

Managing Menopause with Ayurveda: An Alternative to Hormone Replacement Therapy

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ABSTRACT

Estimated prevalence of Menopause is around 50 million cases per year worldwideⁱ with expected 1.2 billion women in menopause by 2030.ⁱⁱ The most common symptoms being vasomotor, i.e., hot flushes in 40% women and night sweats in 17%, followed by insomnia, mood disorders and weight gain. Mean age of prescribed Hormone Replacement Therapy (HRT) was 54 years.ⁱⁱⁱ Ayurveda mentions a wide range of single (*Methi, Guduchi, Shatavari* etc) and compound drugs (*Ashokarishta, Praval Bhasma, and Rasayan Churna*) with proven estrogenic, anti-stress, anxiolytic, cytotoxic, immunomodulatory actions among others for relieving menopausal symptoms and improve quality of life. This article attempts to provide evidence-based efficacy of these drugs and formulations in different menopausal symptoms and alternative to HRT for a healthy, happy and quality life even after menopause.

Key Words: Ayurveda, herbs, menopause and perimenopause.

INTRODUCTION

Menopause by definition means permanent cessation of menstruation in a woman at the end of reproductive life due to loss of ovarian follicular activity. Owing to the improved medical facilities women live around one-third of their life post menopause but lack of proper knowledge and attitude makes women think negatively about menopause. Estimated average age of menopause in India is 46.2 years, much less against 51 years in Western world^{iv} trepidating a greater number of females and vulnerability.

According to a study, 64.25% of women in India consider Menopause an end of youth, often associated with decreased libido, vaginal dryness, anxiety, insomnia, lethargy, joint pain and also vasomotor symptoms.^v Health of women with menopause has to deal with dual factors; elderly age and altered hormonal status. Thus, these women are also at a higher risk of developing systemic disorders owing to their depressed immunological status. Menopausal women are said to be twice more prone to develop psychological disorders and paranoid disorders, than men.^{vi} During Perimenopausal phase and after menopause women are more prone to develop depressive tendencies and cognitive difficulties that are inconsistently related to disturbed hormones^{vii}. Around 85% of women experience some menopausal symptom in their life and prevalence of vasomotor being 40 to 50 million women in United States alone with prevalence of symptoms varying according to different geographical areas and climate, from 74% of women in Europe, 36-50% in North America to 22-63% in Asia.^{viii}

Vasomotor symptoms are said to affect 75% of peri-menopausal women lasting upto couple of years even postmenopause, however may continue upto and over a decade hindering daily activities of a woman creating disturbed work and sleep. Women face difficulty in concentration and altered emotional status. There is urogenital atrophy leading to vaginal dryness, pruritus, dysuria, and dyspareunia while others include increased Cardio vascular disease risk, depression and osteoporosis.^{ix} Any physical condition ultimately affects psychologically and vice versa. Popular treatment modalities include Hormone Replacement Therapy (HRT) and Selective Estrogen Receptor Modulators (SERMs). HRT has been associated with mild side effects of nausea and vomiting to Deep Vein Thrombosis, Pulmonary embolism and cancer. SERMs used for Postmenopausal symptoms have been associated with the increased risk of breast and uterine cancer, coagulopathies, depression and impaired memory.^x Therefore, an alternative non-hormonal therapy is required which is safe and effective. Here, Ayurved bestows hope and an alternative therapeutic and preventive modality for women to have a strong immunological and emotional status that not only prevents systemic illnesses, but also reduces effects of aging and helps them live a healthy and active life even after menopause.

Material and Methods

Various relevant research articles from PubMed, Google Scholar, ScienceDirect and related databases were comprehensively reviewed for publications including classical Ayurvedic texts. See Table.1 (Different Related Research Articles cogitated for study).

Menopause and Ayurveda

According to Ayurveda, menopause is a natural and physiological process.

