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Embracing Natural Remedies: The Role of Ashoka, Ashwagandha, And Rhodiola Rosea In Managing Mental Health During Menstrual Cycle

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ABSTRACT :

The article being reviewed discusses how mood and mental health are influenced by hormonal changes during the menstrual cycle. Emotional well-being has been found to be affected by the levels of two hormones, estrogen and progesterone, that vary in a woman's menstrual cycle. It is important to know these details as they will enable many people who have a problem managing their own mental health throughout the month to do so. Furthermore, this study delves into the possible therapeutic roles played by some herbs including Ashoka (Saraca asoca), ashwagandha (Withania somnifera) and Rhodiola rosea. These plants are used in different cultures for improving health status and recent studies show that they can be beneficial for correcting menstrual related mood disorders. Ashoka is said to have an effect on hormones through its active ingredients. Research has suggested that it might help reduce menstrual pain and emotional stress. An adaptogenic herb called ashwagandha has gained popularity because of its anxiety-reducing properties. Ashwagandha appears like a viable natural remedy since it counteracts stress which worsens moods during menstruation. Rhodiola rosea is among the other adaptogens that is being considered for its ability to modify stress response and enhance mood control. This article evaluates critically scientific literature available, and therefore, integrates what has been established about the efficiency of these drugs and how they work.

Keywords: Mood disorder, hormonal fluctuation, herbal plant.

INTRODUCTION :

During menstruation hormones influence women's moods, leading to anxiety, irritability, and depression. Serotonin and dopamine, two common neurotransmitters during menstruation, disrupt brain chemicals, affecting pleasure, attention, and mood. Low levels of these hormones cause food cravings, anxiety, depression, and irritability. Because they are so subtle, mood swings that occur during menstruation are often overlooked. The emotional roller coaster throughout the menstrual cycle is caused by the fluctuating hormone levels, but occasionally the intensity of mental disorders can be concerning and may indicate a mental problem.[1] Many research streams during the past few decades have expanded the critical functions of ovarian hormones, including progesterone and estrogen, outside of the reproductive system. One major target for the effects of progesterone and estrogen is the brain. Throughout a woman's life, the neuroendocrine conditions provided by both hormones alter the form and function of brain.[2]
Women are more likely to experience anxiety disorders and PTSD due to the menstrual cycle, which involves the cyclical rise and fall of estradiol, progesterone, and psychotropic metabolites, and can worsen psychological and physical symptoms. During the late luteal/premenstrual and early follicular phases of the menstrual cycle, when estradiol and progesterone are decreasing or low, psychological and physical symptoms are sometimes made worse in healthy women.[3] The menstrual cycle of women is tightly regulated by endocrine, autocrine, and paracrine hormones that regulate ovarian follicular development, ovulation, luteInisation, luteolysis, and endometrium remodelling. [4]

THE MENSTRUAL CYCLE :

Menstruation, derived from Latin words for "months," is a natural occurrence affecting various aspects of a woman's life, including academic achievement, physical condition, behavioral rhythm, food, activity, mood, and sleep pattern. Menstrual blood contains uterine blood and tissue.[5]The female reproductive system undergoes a series of natural changes, including the ovarian and uterine cycles, which enable pregnancy. The ovarian cycle

controls egg production and estrogen release, while the uterine cycle prepares the uterus for embryonic development.[6]

Hormones, such as luteinizing and follicle-stimulating hormones from the pituitary gland, regulate the menstrual cycle by promoting ovulation and stimulating the production of estrogen and progesterone.[7]

ENDOCRINE GLAND	HORMONE	FUNCTION
ANTERIOR PITUTARY	FSH	Stimulates follicular growth in ovaries Stimulates estrogen secretion (from developing follicles)
	LH	Results in the formation of a corpus luteum Surge causes ovulation
OVARIES	ESTROGEN	Thickens uterine lining (endometrium) Inhibits FSH and LH for most of cycle Stimulates FSH and LH release pre-ovulation
	PROGESTERONE	Thickens uterine lining (endometrium) Inhibits FSH and LH[8]

