

Menstrual Health Formula

Providing essential minerals and vitamins plus traditional herbs
to nourish and balance a woman's body prior to and during menstruation

Overview

Premenstrual syndrome (PMS) is a combination of recurring physical and emotional symptoms that occur in premenopausal women one to two weeks prior to menstruation.¹ The symptoms of PMS may include acne, anxiety, backache, bloating, breast swelling and tenderness, cramps, cravings, fatigue, headaches, irritability, tension, and changes in mood.¹ PMS affects women of all ages. Symptoms may first appear shortly after a young woman reaches menarche or later in adulthood, continuing until menopause.

More than 90 percent of women experience PMS at some point during their lives, according to the American Medical Association's *Encyclopedia of Medicine*.¹ Thirty to 40 percent of American women report PMS symptoms so severe that it interferes with daily activities,² according to the National Women's Health Information Center. Sadly, nearly seven percent of American women have premenstrual dysphoric disorder—a very severe form of PMS that requires supervised medical attention and treatment.²

In order to understand what PMS is, when it occurs, why it occurs, and what can be done to it, it is first important to understand a woman's menstrual cycle and the physiological and hormonal changes that occur prior to and during PMS.

A woman's menstrual cycle lasts between 24 and 35 days in 95 percent of women, with the average cycle lasting 28 days.³ A woman's cycle is characterized by changes in the endometrium or inner lining of the uterus accompanied by changes in female hormone levels (estrogen, progesterone, prolactin, etc.). The menstrual cycle is divided into three distinct phases: follicular, ovulatory, and luteal.³

The follicular phase occurs when menstrual bleeding has ceased. This phase typically lasts ten to fourteen days, during which time the uterine lining grows and thickens, and ovarian follicles are stimulated by hormones to produce an egg.

The next phase—ovulatory—is very short (approximately 36 hours) and involves the release of the egg (ovum) by the ovaries. Once the ovum

is released, it travels down one of the fallopian tubes where it will either be fertilized, resulting in pregnancy, or shed during menstruation.

The luteal phase is the final stage of the menstrual cycle. It can last up to fourteen days, and it is during this phase that the first signs of PMS emerge. During the luteal phase, there are fluctuations in estrogen, progesterone, aldosterone, and prolactin. These hormonal changes strongly influence the emotional and physical symptoms of PMS including fluid retention, breast tenderness, mood swings, etc. Once menstruation begins, hormone levels drop, which would explain why many women report that symptoms cease or gradually diminish once their period begins.

What causes PMS? Physicians and medical researchers aren't exactly sure. Several theories about the cause or etiology of PMS have been proposed. One theory holds that PMS is caused by imbalanced levels of progesterone and estrogen;³ another theory asserts it may be due to the dysregulation of serotonin, a substance found in the human brain that regulates mood.⁴

In recent years, one theory that is gaining increased recognition and credibility is the role of diet and nutrition. Dr. Guy Abraham, a researcher and retired obstetrician and gynecologist, has stated that "Nutrition is the single most important factor in whether or not a woman will have PMS."⁵ Based on his experience and research, Abraham developed four PMS subtypes, which are discussed in this technical paper.

Women who suffer from PMS consume diets that differ dramatically than those without the condition, especially in terms of the amount of minerals that are consumed. A review of PMS patients' diets revealed that these diets were

- 275 percent higher in refined sugar
- 79 percent higher in dairy products
- 78 percent higher in sodium
- 77 percent lower in magnesium
- 63 percent higher in refined carbohydrates
- 53 percent lower in iron
- 52 percent lower in zinc⁶

Nutrition researchers theorize this dietary pattern may affect the cause and severity of PMS.

This technical product paper from Mineral Resources International (MRI) examines premenstrual syndrome, or PMS, including the four types of PMS, the key symptoms found in each type, and the treatment options that exist for PMS. In addition, this paper discusses MRI's Menstrual Health Formula, examining the ingredients in this premier formula and current research that supports the use of these minerals, vitamins, and herbs for PMS.

The Four Types of PMS

In an article published in the *Journal of Reproductive Medicine* in 1983, Abraham maintained that there is actually more than one syndrome present within the larger, overarching complex known as PMS.⁷ Abraham identified four types of PMS. Because nervous tension is common to all four types, Abraham applied the term premenstrual tension syndrome (PMTS).⁷

The four subtypes of premenstrual tension include⁵

- PMT-A (Anxiety)
- PMT-H (Hyperhydration)
- PMT-C (Cravings)
- PMT-D (Depression)

PMT-A (Anxiety)

PMT-A is the most common subtype, and is characterized by premenstrual anxiety, irritability, nervous tension.⁷ According to Abraham, elevated levels of blood estrogen and low progesterone have been found in PMT-A patients.⁷

One nutrient that appears to be helpful is vitamin B₆, which in high dosages (which should only be taken under a doctor's supervision), states Abraham, may reduce blood estrogen, increase progesterone, and improve symptoms.⁷

PMT-H (Hyperhydration)

PMT-H is the second most common subtype, and is associated with symptoms of water and salt retention, abdominal bloating, breast tenderness (mastalgia), and weight gain.