Acharya Sushruta says– “*Jarapakwashariranaam yati panchashatah kshayam*” (Su. Sha.3/9)^{xi} He considers senility a reason for menopause with its average age being 50 years, whereas old age has been considered natural to body, a physiological process due to advancing age termed as ‘*Rajonivritti*’. In old age, there occurs continuous decrease in *dhatu*s, various senses, physical strength, potential, excitement making vulnerable to various diseases^{xii}. It is also mentioned that this decrease or degenerative changes in body begin to occur after the age of 40 years only. Also, *Acharya Sharangdhara* mentions loss of intellect and cognition in fourth decade of life. Thus, after forty years of age females also face these degenerative changes due to which menopause also presents with host of psychological symptoms including; anxiety, depression, mood swings etc. These changes and associated degeneration leads ultimately to *rajonivritti*, ie, cessation of menses or menopause whose age average is given as 50 years. In ayurveda any disease occurs mainly due to imbalance of the three doshas namely *Vata*, *Pitta* and *Kapha* having their own different properties and seven *dhatu*s (body constituents) which are *rasa* (fluid), *rakta* (vascular system), *mansa* (muscular system), *meda* (fat and adipose), *asthi* (bone and cartilage), *majja* (marrow) and *shukra*^{xiii} (reproduction). *Vata* dosha is the considered one of the important factor in the pathophysiology of ageing and related disorders because of its natural predominance at that stage of life^{xiv}. It is considered that dryness and lightedness property of *vata* leads to *kshay* decrease in liquidity of the *Rasa dhatu* leading to depleted-dhatu bringing old age and further decrease of *sub-dhatu* (*artav*) leading to *artavnash* presenting as amenorrhoea.^{xv}

Menopause: A Phase of Liberation

Menopause is surely a phase of relief and clinical liberation. It relieves a woman from a cyclic burden of menses, sanitary pads, tampons, discomfort, anxiety, irritation, mood swings associated with menstrual cycle along with associated problems such as Pre-menstrual Syndrome, Dysmenorrhoea and worries of bleeding duration, flow or irregular patterns. It gives freedom from the stress, fears, insecurities, reluctant and reclusive behaviours during those days. It gives the control to a woman to enjoy her life to the fullest and each day of the month. Through proper general care and health through Ayurveda she can make this possible and make Menopause a Happy Phase.

Menopause: A Phase of Care through Ayurveda!

Medhya Dravya- Elderly age is associated with increased oxidative stress, degenerative changes, weakened neurons and forgetfulness and thus *Medhya dravyas* (nootropic drugs) should be added to improve and maintain neuronal strength and cognitive abilities of the women. **Rasayan:** A rejuvenative drugs should be taken to help maintain or improve immunity, longevity, vitality and in the women of this stage. **Phytoestrogens:** According to many studies phytoestrogens have proved to reduce the vasomotor symptoms of menopause.^{xvi} Thus, most of the drugs suggested below contain phytoestrogens and tend to mimic hormones of the body and thus reduce severity and symptoms of menopausal syndrome^{xvii} Therefore, following are a few drugs and *yoga* (combination) considered safe, effective, economically-feasible have proven either preventive or therapeutic activity in post-menopausal manifestations.

Single Drugs

* **Amalaki (*Emblica officinalis*)-** It is rejuvenative, balances all three *doshas*, predominantly pacifies *Pitta* and thus included in the stabilise and balancing age, ocular tonic and cardiogenic groups of drugs mentioned in Ayurveda.^{xviii}

* **Ashwagandha (*Withania somnifera*)-** Root of *ashwagandha* is used since years for diverse diseases. Its root extract resulted in reduction of tumour development by 23% as compared to control group.

* **Methi (*Trigonella foenum-graecum*)-** It is a phytoestrogen shown to improve neurocognitive deficit in experimental studies.^{xix} It decreases hot flashes and vasomotor symptoms of menopause.^{xx}

* **Guduchi (*Tinospora cordifolia*)-** It is again a rejuvenative and one among four major nootropic drugs mentioned by *Acharya Charak*^{xxi}. It is also included in *Vayasthaapan*, pain modifier, blood purifier, increases digestive power, *anulomana* and cardio-tonic group of drugs.

* **Shatavari (Asparagus racemosus)**- It is considered under strengthening and power, age-stabilizing, gamete-genesis and increases libido and sexual vitality. Its components Shatavarin I-IV and Isoflavones are potent phytoestrogens.

Compound Drugs

***Ashokarishta**- It is an prepared with a specified fermenting process with *Sarca ashoka*. It possesses *Tridoshashamaka* properties. The ingredients are also having rejuvenative, anti-ageing, *Balya*, cognitive, eliminates *dosha* vitiating mind, pain-alleviating,^{xxii} vata and pitta shaman properties.^{xxiii}

Madhwadi yoga- Its ingredients are *amalaki*, *suvarna bhasm* (purified calcined Gold) and honey. It is mentioned that one who consumes this yoga gets relieved from fear of death even if one shows signs of it.^{xxiv} (*Amalaki* described above) and *Suvarna Bhasm*, in Ayurveda, is considered detoxifying, ophthalmic-tonic and pacifies all doshas. It increases serum estradiol levels in female albino rats. It is said to be the first in-organic compound that possesses anti-angiogenic property.^{xxv}

* **Madhu**, ie, honey has been in use for different Ayurvedic formulations owing to its medicinal, nutritional and adjuvant properties. It pacifies all the three *doshas*, is improves digestive power, increases strength and lusture. Due to lightedness and unique properties, it enters minute channels of the body and enhances effects of the drugs it is given with.^{xxvi} Besides having nutritional value in providing mono-di-tri- saccharides, it is also antioxidant and has trace minerals such as Copper, Zinc, Lithium and strontium.^{xxvii}

* **Praval Bhasm**- It is a marine drug with properties like, lightness, dry, sweet, cold in potency and thus, it also, pacifies all the three *dosha*.