The menstrual cycle is regulated by hormones through a positive and negative feedback circle. During puberty, the hypothalamus secretes further GnRH, adding pulsatile affair. This is also transferred to the anterior pituitary, releasing LH and FSH. Theca and granulosa cells in the ovaries produce these hormones, with upregulation or downregulation of GnRH receptors.(9)

PHASES OF MENSTRUAL CYCLE :

When blood first appears in the vagina on the first day of period, it's when the menstrual cycle's day count starts. The menstrual cycle duration of 28 days, which is the normal for women, has been assumed in this section. Four main phases can be observed over the entire menstrual cycle duration

1. Menstrual phase (From day 1 to 5)
2. Follicular phase (From day 1 to 13)
3. Ovulation phase (Day 14)
4. Luteal phase (From day 15 to 28) (10)

MENSTRUAL PHASE

The first phase of menstruation lasts from day 1 to day 5, during which time the uterus sheds its inner lining and women get cramps from the uterine wall contracting.[11]

FOLLICULAR PHASE

The follicular segment, spanning from the primary day of menstrual bleeding to ovulation, is a critical degree in the menstrual cycle. While normally lasting for approximately 14 days, the duration can range among girls. This phase is marked by way of tremendous hormonal modifications, commonly regarding the follicle-stimulating hormone (FSH) and luteinizing hormone (LH), both produced by means of the pituitary gland. As menstruation comes to an stop, FSH stimulates the growth of ovarian follicles, every containing an immature egg. At the equal time, increasing ranges of estrogen cause the

thickening of the uterine lining in practise for ability being pregnant.[12]

OVULATION PHASE

the ovulation phase stands out as a critical juncture in the menstrual cycle, bearing profound implications for fertility and family planning. Typically occurring around the midpoint of the menstrual cycle, this phase is characterized by the release of a mature egg from the dominant ovarian follicle. The orchestration of this process involves a carefully timed surge in luteinizing hormone (LH), triggered by elevated levels of follicle-stimulating hormone (FSH) during the preceding follicular phase. The released egg traverses the fallopian tube, awaiting fertilization by sperm. Ovulation is accompanied by several distinctive physiological changes, including alterations in cervical mucus consistency, a subtle rise in basal body temperature, and, for some women, the experience of ovulation-related pain known as mittelschmerz.[13]

LUTEAL PHASE

The luteal phase, constituting the latter part of the menstrual cycle, is a pivotal stage characterized by the transformation of the ruptured ovarian follicle into the corpus luteum—a temporary endocrine structure. This transition is triggered by the surge in luteinizing hormone (LH) during ovulation. The corpus luteum, in turn, secretes progesterone and estrogen, orchestrating changes in the uterine lining to create a receptive environment for a potential embryo. Spanning approximately 14 days, the luteal phase is relatively consistent in duration, regardless of the overall cycle length. Physiological indicators of the luteal phase include a sustained elevation in basal body temperature, indicative of increased progesterone levels, and changes in cervical mucus. If fertilization does not occur, the corpus luteum degenerates, leading to a decline in progesterone and estrogen, ultimately triggering menstruation. The luteal phase is integral to fertility, and its duration and hormonal dynamics play a crucial role in reproductive health. Comprehensive insights into the intricacies of the luteal phase not only enhance our understanding of the menstrual cycle but also have implications for assisted reproductive technologies and the diagnosis and treatment of conditions such as luteal phase defects.[14]

Causes of mood changes during the menstrual cycle :

Menstrual Phase:

The causes of mood swings during the menstrual phase are primarily rooted in hormonal fluctuations that accompany the onset of menstruation. As estrogen and progesterone levels decline in preparation for the shedding of the uterine lining, the intricate interplay between these hormones and neurotransmitters in the brain can lead to noticeable changes in mood. The reduction in estrogen levels, in particular, may influence serotonin levels, a neurotransmitter linked to mood regulation. This hormonal shift can give rise to mood swings, irritability, and feelings of fatigue. Additionally, the physical discomfort associated with menstrual cramps and bloating may contribute to emotional fluctuations. Beyond hormonal factors, individual variations in sensitivity to hormonal changes, stress levels, and overall health can also play a role in the intensity and manifestation of mood swings during the menstrual phase. Recognizing these contributing factors is crucial for understanding and effectively managing mood changes during menstruation, paving the way for tailored strategies to enhance emotional well-being.

