THEORETICAL ESTABLISHMENT OF MAINTAINENCE OF HEALTH DURING PERI-Menopause THROUGH BIOACTIVE COMPOUNDS OF ASHWAGANDHA

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ABSTRACT
Perimenopause is the time between the onset of the climacteric and the year after the last menses. It is the period of transition in a woman’s life from reproductive to non-reproductive state and begins between 40 to 50 years of age. According to Ayurveda, it is the Adhirudha Avastha in a woman’s life which corresponds to Perimenopause. It is the physiological process. But due to tremendous change in lifestyle of today’s woman, the physiological changes do not become easy and affects her day-to-day life. So, it is essential to strengthen the body physiology to cope up with the physiological changes. Ayurveda believes in prevention rather than cure. Rasayana Chikitsa is described in Ayurveda as a systematic and scientific method of maintaining longevity and preventing diseases. Rasayana drugs are capable of imparting suitable body components namely Rasa and Dhatu. This Chikitsa is known as Rasayana Chikitsa. This Chikitsa helps in protection and promotion of health. Out of the multiple Rasayana herbs, in this article role of Ashwagandha will be discussed to attain silent menopause. Relation of bioactive components and desirable effects is discussed in this article.

Keywords: Ashwagandha, Perimenopause, Rasayana
INTRODUCTION

In Ayurveda, care of Female in every phase of her life has been given importance. Ageing is an unavoidable process which involves transition from one stage of life into other. This causes tremendous physiological changes in a woman’s body. The state of Doshas, Dhatus and Mala keep on changing according to age, day, night, period of digestion by accommodating the changes, and thus help in this transition. Rajonivritti is an inevitable manifestation of ageing process in women. It occurs in a naturally degenerated body at the age of fifty years. Taking this into consideration the epochs of women’s life are classified as follows with special reference to menstruation, procreative capability, sexual maturity, etc.

There are mainly 3 epochs in a woman’s life:

1. Bala Avastha - from birth up to 16 years of age.
2. Rajaswala Avastha - between 16-50 years.
3. Vridha Avastha - beyond 50 years of age.

Rajaswala Avastha comprises of two subdivisions- Tarun (16years-32years) and Adhirudha (32-50years of age)

Perimenopause comes in the early stage of Rajonivritti which is called the Adhirudha Avastha. Climacteric is the alternative word for Perimenopause. From the Greek word kilemaker (meaning rung of the ladder) it signifies a major movement of life’s ladder and is often used synonymously with Perimenopause or ‘the change’. It marks the transition from the reproductive to the non-reproductive state, the menopause being the specific event within that phase. Hence the term Perimenopause will be used to denote the early stage of Rajonivritti.

The word Menopause comes from Greek word ‘Menos’ (month) and ‘Pausis’ (cessation) and represents a watershed in the reproductive life of a woman. While the menopause can sometimes be a sudden event, for most women there is a gradual change in menstrual pattern preceding the menopause as ovarian activity fluctuates, which may be accompanied by troublesome symptoms; this is called the Perimenopause.

Cessation of menstrual cycle and end of reproductive phase of life, after certain time period with many psycho-physiological changes comes under the title of ‘Rajonivritti’. The term, Rajonivritti is made up of two words viz. ‘Rajah’ and ‘Nivritti’. Rajah means to give colour to the substance. Here in the context of Rajonivritti, the word Rajah shall be considered as Aartava (ovum) (S. Sh. 3/10) & Stripushpa (menstrual discharge) (S. Su. 14/6). Nivritti: Meaning of Nivritti can be stated as ‘Apravritti’, Virati, Uparati. Meaning of all the words is summarized as accomplishment, fulfillment, completion, end, cessation. The meaning of Nivritti is understood as end or cessation. Thus, the whole term Rajonivritti means ‘end of Aartava Pravritti’ or ‘cessation of Raja’. Vata Dosha being the dominant Dosa in this period, Kapha Dosha is in its Kshaya Avastha while Pitta Dosha in its Chaya Avastha.

