinesh Dhingra()and it will also act on pathology caused by water retention such as swelling of extremities and,

Devdaru is known to posses – vatahara, amanashana, shophagna, tandrahara properties as per the various nighantus of Ayurveda. Studies have also proved the anxiolytic activity of devdaru through modulation of GABA levels. Its antidepressant activity has also been es the role of NO in depression and how Tinospora cordifolia exerts its beneficial effects in the patients of depression¹⁸. We can therefore infer that guduchi can effectively provide relief in the psychosomatic symptoms of PMS.

Haritaki is known to posses properties like deepana, pachana, rochana, shothahara, kushthahara, shulahar. Therefore its helps to alleviate symptoms like headache and backache. Many subjects also experience symptoms like loss of appetite, indigestion and acne which are effectively relieved by haritaki.

It is also said to posses property of cleansing the manovaha strotas and the indriyas. A study by Yadavalli Chandra Shekhar proved that haritaki displayed significant anxiolytic activity in GABA

proven. Anti-inflammatory and analgesic activity²⁷

Guduchi has Tridoshagna, Medohara, Mehaghna properties and is also Rasayana and Dhatu Agni Vardhak will help in treating Dhatwagnimandya and balancing of Tridoshas. Tinospora cordifolia commonly named as “Guduchi” has been reported for its strong free radical scavenging properties against superoxide anion (O₂-), hydroxyl radicals (OH), NO, and peroxynitrite anion (ONOO-). Thus the present manuscript demonstrat

antagonist induced anxiety models in mice²². The inhibition of GABAergic system is the most studied and proven pathologies that contributes to the PMS symptoms.

Anti-inflammatory²⁴. Analgesic²⁴, Anxiolytic²⁵ properties of Hartaki cited below provide relief from PMS .

Guggulu will help in resolving shotha samprapti as well as in vata shamana. Erand tail will help in vata regulation. All the contents of *Punarnavadi Guggulu* have anti-inflammatory action that will probably act to break the water retention pathology and anti-oxidant²⁰ property (Rasayan), Hridya properties that will cure the mental symptoms and activity. And all the drugs having ushna veerya which will balance the vitiated *Apana Vayu*. *Triphala kashaya* has

been used as *bhavna dravya* which is *tridosh nashak* and *kleda-shamana*, *Shothaghna* which will break the water retention pathology and *Vatanulomana* also.

Guggulu manages vata, and kapha, act on loss of appetite, indigestion, acne, constipation,²⁹

Guggulu is antidepressant²⁸ hence acts on GABAergic system. Anti-inflammatory³⁰

Due to excessive consumption of junk food, vitiation of Apana Vayu, Vyana Vayu results in Dhatu Ksaya condition.

It is also responsible for pelvic congestion¹⁴.

The centre researchers anticipated that the alleviation of hot flashes and also the symptoms associated with premenstrual syndrome are partially mediated by activity at estrogen receptors² The most obvious among these involves aetiological role of fluctuations in ovarian steroids which influence neurotransmitters: serotonin, noradrenalin, and GABA. This explains impulse control, negative mood, aggression and irritability. Fluid and electrolyte retention are due to increased absorption/prolactin and sex steroid interaction with rennin-angiotensin-aldosterone system⁹

Junk foods being deficient in micronutrients like vitamin B6, calcium, magnesium and potassium, might also be

responsible for triggering premenstrual symptoms. Premenstrual symptoms were also significantly high in girls who did not do regular physical activity

Indulging in comfort foods like gooey chocolate bars, gulping down cups of coffee/tea or skipping meals because of feeling bloated is certainly not going to help. These will, in fact, aggravate the vulnerability of PMS symptoms.

Therefore Premenstrual symptoms are significantly high in girls who consume excessive junk food¹⁵.

CONCLUSION:

Punarnavadi Guggulu showed significant results in the present study. This drug helps in resolving the symptoms of PMS. This has proved that this classical preparation mentioned in *shothadhikara* is very effective in the treatment of PMS without any complications or adverse effects. Many studies have shown that both the ayurvedic formulations and modern modalities used as a treatment for PMS are anti-inflammatory, so considering PMS with an inflammatory pathology and that's why believing *Punarnavadi Guggulu* will help in the management of symptoms PMS.