Follicular phase

The causes of mood changes during the follicular phase, the initial stage of the menstrual cycle, are intricately linked to hormonal fluctuations, particularly those of estrogen. As estrogen levels gradually rise during this phase, its mood-enhancing properties come to the forefront, fostering feelings of well-being and positivity. This hormonal shift not only influences neurotransmitters like serotonin but also contributes to increased energy levels, creating an overall sense of vitality. Beyond hormonal dynamics, social and behavioral factors play a role, with some women exhibiting heightened sociability and interest in social interactions during the follicular phase. Additionally, improved cognitive function associated with estrogen may contribute to a more positive mental state. While these factors contribute to mood improvements for many women, it's crucial to recognize individual variations in hormonal sensitivity and the potential impact of other external factors on mood throughout the menstrual cycle.

Ovulation phase:

The ovulation phase, occurring midway through the menstrual cycle, is marked by the release of a mature egg from the ovary. Mood changes during this phase are primarily influenced by hormonal shifts, with a surge in estrogen being a prominent factor. As estrogen levels peak around ovulation, they contribute to a range of effects on neurotransmitters, including an increase in serotonin, which is associated with feelings of happiness and well-being. This hormonal surge may lead to heightened energy levels, improved mood, and, for many women, an increased sense of confidence and attractiveness. Furthermore, the release of an egg can triggers changes in libido, fostering a heightened interest in sexual activity, which can positively impact mood. While these hormonal dynamics contribute to mood enhancements during ovulation, individual variations, stress levels, and external factors can also play a role in influencing mood during this phase of the menstrual cycle. Understanding these hormonal fluctuations provides insight into the complex interplay between biology and mood regulation.

Luteal phase:

The luteal phase, which follows ovulation and precedes menstruation, is characterized by the presence of the corpus luteum and fluctuations in hormone levels, particularly progesterone. Mood changes during this phase are often associated with the interplay of hormones and their effects on neurotransmitters. As progesterone levels rise after ovulation, some women may experience a range of emotional changes. Progesterone can have calming and sedative effects, but it may also contribute to feelings of fatigue or irritability in certain individuals. Additionally, changes in estrogen levels during the luteal phase can influence serotonin levels, impacting mood and emotional well-being. For some women, premenstrual syndrome (PMS) symptoms may emerge during the later part of the luteal phase, leading to mood swings, irritability, and heightened emotional sensitivity. While these hormonal factors are key contributors to mood changes during the luteal phase, external factors such as stress, lifestyle, and individual variations play a role in shaping the overall emotional experience during this stage of the menstrual cycle. Understanding these hormonal dynamics can provide insights into the complex relationship between biology and mood regulation in the context of the menstrual cycle. [15-16]

Causes of severe hormonal flacuation and mood disorder during menturation :

Polycystic Ovary Syndrome (PCOS):

PCOS is a common hormonal disorder that affects the ovaries. It can lead to irregular menstrual cycles, anovulation (lack of ovulation), and elevated levels of androgens (male hormones). The hormonal imbalances associated with PCOS can result in severe menstrual irregularities and pronounced fluctuations.

Endocrine Disorders:

Disorders affecting the endocrine system, such as thyroid disorders (hypothyroidism or hyperthyroidism), can disrupt the delicate balance of reproductive hormones. Thyroid hormones play a crucial role in regulating the menstrual cycle, and imbalances can lead to irregular periods and severe hormonal fluctuations.

Stress and Mental Health:

Chronic stress can impact the hypothalamus-pituitary-adrenal (HPA) axis and, subsequently, the menstrual cycle. Excessive stress may lead to disruptions in hormonal regulation, resulting in severe fluctuations and irregular periods.
Extreme Weight Changes: Rapid weight loss or gain, as well as extreme exercise or restrictive eating habits, can affect hormone production and menstrual regularity. Hormonal imbalances associated with these changes can lead to pronounced fluctuations and irregular cycle.