It is in other words calcined coral calcium and so mainly comprises of calcium carbonate (83%), rest it contains magnesium carbonate, Iron and organic compounds. It modifies sweat secretion and so, is helpful in hot flashes and excessive sweating.^{xxviii} Decreased levels of estrogen in menopause are linked with bone resorption and significant loss of bone calcium.^{xxix} Being from coral origin and a rich source of calcium it has easy absorption and has potential to play a vital part in prevention of osteoporosis.^{xxx}

***Rasayan Churna**- This formulation is a rejuvenative drug comprising of three ingredients; *Amalaki*, *Guduchi* (as above) and *Gokshur (Tribulus terrestris)*. It has *Vata- Pitta* vitiating and *Kapha* increasing property. It is compatible to body, increases longevity, nourishing, improves quality of seven *dhatu* and *Oja* (essence of all *dhatu*s) and thus is improves quality of life.^{xxxi} *Gokshur*'s alkaloid, Harmine, has shown Monoamine Oxidase (MAO) inhibiting activity which leads to higher levels of dopamine in brain, leading to slow and strong mood elevation and a feeling of wellness.^{xxxii}

Table 2 (Compilation of Drugs' Properties & Uses)

Dose and Duration

*Single drugs and *Rasayan Churna* is usually 3-6 gm daily after meals. **Madhwadi yoga* is *Amalaki churna* 3 gram, purified calcined Gold 20 mg and honey required enough to mix the two, daily in early morning^{xxxiii}.

Duration may be variable starting from a few days to a few months based on severity of the symptoms with consultation of an Ayurvedic Gynaecologist.

Discussion

Most of the drugs described above are rejuvenative, phytoestrogenic, anti-oxidant, anti-inflammatory, immunomodulatory, possess cytotoxic activities and improve *agni* or digestive power of body. Improved *agni* meaning better digestion and absorption, ie, optimum quality first *dhatu (rasa)* formation and from that subsequent *dhatu* formation with optimum qualities. Thus, these in general, improve immunity, balance the three *doshas*, facilitate optimum formation of *dhatu*s and *oja*, leading to a healthy rejuvenated body and mind. Reactive Oxygen Species (ROS) damage macromolecules and cause irreversible cell damage leading to cell dysfunction which may lead to ageing and degenerative diseases such as Cardiovascular disease, Diabetes Mellitis, Alzheimer's disease etc. Antioxidants found in medicinal plants and honey (e.g. phenolic content, flavonoids and others) act as ROS Scavenger that prevent cells from Oxidative damage and thereby from these diseases. These by reducing oxidative stress and related degenerative changes, also prevent chances of cancer and osteoporosis post menopause. Anti-anxiety property of *amalaki* and *ashwagandha* help reduce chronic stress and reduce psychological and depressive manifestations during and post menopause. Female wistar rats whose memory and learning abilities decreased post ovariectomy, along with hippocampal death in CA1 and CA3 region administered fenugreek seed extract showed significant improvement in memory and learning and significant recovery of cellular damage.^{xvii} Fenugreek also reduces vasomotor symptoms like hot flushes, palpitations, sleep apnea and paresthesia. Fenugreek seeds and *Amalaki* reduce lipid per-oxidation and protects against cellular damage from oxidative changes.^{xix-xxxiv} *Methika* showed anti-cataract activity by restoration of

glutathione, decreasing malondialdehyde levels and increasing anti-oxidant enzymes.^{xix} *Ashwagandha* has shown to lower cortisol production by 28% which helps to improve concentration and induces sound sleep. It acts synergistically with adrenal system and moderates effects of estrogen to improve overall quality of life and reduce the severity of symptoms such as, hot flushes and mood swings.^{xxxv} *Guduchi* is a potent rejuvenative as well as encephalo-tonic drug, its varied properties (Table 2) and anxiolytic actions improves overall physical and psychological health and may also be equally helpful for immuno-compromised females. *Shatavari* is strengthening and aphrodisiac drug, thus increases libido, sexual vitality and also cervical health by maintaining pH of cervical area.^{xxxvi} It reduces bone resorption and increases bone formation, thus prevents Osteoporosis.^{xxxvii} With its properties (Table 2), may help prevention of cancer and cardiac problems.