Rajonivritti Kala is mentioned by most of the Acharyas as 50 years. Acharya Sushruta said that menarche occurs at the age of 12 years and due to the effect of aging menopause occurs at the age of 50 years. Acharya Vagbhata and Bhavamishra mentioned the same age for menarche & menopause.

Types of Rajonivritti: There are two types of Rajonivritti:

1) Kalaja Rajonivritti: Kalaja means Rajonivritti occurring at the age of 50 years. Swabhava, Kala, Vayu and Jara awastha can be considered as biological factors which stimulate Rajonivritti. All these factors lead to Dhatukshay, Vata Vridhi and Kapha Kshay.

2) Akalaja Rajonivritti: Akalaja Rajonivritti means Rajonivritti occurring before or after the age of 50 years.

Physiological changes during Perimenopause:
Body is made up of 1) Dosha 2) Dhatu 3) Mala. Perimenopausal changes on the basis of Dosha, Dhatu, Mala Vichar:

1) Dosha vichar during Perimenopause: Doshas are biological energies found throughout the human body and mind. They govern all physical and mental processes and provide an individual blueprint for health to every living being. Ayurveda quotes that Dosha changes according to age, day and night, period of digestion.
Dominance of Doshas in different stages of age\textsuperscript{7} - there is dominance of Kapha Dosha in Balavastha (up to 16 years); dominance of Pitta Dosha in Madhyam Avastha (16 to 50 years); dominance of Vata Dosha in Vridhavastha (beyond 50 years). Thus, we can observe that early stage of Rajonirvat Avastha is dominated by Vata. So in this phase, Vata Vridha Lakshana are seen:

Due to Vridha Vata Lakshanas seen according to Acharya Vagbhata\textsuperscript{8}: Stransa (can be correlated with prolapse uterus from its anatomical position), Vyaas (laxity, loss of tone of organs), Vyadha (needling pain piercing pain), Swap (loss of tactile sensation), Saad (loss of strength), Ruuk, Toda, Bheda (continuous, pricking/crushing pain), Sanga (obstruction), Angabhangha (bodyache), Sankoncha (atrophic changes in body and reproductive organs), Kampa (tremors), Parushya, Rukshata (dryness in vagina and over all body), Stambha (feeling of stiffness in joints), Kashyarasata (weight loss), Aarakta Varnata, Shyava, Aaruna Varnata (skin discolouraton blackish, reddish, etc).

\textbf{Rajonash}\textsuperscript{9}

When Vata Dosha is in Vridhavastha, there is Pitta Dosha and Kapha Dosha Dushhti.

The functions of Pitta are impaired due to Vridha Vata and following symptoms are seen in Perimenopausal (Adhirudha Avastha)\textsuperscript{10} - Apakti (improper digestion resulting in bloating/constipation), Adarshana (visual errors), Vishama Ushma (abnormal temperature/hot flashes), Vikruta Varna (impaired colour and complexion), Bhaya (fear/loss of confidence), Moha (delusion), Vishada (worry).

Similarly, functions of Kapha Dosha are disturbed due to Vridha Vata and following symptoms are seen in Perimenopausal\textsuperscript{11} - Shaithilya (flaccidity and looseness), Irritability (loss of patience), Decreased libido (decreased Vrushata, Krushata (emaciation), etc.

2) \textit{Dhatu vichar} during Perimenopause: Dhatus are the seven fundamental principles that support and nourish the basic structure of the body. They have the nature to be vitiated and are known as Dushtha. Due to the Vridh Vata in perimenopause, Saptak Dhatus are affected. There is gradual decline in all the Dhatus is uniformly noted during Perimenopause:

Rasa- Rasa Dhatu Kshay occurs during Perimenopause. The Lakshanas of Rasa Dhatu Kshay can be correlated to irregular menses, dry /tanned/rough skin, palpitation, drowsiness. Vikruti in Rasa Dhatu causes Uttarottar Dhatu Vikruti/Kshay.