Perimenopause:

The transition to menopause, known as perimenopause, typically occurs in the years leading up to menopause. During this time, there can be significant hormonal fluctuations as the ovaries gradually reduce estrogen production. These changes can result in irregular menstrual cycles and pronounced hormonal shifts.

Medical Treatments:

Certain medical treatments, such as hormonal therapies, chemotherapy, or radiation, can impact reproductive hormones and lead to severe hormonal fluctuations. The extent of the impact depends on the specific treatment and individual factors.

Uterine Conditions:

Conditions affecting the uterus, such as fibroids or polyps, can disrupt the normal hormonal signaling between the ovaries and the uterus. These disruptions can contribute to severe hormonal fluctuations and irregular menstrual cycles.
Premenstrual Syndrome (PMS) and Premenstrual Dysphoric Disorder (PMDD): While PMS is common and may cause some hormonal fluctuations and mood changes, PMDD is a more severe form characterized by intense mood swings, irritability, and severe psychological symptoms. Both conditions are linked to hormonal changes in the menstrual cycle [17-18]

ASHOKA TREE :

Saraca asoca, commonly known as the Ashoka tree (lit. "sorrow-less"), is a plant belonging to the Detarioideae subfamily of the legume family. In the cultural traditions of the Indian subcontinent and its surrounding regions, it is a significant tree.The state's official flower of the Indian state of Odisha is the blossom of the Ashoka tree.[19]
The Ashoka is a rain- forest tree. Its original distribution was in the central areas of Deccan plateau, as well as the middle section of the Western Ghats in the western coastal zone of the Indian subcontinent. It is a small, erect, evergreen tree, with deep green leaves growing in dense clusters. Its flowering season is around February to April. The Ashoka flowers come in heavy, lush bunches. They are bright orange yellow in colour and turns into

red before they fall. [20]

GEOGRAPHICAL SOURCE :

Although Asoka is found all throughout India, it is most commonly found in South India, Sri Lanka, Orissa, and Assam.The species can be found up to 750 meters in the central and eastern Himalayas because of its aromatic flowers and foliage, it is planted as an avenue tree.[21]

MORPHOLOGY :

The plant has narrow, elliptic-oblong leaves that are glabrous and 7–30 cm long. Its bark has warts and is dark brown, grey, or nearly black. The stem bark is rough and uneven due to rounded or projecting lenticles. The inflorescences are dense orange corymbs, occasionally white and aromatic. The fruits are flat, oblong, and apiculate pods .[22]

ASHOKA PLANT[shoot with realme 5]

PLANT TAXONOMY [23]

Domain	Eukaryota
Kingdom	Plantae
Phylum	Spermatophyta
Subphylum	Angiospermae
Class	Dicotyledonae
Order	Fabales
Family	Fabaceae
Subfamily	Caesalpinioideae
Genus	Saraca
Species	Saraca asoca

CHEMICAL CONSTITUENT [24-28]

Chemical Constituent	Location in Plant	Approximate Amount
Tannins	Bark, leaves, flowers	0.57%-7.85%
Flavonoids	Bark, leaves, flowers	1.5%-3.5%
Triterpenoids	Bark, leaves, flowers	0.5%-1.5%
Saponins	Bark, leaves, flowers	0.2%-0.8%
Glycosides	Bark, leaves, flowers	0.1%-0.5%
Alkaloids	Bark, leaves, flowers	Trace amounts
Sterols	Bark, leaves, flowers	Trace amounts
Proteins	Bark, leaves, flowers	5%-10%
Carbohydrates	Bark, leaves, flowers	20%-30%

It has been reported that asoca contains tannins, glycosides, flavonoids, and saponins. [29]

Ashoka benefits the lining of the uterus and the ovaries in terms of health. Because of its estrogenic activity, it balances female hormones and is used to treat a variety of women's health issues, including irregular uterine bleeding, menorrhagia, premenstrual syndrome, and menstrual cycle regulation.[30]
It is used as a spasmogenic, oxytocic, uterotonic, antibacterial and antidysentric agent It has also been reported to possess antiprogestational and antioestrogenic activity against menorrhagia .[31]