Madhwadi yoga, delays age related signs and rejuvenates whole body, i.e., balances and strengthens all *dhatu*s, senses, strength, lusture, memory and cognition. Its ingredients reduce neuro-inflammatory processes and prevent neuronal injury and neuro-degenerative diseases.^{xiii} It acts on, *Oja* to enhance feeling of happiness improving Psychological disorders. It is also associated with maintaining homeostasis, cellular vitality and delaying Apoptosis which leads to faster healing of injuries, enhanced stamina and protection from infectious pathogens. Gold nanoparticles improve cellular internalization properties. Therefore, this formulation not only helps prevent degenerative changes and prevent associated diseases but may also help to reverse them.^{xlvii} Further research is however, required to strengthen the faith. Praval bhasm has proven cytotoxic activity that helps prevent cancer susceptibility post menopause and being calcined coral calcium proved effective in the post-menopausal osteoporosis, ie, in management of calcium and estrogen deficient bone loss as well as prevention of bone metabolic disorders.^{xxxviii} *Rasayan churna's Vata- Pitta* alleviating and *Kapha* increasing property leads to reduction in anxiety, pain, hot flushes and depressive thoughts while it improves sleep duration, calmness, happiness, energy and willingness for life. This formulation tends to relieve stress and improve quality of life. It has not only proved to be effective in reducing physical stress and complaints but also improve anxiety, restlessness, critical feelings about oneself and other emotional and mental stress which are usually seen post-menopause. It has proved to have stress adaption property, decreased stress evaluation score and increased life enjoyment parameters, thus improves overall quality of life.^{xxxix} *Ashok* reduces anxiety, depression and insomnia by increasing sleep duration and its CNS depressant activity. A study on combination of *Ashokarishta*, *Ashwagandha Churna* and *Praval Pishti* in managing menopausal syndrome proved highly significant and quality of life also improved significantly reducing hot flushes, relieved heart discomfort and insomnia while also improved depressive mood, irritability and anxiety. Improvement was also noted in sexual and bladder problems, dryness in vagina, joint and muscular discomfort and significant in all four sub scales MENQOL.^{xl} Thus, above mentioned drugs and formulations can be used in combination for managing menopausal syndrome and maintaining health and vigour post menopause.

CONCLUSION

Menopause is a special phase of life bringing experiential wisdom and freedom. However, due to changed hormonal status and increasing age women get vulnerable for various systemic as well as psychological problems. Ayurvedic drugs and formulations wisely chosen and administered under supervision can prevent as well as help manage these conditions and delay ageing process. Thus, women can enjoy a healthy and active life even after menopause.

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| S. No. | Authors & Year | Type of Study | Title | Journal | Summary |
|--------|--|-------------------|--|-------------------|--|
| 1 | Massart F,Reginster JY, Brandi ML 2001 | Review | Genetics of menopause-associated diseases | Maturitas | Estimating average value for women with menopause it emphasizes on genetic correlation of different post-menopausal disorders |
| 2 | Hill K, 1996 | Review | The demography of menopause | Maturitas | In this article examines the world's demographic characteristics of menopausal and post-menopausal women are examined along with implication of mortality risks in menopause. |
| 3 | Palacios S, Henderson VW, Siseles N, Tan D, Villaseca P 2010 | Systematic review | Age of menopause and impact of climacteric symptoms by geographical region | Climacteric | Describes vast differences in age for onset of menopause (The median age at menopause in Europe ranges from 50.1 to 52.8 years) and prevalence of climacteric symptoms in different geographical areas (vasomotor symptoms- prevalence of such symptoms ranges from 74% of women in Europe, 36-50% in North America, 45-69% in Latin America and 22-63% in Asia, as reported in different, large, epidemiological studies.). |
| 4 | Sussman M, Trocio J, Best C, Mirkin S, Bushmakin AG, Yood R; et al. 2015 | Cross-Sectional | Prevalence of menopausal symptoms among mid-life women: findings from electronic medical records | BMC Womens Health | Provides mean age of menopause (54 years) and recent data on different types of menopausal symptoms experienced by mid-life women prescribed Hormonal Therapy. N=102, Hot flushes (40%), night sweats (17%), insomnia (16%), vaginal dryness (13%), mood disorders (12%), and weight gain (12%). |