Rakta- Amla Preeti, Shishira Preeti, Sira Shaithilya, Rukshata

Mamsa- Spik Shushkata, Sandhi Vedana, Glani Meda- Shrama, Alpa Api Cheshhte Shwasa

Asthi - Sandishshoola, Keshpata, Danatpata

Majja- Bhrama, Timir Darshanam, Daurbalya, Laghu Asthi (thinness, weakness and lightness of bones)

Shukra- Chirat Praseka (delayed ejaculation), Vrushana Medhra Vedana (pain in scrotum), Pandutva (pallor), Shrama, Klaibhya, Shukra Avisarga (no ejaculation, no ovulation)

Oja- Bibheti(fireful), Durbala, Abhikshnam (repeatedly worries without any reason)

3) \textit{Mala Vichar} during Perimenopause: Those which pollute other structures, being themselves, waste products are called Mala. They purify body after getting excreted. As Saptadhatu are affected, the Mala produced by them also get affected during Perimenopause.

There is Rasadi Dhatu Kshay found due to Vata Dosha dominance. Rasa Dhatu Kshay affects the Upadhatu of Rasa- Stanya and Mala- Kapha. Hence its Dushhti or Kshay is observed. Similarly, each Uttarottat Dhatu which is produced causes Dushtha of the Mala produced during the process.

Symptoms of Perimenopause according to Ayurveda:


b) Pittaja symptoms: Apakti, Adarshana, Vishama Ushma, Vikruta Varna, Bhaya, Moha, Vishada

c) Kaphaja Symptoms: Shaithilya, Krushata, Spik Shushkata, Sandhi Vedana, Glani, Shrama, Alpa Api Cheshhte Shwasa

Symptoms of Perimenopause according to Modern science: 35 symptoms have been associated with menopause so far\textsuperscript{12}: 

\url{http://www.iamj.in/posts/images/upload/_.pdf}
1. Hot flashes, night sweats and/or cold flashes, clammy feeling
2. Bouts of rapid heartbeat
3. Irritability, mood swings
4. Sudden tears
5. Trouble sleeping through the night (with or without night sweats)
6. Irregular periods; shorter, lighter periods; heavier periods, flooding; phantom periods, shorter cycles, longer cycles
7. Loss of libido
8. Dry vagina
9. Crashing fatigue
10. Anxiety, feeling ill at ease
11. Feelings of dread, apprehension, doom
12. Difficulty concentrating, disorientation, mental confusion
13. Disturbing memory lapses
14. Incontinence, especially upon sneezing, laughing; urge incontinence
15. Itchy, crawly skin
16. Aching, sore joints, muscles and tendons
17. Increased tension in muscles
18. Breast tenderness
19. Headache change: increase or decrease

The above-mentioned symptoms can be interpreted according to Doshas as follows:

<table>
<thead>
<tr>
<th>Dosha</th>
<th>Symptoms according to modern science</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vata vitiated symptoms</td>
<td>Bouts of rapid heartbeats, irritability, mood swings, sudden tears, insomnia, irregular menstruation, dry vagina, loss of libido, anxiety, difficulty in concentrating, disorientation, mental confusion, incontinence especially upon sneezing, itchy/crawly skin, aching joints, muscles and tendons, increased tension in muscles, headache, sudden bouts of bloat, depression, exacerbation of existing conditions, hair loss or thinning, tingling in extremities, osteoporosis, fingernails softer, crack or break easier.</td>
</tr>
<tr>
<td>Pitta vitiated symptoms</td>
<td>Hot flashes, night sweats, breast tenderness, gastrointestinal distress, indigestion, nausea, changes in body odour, gum problems, increased bleeding, burning tongue, burning roof of mouth, bad taste in mouth, change in breath odour.</td>
</tr>
<tr>
<td>Kapha vitiated symptoms</td>
<td>Fatigue, weight gain, increase in allergies</td>
</tr>
</tbody>
</table>

Thus, it can be concluded that majority of the symptoms observed in Perimenopause are due to vitiated Vata Dosha in the body.