Ashoka is a herb that is considered to be very effective for females and can help with many hormonal issues that women face. In addition to helping treat endometriosis, it also controls blood levels of FSH and LH, which in turn aids in controlling pubertal maturation, general body development, growth, fortification of the female reproductive organs, menstrual cycle regulation, ovulation stimulation, and corpus luteum formation. [32]

ASHWAGANDHA

INTRODUCTION :

Ashwagandha, scientifically known as *Withania somnifera*, is a medicinal herb that has been a staple in traditional Ayurvedic medicine for centuries. Often called "Indian ginseng" or "Indian winter cherry," ashwagandha is a member of the *Solanaceae f*amily and is indigenous to the arid regions of Africa, the Middle East, and India. Given that the word "ashwagandha" is a combination of the Sanskrit words "ashva," which means horse, and "gandha," which means fragrance, it is implied that the herb has a scent akin to that of horses. [33]

MORPHOLOGY :

Withania somnifera is an evergreen shrub with simple petiolate leaves that can be elliptic-ovate or broadly ovate, with a whitish tomentum on the sides. It grows to 30 to 150 cm tall and has a leaf blade measuring 4-10 cm in length and 2-7 cm in width. Large, alternating leaves grow on vegetative stems, while opposite leaves on floral branches are paired with one large leaf and one small leaf, each with four to 25 tiny, pale green flowers. The plant blooms indefinitely, peaking between March and july.[34]

ASHWAGANDHA PLANT [Shoot with Samsung F41]

PLANT TAXONOMY [35]

Kingdom	Plantae
Phylum	Tracheophyta
Class	Magnoliopsida
Order	Solanales

Family	Solanaceae
Genus	Withania
Species	Withania somnifera

CHEMICAL CONSTITUENTS [36-40]

Chemical Constituent	Plant Part	Concentration
Withanolides	Roots, leaves	0.5-1%
Withaferin A	Roots, leaves	1-0.3%
Alkaloids	Leaves, roots	0.1-0.3%
Steroids Roots	Leaves	0.2-0.4%
Flavonoids	Leaves, roots	0.2-0.4%
Saponins	Roots, leaves	0.5-1%
Glycosides	Roots, leaves	0.2-0.4%
Volatile oils	Roots	0.1-0.2%
Reducing sugars	Roots	0.5-1%

Ashwagandha's acylsterylglucosides and sitoindosides have anti-stress properties. It has been demonstrated that active components of ashwagandha, such as sitoindosides VII–X and Withaferin-A, have strong anti-stress action against acute forms of experimental stress.[41]

Ashwagandha has been demonstrated to have anxiolytic, antidepressant, and neuroprotective properties in animal stress models. Moreover, ashwagandha's effects on luteinizing hormone, follicle-stimulating hormone, testosterone, and progesterone have been shown in animal experiments to support its impact on the generation of sex hormones.[42]

PHARMACOLOGICAL EFFECTS :

The most well-known application of ashwagandha in Ayurvedic medicine is as an adaptogen—a substance that can strengthen our ability to withstand stress. Additionally, preclinical studies have demonstrated the anti-inflammatory, antibacterial, antioxidant, antidiabetic, anti-tumor, anti-aging, and neuroprotective qualities of ashwagandha. Withaferin A and withanolides are two examples of steroidal alkaloids and lactones that are believed to be among the herb's most potent constituents.[43]

Ashwagandha regulates the synthesis of hormones like estrogen, progesterone, and testosterone, which helps maintain hormonal balance.[44]

RHODIOLA ROSEA

INTRODUCTION :

Rhodiola rosea, commonly referred to as "roseroot" or "golden root," is a member of the Crassulaceae family of plants. R. rosea is mainly found growing in high altitude, dry, sandy soil in arctic regions of Europe and Asia.[45]

GEOGRAPHYICAL SOURCE

Rhodiola rosea is found throughout the northern hemisphere, ranging from low-Arctic regions to locations with high temperatures in Asia, Europe, and