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| 5 | Ahuja M, 2016 | Survey | Age of menopause and determinants of menopause age: A PAN India survey by IMS. | Journal of Mid-life Health | Average age of menopause of an Indian woman, ie, 46.2 years much less than their Western counter parts (51 years). |
| 6 | Varuna et al 2017 | Analytical | Study to assess knowledge, attitude and practice regarding menopause among menopausal women attending outdoor in tertiary care centre | International Journal of Reproduction, Conception, Obstetrics and Gynaecology | Majority of women have a negative outlook towards menopause considering as a loss of youth (64.55%) and higher susceptibility towards health problems. 32.72% of menopausal women had knowledge of menopausal symptoms. 39.09%, 52.72% and 22.72% knew that menopause increases risk of cardiovascular, osteoporosis and breast cancer respectively. |
| 7 | Nanette et al 2015 | Systematic Review | Menopausal Symptoms and Their Management | Endocrinol Metab Clin North Am. | The perimenopause and postmenopausal years are associated with significant symptoms. Sleep complaints, vaginal dryness/dyspareunia, and cognitive complaints persist or worsen in association with aging. Estrogen levels, can affect the brain systems involved in mood and cognition. |
| 8 | Garima, Kamini Dhiman 2019 | Review | Psychological Problems of Geriatric Women: A Beacon of Hope in Ayurveda | International Ayurvedic Medical Journal | Elderly women are more prone towards psychological and emotional challenges and Ayurvedic principles and treatments w.s.r. Madhwadi Yoga, may provide relief and hormone free support. |
| 9 | Dalal PK, Agarwal M 2015 | Review | Postmenopausal syndrome | Indian J Psychiatry | Women are prone a range of symptoms during perimenopause including various vasomotor symptoms. They at higher risk for depression during this transition due to hormonal fluctuations and thus affected release of neurotransmitters including serotonin and norepinephrine. |
| 10 | Chen, M-N et al 2015 | Systematic Review and Meta-analysis | Efficacy of phytoestrogens for menopausal symptoms | Climacteric | Total 15 RCTs were reviewed with n ranging from 30-252 aged 49 to 60.1 years, evaluating effect of Phytoestrogens on menopausal symptoms and KI scores. Phytoestrogens found significantly effective in reducing symptoms compared to placebo with mean difference = 0.89, p < 0.005. |
| 11 | Amrita Mishra, Rajshree V. Shelare 2018 | Review | An Ayurvedic and Contemporary Overview of Menopause: A Conceptual Approach | International Journal of Ayurveda and Pharma Research | <i>Rajonivrutti</i> or menopause symptoms of symptoms produced by degenerative changes are explained in Ayurveda as <i>Dhatukshaya lakshana</i> and that <i>Vata dosha</i> dominance seen in later stage of life. <i>Rasayana Chikitsa</i> has been explained to deal with the degenerative processes of the body tissue. |
| 12 | Priyanka Kulkarni, Pramod Khobragade 2016 | Review | Phytoestrogens Medicinal Herbs - Safe and Effective Alternative to Hormone Replacement Therapy in Menopausal Syndrome | Journal of Research in Traditional Medicine | of Phytoestrogen-rich herbs are safe and effective in alleviating menopausal symptoms and could be potential alternatives for HRT. |

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| 13 | Tiejun Zhao et al 2015 | Research | Anticancer Properties of Phyllanthus emblica (Indian Gooseberry) | Oxidative Medicine and Cellular Longevity | Different Phenolic compounds from Phyllanthus emblica extract identified by HPLC have proved to have anticancer properties on various cancer models identifying its antiproliferative and antitumor properties including ovarian, breast, colon, prostate and numerous cancer cell lines from multiple tissue types. |
| 14 | Davis L, Kuttan G 2000 | Experimental Study | Effect of Withania somnifera on 20-methylcholanthrene induced fibrosarcoma | J Exp Clin Cancer Res | All the animals in the control group developed sarcoma by 80th day of carcinogen administration with 40% survival rate while only three developed sarcoma in <i>Withania</i> treated group by 105th day and 100% survival rate even after 15 weeks of carcinogen treatment. |
| 15 | Mirjalili MH et al 2009 | Phytochemical Review | Steroidal lactones from Withania somnifera, an ancient plant for novel medicine | Molecules | Steroidal lactones in ashwagandha and chemical structures of triterpenoid components and their biological activity have been discussed along with tumor inhibition and antiangiogenic properties of withaferin A and the effects of withanolide A on Alzheimer's disease. Withaferin A show promising neuronal regeneration. |
| 16 | Konuri et al 2017 | Experimental Study | Effect of Fenugreek Seed Extract on Menopause Induced Neurocognitive Deficit | Advanced Science Letters | Animal study with n=18 Treating ovariectomized rats having decreased memory and learning with neuronal shrinkage and death in the hippocampal CA1 and CA3 region with fenugreek seed extract significantly improved memory and learning, also protected the hippocampal neuronal architecture and survival suggesting potential benefits for cognitive function in perimenopausal women. |
| 17 | Hakim S. et al 2006 | Quasi-Experimental Study | Probable Effect of Fenugreek Seed on Hot Flash in Menopausal Women | Journal of Medicinal Plants | n=50, Use of fenugreek seed for four and eight weeks significantly decreased number of hot flashes and vasomotor symptoms. |
| 18 | Jhahria, A. & Chaudhary, Krishan 2016 | Review | Fenugreek with its medicinal applications. | International Journal of Pharmaceutical Sciences Review and Research. | Fenugreek in various studies including animal experiments in last three decades has shown to possess anti-diabetic activity, anti-hyper-cholesterolaemic, anti-toxic activity, anti-cataract activity, antiulcer, anticarcinogenic, antifertility immunomodulatory activity and anti-oxidant properties. |
| 19 | Thakur M et al. 2016 | Experimental Study | Antidepressant and anxiolytic effects of <i>Asparagus racemosus</i> | Pharmaceutical Biology | Animal study (n=30 rats); <i>Asparagus racemosus</i> expressed antidepressant and anxiolytic properties among others. |
| 20 | Kumari M et al. 2017 | Clinical Study | Evaluation of Ashoka compound in menopausal syndrome | Ayu Journal | Clinical trial on 40 women administered Ashoka compound significantly had reduction in hot flashes, night sweats, and mood swings, demonstrating significant therapeutic potential in peri and post menopausal symptoms. |