REFERENCES:

- [1] Dinesh Dhingra, Evidence for involvement of the monoaminergic system in antidepressant-like activity of an ethanol extract

- of *Boerhaavia diffusa* and its isolated constituent, punarnavine, in mice
<https://www.tandfonline.com/doi/full/10.3109/13880209.2013.870583>
- [2] Kimberly Ann Yonkers, MD, Prof. P M Shaughn O'Brien, MD, and Prof. Elias Eriksson, MD, Premenstrual syndrome Lancet. 2008 Apr 5; 371(9619): 1200–1210. doi: 10.1016/S0140-6736(08)60527
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3118460/>
- [3] A Case Report On Effective Management Of Premenstrual Syndrome With Ayurveda
<http://ijaprs.com/index.php/ijaprs/article/view/691>
- [4] Ayurvedic Concept Of Premenstrual Syndrome With Special Reference To Pittavrita Vyana Vayu. BJOG – An International Journal Of Obstetrics And Gynaecology, Royal College Of Obstetricians And Gynaecologists Management of Premenstrual Syndrome, Green-top Guideline No. 48 November 2016, BJOG 2016; DOI: 10.1111/1471-0528.14260
[RCOG Premenstrual Syndrome.pdf](#)
- [5] Daniel M. Campagne, Ghislaine Campagne, the premenstrual syndrome revisited, European Journal of Obstetrics & Gynecology and Reproductive Biology, Volume 130, Issue 1, 2007, Pages 4 -17, ISSN 0301-2115.
- [6] Soo-Ho Chung¹, Tae-Hee Kim¹, Hae-Hyeog Lee¹, Arum Lee¹, Dong-Su Jeon¹, Junsik Park¹, Yesol Kim², Premenstrual Syndrome and Premenstrual Dysphoric Disorder in Perimenopausal Women, Journal of Menopausal Medicine 2014; 20(2): 69-74. Published online: 27 August 2014
DOI: <https://doi.org/10.6118/jmm.2014.20.2.69>
- [7] Andrea Rapkin, A review of treatment of premenstrual syndrome & premenstrual dysphoric disorder, Psychoneuroendocrinology, Volume 28, Supplement 3, 2003, Pages 39-53, ISSN 0306-4530, [https://doi.org/10.1016/S0306-4530\(03\)00096-](https://doi.org/10.1016/S0306-4530(03)00096-)
- [8] DC Dutta's Textbook of Gynaecology Enlarged & Revised Reprint of Sixth Edition: November 2013 Seventh Edition: 2016 pg. no.149
- [9] Bharti Sharma, Subhash Sharma, Ayurvedic Concept Of Premenstrual Syndrome With Special Reference To Pittavrita

- Vyana Vayu, International Journal of Ayurveda and Pharma Research, IJAPR | June 2017 | Vol 5 | Issue 6 | page no. 96- 100. https://www.researchgate.net/publication/341726061_Premenstrual_Syndrome_and_Its_Historical_Perspective
- [10] Malik, R., & Bhat, M. D. A. (2018). The management of Premenstrual syndrome: A review. *Bangladesh Journal of Medical Science*, 17(1), 16–20. <https://doi.org/10.3329/bjms.v17i1.35273>. <https://www.banglajol.info/index.php/BJMS/article/view/35273>
- [11] Malik, R., & Bhat, M. D. A. (2018). The management of Premenstrual syndrome: A review. *Bangladesh Journal of Medical Science*, 17(1), 16–20. <https://pubmed.ncbi.nlm.nih.gov/21802738/>
- [12] Steiner M, Peer M, Macdougall M, Haskett R. The premenstrual tension syndrome rating scales: an updated version. *J Affect Disord*. 2011 Dec; 135(1-3):82-8. doi: 10.1016/j.jad.2011.06.058. Epub 2011 Jul 29. PMID: 21802738.
- [13] Steiner, Meir & Peer, Miki & Macdougall, Mary & Haskett, Roger. (2011). The premenstrual tension syndrome rating scales: An updated version. *Journal of affective disorders*. 135. 82-8. 10.1016/j.jad.2011.06.058. https://www.researchgate.net/publication/51534030_The_premenstrual_tension_syndrome_rating_scales_An_updated_version
- [14] Teixeira AL, Oliveira EC, Dias MR. Relationship between the level of physical activity and premenstrual syndrome incidence. *Rev Bras Ginecol Obstet*. 2013 May;35(5):210–4. [PubMed] b. Sr. Consultant Obstetrician and Gynaecologist, Fortis La Femme, <http://timesofindia.indiatimes.com/life-Prashant-Shinde-Et-Al-Effects-Of-Junk-Food-Fast-Food-On-Menstrual-Health-A-Review-Study-IAMJ-OCTOBER-NOVEMBER-2017-871-style/health-fitness/diet/Foods-that-ease-PMSsymptoms/articleshow/14847214.cms> 02-02- 2017)
- [15] J. V. Joshi, S. N. Pandey,¹ P. Galvankar,² and J. A. Gogate³ Prevalence of premenstrual symptoms: Preliminary analysis and brief review of management strategies.

- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3139261/>
- [16] Akhila M, N, Vijayakumar & Kannan VS. (2020). Effect Of Punarnavadi Kashayam And Aswagandha Choorna In Premenstrual Syndrome. *International journal of Ayurveda and pharma research*, 8(Supply1), 48-56. <https://doi.org/10.47070/ijapr.v8iSupply1.1625>.
- [17] Arif A Faruqui, Non Hormonal Management of Menstrual Cycle Irregularities, *Journal of Gynecology and Womens Health Department of Pharmacology, Clinical Pharmacologist, A 504, Rizvi Mahal, India* Submission: August 16, 2018; Published: September 07, 2018 Volume 11 Issue 4 - September 2018, ISSN2474-7602 <https://juniperpublishers.com/jgwh/>
- [18] Sezal, . and Walia, V. 2015. Review: Tinospora cordifolia in the Treatment of Depression. *PharmaTutor*. 3, 12 (Dec. 2015), 32-34. PRINT ISSN: 2394-6679 | E-ISSN: 2347-7881 [https://www.pharmatutor.org/pdf/download/pdf/Vol.%203,%20Issue](https://www.pharmatutor.org/pdf/download/pdf/Vol.%203,%20Issue%2012,%20December%202015,%20PharmaTutor,%20Paper-4.pdf)
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3139261/>
- [19] Akhila M, N. Vijayakumar, Kannan VS. Effect of Punarnavadi Kashayam And Aswagandha Choorna In Premenstrual Syndrome. *International Journal of Ayurveda and Pharma Research*. 2020;8(Suppl 1):48-56.
- [20] Granda, D.; Szmids, M.K.; Kaluza, J. Is Premenstrual Syndrome Associated with Inflammation, Oxidative Stress and Antioxidant Status? A Systematic Review of Case-Control and Cross-Sectional Studies. *Antioxidants* 2021, 10, 604. <https://doi.org/10.3390/antiox10040604>
- [21] Meera Sumanth and S.S. Mustafa, 2007. Antistress, Adoptogenic and Immunopotentiating Activity Roots of Boerhaavia diffusa in Mice. *International Journal of Pharmacology*, 3: 416-420. <https://scialert.net/fulltext/?doi=ijp.2007.416.420>
- [22] Chandrasekhar Y, Phani Kumar G, Navya K, Ramya EM, Anilakumar KR. Tannins from Terminalia chebula fruits attenuates GABA antagonist-induced anxiety-like behaviour via modulation of

- neurotransmitters. J Pharm Pharmacol. 2018 Dec;70(12):1662-1674. doi: 10.1111/jphp.13007. Epub 2018 Sep 10. PMID: 30198561.
- [23] Rapkin AJ, Akopians AL. Pathophysiology of premenstrual syndrome and premenstrual dysphoric disorder. Menopause Int. 2012 Jun; 18(2): 52-9. doi: 10.1258/mi.2012.012014. PMID: 22611222.
- [24] Seewaboon Sireeratawong, Kanjana Jaijoy, Parirat Khonsung, Noppamas Soonthornchareonnon, African journal of traditional, complementary and alternative medicine, Analgesic and anti-inflammatory activities of the water extract from Terminalia chebula Rezt., Vol. 11 No. 6 (2014).
<http://dx.doi.org/10.4314/ajtcam.v11i6.8>
- [25] Vasudevan Mani, Sultan Sajid, Syed Imam Rabbani, Abdulrahman Saud Alqasir, Hani Abdullah Alharbi, Abdullah Alshumaym, Anxiolytic-like and antidepressant-like effects of ethanol extract of Terminalia chebula in mice, Journal of Traditional and Complementary Medicine, Volume 11, Issue 6,2021,Pages 493-502, ISSN 2225-4110,
<https://doi.org/10.1016/j.jtcme.2021.04.003>.
- [26] D. Dhayabaran, E. Jeyaseeli Florance, K. Nandakumar and A . Puratchikody Anxiolytic and anticonvulsant activity of alcoholic extract of heart wood of Cedrus deodara roxb. in Rodents, Journal of Medicinal Plants Research Vol. 4(14), pp. 1374-1381, 18 July, 2010, DOI: 10.5897/JMPR10.140, ISSN 1996-0875 ©2010 Academic Journals
<http://www.academicjournals.org/JMPR>
- [27] Shinde UA, Phadke AS, Nair AM, Mungantiwar AA, Dikshit VJ, Saraf MN. Studies on the anti-inflammatory and analgesic activity of Cedrus deodara (Roxb.) Loud. wood oil. J Ethnopharmacol. 1999 Apr;65(1):21-7. doi: 10.1016/s0378-8741(98)00150-0. PMID: 10350366.
- [28] Kalshetti, Padmaja; Thakurdesai, Prasad; Alluri, Ramesh, Evaluation of Antidepressant Activity of Hydroalcoholic Extract of Commiphora Mukul (Engl.),

Burseraceae in Mice, **Journal of Current Pharma Research; Satara** Vol. 5, Iss. 1, (Oct-Dec 2014): 1343-1350.

[29] Bhavprakash Nighantu with elaborated hindi commentary by Padmashri prof. K.C. Chunekar, edited by Dr. G.S. Pandey: edition of 2010: verse 32., page no- 204.

[30] Jayaraj A. Francis Bioactive Terpenoids and Guggulusteroids from *Commiphora mukul* Gum Resin of Potential Anti-Inflammatory Interest, Vol 1, issue 11, 24 November 2004 <https://doi.org/10.1002/cbdv.200490138>