North America.[46]

MORPHOLOGY :

Rhodiola rosea is a fleshy plant that grows in height from 5 to 40 cm (2.0 to 15.7 in), with several stems emerging from a short, scaly rootstock. Flowers are 1 to 3.5 mm (0.039 to 0.138 inches) long, with four sepals and four petals. They bloom in the summer and range in color from yellow to greenish yellow, occasionally with red tips. From a single, thick root, several shoots may emerge that range in height from 5 to 35 cm (2.0 to 13.8 in). R. rosea has distinct male and female plants; it is dioecious.[47]

PLANT TAXONOMY

Kingdom:	Plantae
Clade:	Tracheophytes
Clade:	Angiosperms
Clade:	Eudicots
Order:	Saxifragales
Family:	Crassulaceae
Genus:	*Rhodiola*
Species:	***R. rosea [ ]***

CHEMICAL CONSTITUENTS [48-52]

Compound Class	Constituent	Amount (% dry weight)
Phenylethanoids	Salidroside	0.3-3.0
	Tyrosol	0.01-0.1
Monoterpene alcohols and glycosides	Rosavin	0.3-1.0
	Rosarin	0.1-0.5
Essential oils	Octanol	0.05-0.25
	Myrtenol	0.05-0.10
	Geraniol	Trace
	Rosiridol	Trace
	Rosiridin	Trace
Flavonoids	Kaempferol glycosides	Trace
	Herbacetin glycosides	Trace
Other	Gallic acid derivatives	Trace
	Proanthocyanidins	Trace
	Phenylpropanoids	Trace [ ]

This herb helps the body adapt to stress by affecting the levels and activity of serotonin, dopamine, and norepinephrine, neurotransmitters found in different structures in the brain and influencing the central nervous system. It appears that rhodiola inhibits the breakdown of these chemicals and facilitates the neurotransmitter transport within the brain. [53]

PHARMACOLOGICAL EFFECTS :

Research on Rhodiola rosea has revealed that the herb contains antidepressant, anti-fatigue, anti-stress, and anti-anxiety qualities without causing any appreciable negative effects. Apart from treating common disorders like depression, anorexia, binge eating, anxiety disorders, and physical and mental exhaustion, it may also help prevent, lessen, and treat serious illnesses like cancer, diabetes, Parkinson's disease, Alzheimer's disease, and cardiovascular disease.[54]

CONCLUSION :

The many-sidedness of hormonal shifts in the course of menses and their far-reaching influence on mood and mental health are tackled in this reviewed article. The menstrual cycle involves changes in oestrogen and progesterone levels which lead to a mixture of psychological and physiological

developments. Therefore, it is important to understand how these changes affect women's lives. One major theme explored in the article has to do with trying to identify the potential use of plant-based products for mitigating emotional and cognitive symptoms that often accompany hormonal imbalances. In relieving menstrual discomfort, Ashoka with its alleged hormone-stabilizing characteristics seems to be a good choice. Stress-induced mood swings can be improved by considering Ashwagandha, whose adaptogenic qualities make it an alternative option to traditional interventions. Rhodiola rosea is also mentioned as another adaptogen due to its stress-lowering effect, thus expanding botanical choices for menstrual health. A more nuanced understanding of these herbs may be obtained through synthesis of current scientific literature that considers both positive aspects as well as disadvantages including possible side effects and interactions among them .Taking an inclusive view is important in helping people and medical doctors reach sound decisions on incorporating such traditional solutions into their menstruation management. The paper points to the promising aspects of ashoka, ashwagandha, among others as it highlights that their mechanisms are not yet clear and thus calls for further research. It also stresses the significance of encompassing a whole woman's health framework that encompasses individual differences, lifestyle factors and cultural diversity. In conclusion, this article adds value to the larger debates around women's health by offering a deep understanding of the complex linkages between hormones and mood swings as well as mental wellness during a period. This article therefore supports a holistic approach to reproductive health issues that combines both conventional and unconventional practices through an alignment of scientific knowledge with traditional wisdom to help individuals navigate such complexities as their menstrual cycles.

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