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| 21 | Rao S et al. 2020 | Experimental Study | Effect of Brahmi (<i>Bacopa monnieri</i>) on menopausal stress | Journal of Ethnopharmacology | Animal study (n=28 rats); Brahmi extract reduced anxiety and improved stress response in menopausal models, indicating adaptogenic potential for mood disorders. |
| 22 | Sarika S. et al. 2019 | Experimental Study | Comparative effect of Shatavari vs HRT in menopausal women | Indian Journal of Traditional Knowledge | Total n=60 women; Shatavari group showed significant improvement in vasomotor and psychological symptoms and fewer side effects as compared with HRT. |
| 22 | Bhatt et al. 2021 | Experimental Study | Effect of Mandukaparni on perimenopausal cognitive decline | Ayurvedic Research Journal | Animal study with 36 rats; <i>Mandukaparni</i> showed improved memory and reduced oxidative stress markers in menopause-induced models, suggesting neuroprotective benefits for cognitive decline in perimenopausal women. |
| 23 | Patel and Joshi 2022 | Experimental Study | Role of Dashamoola Kwatha in menopausal syndrome | Journal of Ayurveda Integrative Medicine | Clinical trial of n=50 women <i>Dashamoola</i> decoction showed notable reduction in vasomotor and musculoskeletal symptoms, strengthening its use in management of perimenopausal symptoms. |
| 24 | Sharma et al. 2020 | Experimental Study | Anti-anxiety effect of Jatamansi in menopause model | Journal of Natural Remedies | Animal study consisting of 24 rats in which <i>Jatamansi</i> administered in menopause-simulated rats exhibited significant anxiolytic effects and improved behaviour |
| 25 | Verma and Singh 2018 | Review | Ayurvedic Approach to Menopausal Transition | Ayu Journal | Ayurvedic concepts like <i>Rasayana</i> or rejuvenation therapy along with lifestyle regulation mitigates perimenopausal symptoms such as hot flashes, irritability, insomnia and others. |
| 26 | Reddy et al. 2023 | Experimental Study | Effect of Shirodhara on stress and sleep in menopausal women | Clinical Ayurveda Journal | Study with n=35 women; <i>Shirodhara</i> therapy significantly improved sleep quality along with reduced cortisol levels. Hence, helps managing perimenopausal insomnia and anxiety. |
| 27 | Mukherjee et al. 2021 | Experimental Study | Anti-osteoporotic effects of Laksha Guggulu | Phytotherapy Research | Animal study with n=40 rats; Laksha Guggulu administration improved bone mineral density and reduction in bone resorption markers. |
| 28 | Das et al. 2017 | Experimental Study | Effect of Ayurvedic Rasayana on Menopausal Fatigue | Ancient Science of Life | Clinical Study with n=42 women; Rasayana treatment including Ashwagandha and Amalaki reduced fatigue and improved vitality and overall quality of life. |
| 29 | Bordia A, Verma SK, Srivastava KC. 1997 | Experimental Study | Effect of ginger (<i>Zingiber officinale</i> Rosc.) and Fenugreek (<i>Trigonella foenum graecum</i> L.) on Blood Lipids, Blood Sugar and Platelet aggregation in patients with Coronary Artery Disease | Prostaglandins, Leucotrienes and Essential Fatty Acids. | Ginger administered to CAD patients showed significant reduction in platelet aggregation induced by the two agonists while Fenugreek administered CAD patients also with NIDDM, significantly decreased total cholesterol and triglycerides without affecting the HDL-c. It also reduced the blood sugar significantly in NIDDM (non-CAD) patients. |