Perimenopause is a physiological process. But due to tremendous change in lifestyle of today’s women, these physiological changes do not become easy and affect their day-to-day life. So, it becomes essential to strengthen body physiology to cope up with these changes.

Ayurveda believes in prevention rather than cure. Rasayan is one of the concepts of prevention & maintenance of health. The term Rasayan is a compound word comprising of two words ‘Rasa’ & ‘Ayan’. Rasa is derived from the verb root ‘Rasa’ in the sense of Gati (movement). It means the pure and minute essence of food which has the ability to pass into minute channels. Rasa Dhatu is the first Dhatu produced after digestion of food. Due to liquidity it circulates and saturates persons of all ages, promotes the growth and development of body tissues & sustains the well-formed dhatus. The other word constituting Rasayan is Ayan. The word Ayan has the sense of attainment. Thus, the term Rasayan is a compound word which denotes the process of attaining Akara rasa of good quality for the body. Rasayana helps attain Deerghayu, Smriti, Medha, Arogya, Bala, Kanti.

Ashwagandha is one such drug which is believed to provide beneficence during Perimenopause. Ashwagandha is a Rasayana herb which means smell of the horse (Ashwa-horse, Gandha-smell). It refers to both its
unique smell and ability to increase strength. Any drug or formulation for Perimenopause must meet the need of the psycho-physical condition and changes in the physiology during Perimenopause. Ashwagandha helps producing Samyavastha of all the three Doshas thus helping attain a healthy menopause.

Pharmacodynamics of Ashwagandha

Rasa- Madhur Tikta, Kashay
Vipak - Madhur
Veerya – Ushna
Guna - Laghu, Snigdha
Doshaghnata-Vata Shamak (Madhura Rasa, Madhura Vipaka, Snigdha Guna and Ushna Veerya), Kapha Shamak (Tikta, Kashay Rasa, Ushna Veerya)
Rogaghanata- Medhya, Nirajanan, Stanyajan, Vedanasthapana, Balya, Vajikarana, Rasayana, Shothahara, Mastishka Shamak, Deepana, Anulomana, Krimgighna, Raktabharashamak, Vajikarana, Garbhashay shothahara, Mutrala
Gana: It is mentioned by Acharya Charak in Balya, Bruhaniya, Madhuraskandha Gana
Kula: Kantakarii Kula

Chemical composition of Ashwagandha: Laboratory analysis has revealed over 35 chemical constituents contained in the roots of Withania somnifera. They are:
- Alkaloids- withanine, somniferine, somnine, somniferinine, withanamine, pseudo-withanine, tropine, pseudotropine, 3-a-gloyloxytropane, choline, isopelleretine, anaferin, cuseobygrine, anahygrine
- Steroidal lactones- withanolides, withaferins
- Acylsterylglucosides containing an additional acyl group (sitoindosides VII and VIII)
- Withanolides with a glucose at carbon 27 (sitoindoside XI and X)

Much of Ashwagandha’s pharmacological activity has been attributed to two main withanolides- withaferin A and withanolide D.

There is ongoing research worldwide to study the effect of bioactive compounds found in herbal medicinal plants. Animal studies or human clinical studies are available as references to determine the ingredients causing desired effect in a particular clinical condition.

1) Researchers discovered that Ashwagandha significantly reduces the level of stress. Animals were given the herb an hour before the foot shock. They experienced reduced level of stress. Thus, ashwagandha is a proven anti-stress, adaptogenic drug. Ashwagandha is a potent anti-inflammatory drug due to the presence of biologically active steroids. Out of them Withaferin-A is a major component. It is as effective as hydrocortisone sodium succinate.

2) Ashwagandha was administered to animal models (mice). They were previously treated with three immunosuppressive drugs viz. cyclophosphamide, azathioprine and prednisolone. After giving Ashwagandha it was found that the myelo-suppression in mice was prevented. Also, it significantly increased haemoglobin concentration, RBC count, platelet count and body weight in mice. Thus, Ashwagandha is a proven immunomodulatory and anti-ageing drug.

3) Clinical trials on human subjects showed hypoglycemic, diuretic and hypocholesterolemic effects of Ashwagandha. Powder od roots of Ashwagandha were given to six mild NIDDM subjects for 30 days. The blood and urine samples of the subjects were studied for different suitable parameters before and after the treatment period. Results showed that roots of Ashwagandha is a potential source of hypoglycemic, diuretic, hypocholesterolemic agents.

Summary: Thus, Ashwagandha is a proven anti-stress, anti-inflammatory, immunomodulatory, anti-ageing, antioxidant, sedative and tonic drug.

Perimenopause:

1) New study documents lack of screening for depression and need to better educate healthcare providers on women’s mental health issues during the menopause transition. Almost 40% of women experience symptoms of depression during perimenopause, yet it often goes undetected and untreated because many healthcare providers aren’t screening for it and aren’t prepared with treatment options. A new study analysed screening practices by...
women’s healthcare providers and their management of depression during perimenopause.

2) 23 studies from six electronic databases were systematically searched. Significant effects in exercise-based intervention and mind-body therapies were found for quality of life, menopausal symptoms and depression but not for hot-flashes. Thus, healthcare professionals can consider exercise-based interventions or mind-body therapies to manage menopausal symptoms.

3) This study aimed to evaluate the effectiveness of a behaviour change counselling program which was planned in order to improve the women self-care during the perimenopausal stage. The study was a quasi-experimental type, conducted before and after counselling intervention, to evaluate effect of health behaviour counselling on self-care of 42 women aged 39 to 51 (during climacteric stage) in areas of general health, physical activity, nutrition, sleep, psycho-social health, body image, sexual health. Results showed significant difference between the self-care score before counselling, and one and three months later, in all areas except body image and sleep. Thus, it was concluded that women need more information about menopause process to manage its symptoms.

4) Aim of this study was to compare the clinical efficacy and safety of electro-acupuncture therapy and escitalopram on perimenopause women with mild-moderate depressive symptom. A multicentre, randomized, positive-controlled clinical trial was conducted at 6 hospitals in China. It showed that EA treatment is effective and safe in relieving depression symptom and improving the quality of life in the perimenopausal depression.

**Summary**

During Perimenopause anti-stress, anti-ageing, immunomodulatory, anti-inflammatory, cognition promoting, anxiolytic, adaptogenic, sleep promotive activity is desirable. Ashwagandha is found to be active for these effects in one or more ways.

**DISCUSSION**

Bioactive compounds are those compounds in food that influence physiological or cellular activities in animals or humans that consume them. They are found in small quantities but are beneficial for health. This potential is assessed through animal or human trials. During Perimenopause the priority is to reduce stress, mood swings, hot flashes. As mentioned above, adaptogenic, sleep promotive, anxiolytic, anti-ageing, anti-stress action is needed during this period. Ashwagandha is a proven drug showing all these activities. Perimenopause is a *Vata Dosha Pradhan Avastha*. Though it is a physiological process, it affects day-to-day life of the woman. Ashwagandha is *Snigdha, Ushna, Madhura Rasa, Madhura Vipaka* and hence *Vata Shamak*. Thus, Ashwagandha can be a drug of choice to help face the physiological changes during Perimenopause period and attain Menopause smoothly.

**CONCLUSION**

The modern-day changes in lifestyle may cause some short term or long-term health complications. Ayurveda has advocated some drugs which can be used as preventive or curative medicines during Perimenopause. Ashwagandha is one such drug. The claim of efficacy of Ashwagandha in woman during Perimenopause matches the bioactivity of chemicals for most desired action.

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