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| 30 | Khulbe A. 2015 | Review | Asparagus Racemosus(Shatawari)- A Multipurpose plant | European Journal Of Pharmaceuti cals & Medical Research | Several studies including animal experiments have shown <i>Asparagus racemosus</i> to posses anti-abortificant, antidepressant, anti-diarrhoeal, antiulcerogenic, antibacterial, analgesic and antioxidant activities. |
| 31 | Dighe S.A. et al. 2020 | Review | Role of Ashokarishta In Raktapradara (Menorrhagia) A Review | European Journal of Pharmaceuti cal and Medical Research | <i>Ashoka (Saraca asoca)</i> is having haemato-protective and stimulating action on endometrium. <i>Ashokarishta</i> (Fermentive preparation in Ayurveda) pacifies and purifies blood making is useful in menorrhagia. |
| 32 | Swar G, Shailajan S, Menon S. 2017 | Experimental Study | Activity based evaluation of a traditional Ayurvedic medicinal plant: <i>Saraca asoca</i> (Roxb.) de Wilde flowers as estrogenic agents using ovariectomized rat model. | Journal of Ethnopharm acology | HPTLC of ethanolic extract of <i>Saraca asoca</i> Flower showed presence of markers like quercetin, luteolin, kaempferol and β -sitosterol. It was found safe at 2000mg/kg body weight oral dose in rats. The 400 mg/kg high-dose treatment showed most significant estrogenic effects as compared to ovariectomised control group. |
| 33 | Kausar et al. 2016 | Review | Ethnobotanical, phytochemical and pharmacological properties of <i>Saraca asoca</i> bark: A Review | European Journal of Pharmaceuti cal and Medical Research | <i>Saraca asoca</i> bark exhibits various pharmacological activities, it is astringent, haemostatic, antihelmintic, antibacterial and has diuretic effects. Hence, widely used for managing menorrhagia, dysmenorrhea, and abnormal uterine bleeding. |
| 34 | Shah et al 2005 | Experimental Study | Attenuation of Stress- Elicited Brain Catecholamines, Serotonin and Plasma Corticosterone Levels by Calcined Gold Preparations Used in Indian System of Medicine | Basic & Clinical Pharmacolo gy & Toxicology | Gold preparations (Ayurvedic Swarna Bhasma and Unani Kushta Tila Kalan) used proved significant in restoring elevated levels of norepinephrine, epinephrine, dopamine, serotonin, and corticosterone to almost normal levels after restraint stress. |
| 35 | Samarghandian et al. 2017 | Review | Honey and Health: A Review of Recent Clinical Research | Pharmacogn osy Research | Based on various clinical studies Honey is proved to possess antioxidant, anti-inflammatory, anti-cancerous, anti-microbial and anti-metastatic properties. It is used for control and management of, DM, cancer, wound-healing, asthma, and even cardiovascular, neurological, and GI disorders. |
| 36 | Hsueh et al. 1975 | Experimental Study | Progesterone Antagonism of Estrogen Receptor and Estrogen- Induced Growth | Nature | Various symptoms develop in menopause due to estrogen deficiency. Progesterone has antagonistic action to oestrogen. It interferes with the replenishment of cytoplasmic receptors resulting in reduced sensitivity towards oestrogen in uterine tissue. |

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| 37 | Reddy et al. 2003 | Experimental Study | Effect of Prawal Bhasma, a Natural Source of Bone Mineralization in Rats | Uttar Pradesh Journal of Zoology | Animal Study with 24 rats overrectomised. Prawal Bhasma resulted in better and improved bone health based on various parameters including increased bone mineral density, impact strength, SEM and CT-Scan supporting and promoting traditional use of Prawal Bhasma in management of bone metabolic disorders like osteoporosis. |
| 38 | Palbag S., Pal K, Dhiman S., Nandi M.K., De B.K, D.N.S. Gautam 2013 | Review | Pharmaceutics, Ethno Pharmacology of Ayurvedic Marine Drugs: A Review | International Journal of Research in Ayurveda and Pharmacy | Ayurveda has mentioned a several marine drugs with their unique processing, purification and chemistry, including; Pearl, Coral, Ambergris, Cowries, etc that can be used for management of various diseases such as, hyperacidity, dyspepsia, paralysis, cancer and eye diseases among others. |
| 39 | Garima & Rajesh Gupta 2016 | Review | Conceptual Study On Madhwadi Yoga In Geriatrics | International Ayurvedic Medical Journal | <i>Madhwadi yoga</i> , a rejuvenative formulation with its powerful ingredients, for elderly when started at 50 years of age, helps enhancing immunity, delays age-related sign and symptoms and prevents against communicable diseases. It also strengthens major organs preventing systemic diseases in old age. |
| 40 | Shamkuwar, Sujata et al. 2019 | Experimental Study | A Case Report on Management of Menopausal Syndrome Through Ayurveda | International Journal of Advanced Research | A 48 years old woman with HTN presented with various complaints and Osteoporosis was found on BMD test was given Ayurvedic formulations and drugs (Duration-5 months), got moderately relieved in 2 weeks while complete relief was found in 2 months. |
| 41 | Deole YS, Thakar AB, Chandola HM, Ravishankar B. 2012 | Experimental Study | Effect of Rasayana Ghana tablet (An Ayurvedic formulation) on improving quality of life of stressed individuals. | International Journal of Ayurvedic Medicine | Total n=108. Rasayan Ghan tablets proved statistically significant in improving physical, psychological symptoms, stress adaptation, enjoying life, and overall quality of life on various subscales. |
| 42 | Modi MB, Donga SB, Dei L. 2012 | Experimental Study | Clinical evaluation of Ashokarishta, Ashwagandha Churna, and Praval Pishti in the management of menopausal syndrome. | Ayu | n=115 women between 40-55years of age. Therapy found safe and effective with Statistically significant decrease in MRS total score (p-value <0.001) was seen. Total MRS score decreased from baseline 22.43 to 5.29 at 84th day after treatment, MENQOL improvements were also seen in all four domains i.e. vasomotor, psychosocial, sexual, and physical. |

Table.1 Different Related Research Articles cogitated for study

| S. No. | Drug/Formulation | Major Properties | Major Use |
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| 1. | <i>Amalaki</i> | Anxiolytic, anti-inflammatory, antioxidant, immuno-modulatory, analgesic, diuretic, ^{xl} antipyretic, cytoprotective, gastro protective, anti-carcinogenic and anti-metastatic activity ^{vii} | Rejuvenative, Stress, Depression, Over- all Physical & Psychological Health |
| 2. | <i>Ashwagandha</i> | Anti-Tumour effects, anti-arthritis, reduces risks of breast cancer and other tumours, and reduces chronic stress ^{xl-xl} | Tumours, Arthritis, Chronic Stress, Depression & Debility |

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| 3. | <i>Methi</i> | Phytoestrogen, neurocognitive stress possess anti-oxidant, anti-diabetic, anti-cataract, anti-carcinogenic, immunomodulatory ^{x1} and hypocholesterolemic effect ^{x1} | Memory loss, Hot Flushes, Palpitations, Parasthesia & Cataract |
| 4. | <i>Guduchi</i> | Anti-inflammatory, anti-fibrotic, immunomodulatory, immuno-potentiating, antipyretic and adaptogenic activity ^{x1} and sedative, analgesic, anxiolytic. ^{xi} | Rejuvenative, Physical & Psychological Health, helpful in Immuno-compromised |
| 5. | <i>Shatavari</i> | Antioxidant, anti-cancer, immunomodulatory, diuretic, adaptogenic, cardiogenic and anti-allergic properties, bone formation ^{x1} | Decreased Libido, Debility, Osteoporosis, Sexual Health, Cardiac problems & allergic conditions |
| Compound | | | |
| 1. | <i>Ashokarishta</i> | Phytoestrogenic activity ^{x1} , anti-inflammatory, anti-cancerous, antimicrobial, anti ulcerous, CNS depressant and anthihelminthic property. ^{x1} | Anxiety, Depression, Insomnia, Sexual & Bladder problems |
| 2. | <i>Praval Bhasm</i> | Prevention Of Osteoporosis, anti-inflammatory action and cytotoxic activity against breast adenocarcinoma ^{x1} | Cancer prevention, Osteoporosis & Bone Metabolic Disorders |
| 3. | <i>Rasayan Churna</i> | Monoamine Oxidase (MAO) inhibiting activity, mood elevation and feeling of wellness and betterness ^{x1} | Stress, Anxiety, Psychological & Emotional Well Being, improves QoL |
| 4. | <i>Madhwadi Yoga</i> | Potent anti-depressant, has anti- anxiety, analgesic properties and has also free radical scavenging activity, cardiogenic, immunity booster and improves intelligence and memory ^{x1} | Psychological Disorders, Delays Ageing |

Table 2 Compilation of Drugs' Properties & Uses