Abraham states that the severe form of PMT-H is linked with elevated levels of aldosterone, which is a hormone secreted by a part of the adrenal gland. Fluid retention—a common complaint in PMS—can be caused by high levels of aldosterone. Aldosterone regulates electrolyte levels in the body, specifically sodium and potassium.⁸ Aldosterone influences fluid retention in that sodium that would

otherwise be excreted in urine is, instead, replaced with potassium, resulting in a loss of potassium but retention of sodium.⁸ The result is that the body retains extra sodium, which, in turn, causes excess fluids to be retained.

For women with PMT-H, Abraham recommends adopting certain dietary changes including limiting salt intake to 3 grams/day and limiting or altogether avoiding smoking (and nicotine-containing products). For PMT-H, Abraham suggests vitamin B₆ and vitamin E as helpful nutrients. Abraham states that in high doses (which, again, should only be taken under a physician's supervision), vitamin B₆ can act as a diuretic; vitamin E may alleviate breast tenderness.

PMT-C (Cravings)

PMT-C is the third subtype. It is characterized by increased appetite and cravings for sweets, refined sugar, and refined carbohydrates (*e.g.*, pastas, breads, snack cakes, and chips), followed by fatigue, heart palpitations, headache, and feeling jittery or shaky, which would indicate a change in blood sugar levels.⁷

Some researchers theorize that a deficiency of prostaglandin PGE1 could play a strong role in PMT-C; however, Abraham notes that these patients often have low red blood cell magnesium.⁷

Magnesium is an essential mineral that plays a central role in glucose control and metabolism. (For more information about magnesium and glucose metabolism, refer to MRI's technical paper *Metabolic Syndrome X*). Abraham states that adequate replacement with magnesium has resulted in improved glucose tolerance tests and decreased PMT-C symptoms.⁷

PMT-D (Depression)

The fourth and least common subtype is PMT-D. PMT-D is extremely serious—it is the most dangerous subtype because suicide is common.⁷ Symptoms include depression, withdrawal, insomnia, forgetfulness, and confusion. In ten PMT-D patients, Abraham states that mean blood estrogen levels were lower, and mean blood progesterone levels were higher than normal during the mid-luteal phase in women with PMT-D.⁷

In 1987, the American Psychiatric Association, in the Diagnostic and Statistical Manual of Mental Disorders (DSM III-R) introduced the Late Luteal Phase Dysphoric Disorder diagnosis that, in 1994 (DSM-IV), became Premenstrual Dysphoric Disorder (PMDD).¹⁰ Women who have or may have Pre-Menstrual Dysphoric Disorder are advised to seek medical care from a qualified physician or specialist.

Treatment Options for PMS

There are numerous treatment options available to manage the pain and discomfort of PMS. Conventional treatments include prescription drugs such as selective serotonin reuptake inhibitors (SSRIs), oral contraceptives, diuretics, and over-the-counter pain relievers (NSAIDs). These drugs are designed to manage mood, hormone levels, water retention, and pain. In some cases, a combination of these therapies is indicated.⁹

In addition to conventional treatments, many physicians and professional medical associations recommend supplementation with certain nutrients (accompanied by diet and lifestyle changes) as a viable treatment option for PMS.

In April 2000, the American College of Obstetricians and Gynecologists revised its recommendations to include the use of nutritional supplements including magnesium, calcium, and vitamin E, combined with aerobic exercise and a complex carbohydrate diet to resolve PMS symptoms.¹⁰

In addition to these recommendations, results from several clinical studies demonstrate that supplementation with certain minerals, vitamins, and herbs may provide some relief from the pain and discomfort of PMS.

Facts About MRI's Menstrual Formula

MRI developed its Menstrual Health Formula for the multifaceted nutritional needs of women. This formula is designed to provide essential minerals and vitamins as well as a blend of herbs to nourish and balance a woman's body during times of monthly stress.

There are literally hundreds of dietary supplements formulated for PMS, but one of the most distinctive features separating MRI's formula from other products is the marriage of minerals, vitamins, herbs, and micronutrients.

MRI's formula contains essential minerals such as magnesium and calcium plus essential vitamins like B₆ and E that participate in a number of critical physiological functions and have been shown to alleviate certain PMS symptoms. In addition to these nutrients, MRI added iron, potassium, zinc, chloride and vitamins A, C, B₁ (Thiamin), B₂ (Riboflavin), B₁₂ (Cyanocobalamin), and folic acid to provide general nutritional support for a woman's body.

In addition to the minerals and vitamins, MRI's Menstrual Health Formula contains a blend of herbs traditionally used by herbalists for PMS. It also contains vegetarian digestive enzymes to assist in

the absorption and utilization of the nutrients in the formula. This dietary supplement is very low in sodium, so it will not contribute to increased fluid retention.

Minerals

Ample research conducted in recent years has focused on the effect of certain minerals, vitamins, and herbs on PMS. Below is a brief review of current research of the minerals, vitamins, and herbs contained in MRI's Menstrual Health Formula and their clinically documented effects on PMS.

Magnesium

Clinical studies have revealed that low levels of magnesium are common in women affected by PMS and that supplementation with magnesium may improve its physical and emotional symptoms.¹¹

One study that has yielded fascinating results measured women's magnesium levels throughout their menstrual cycle. It found that women suffering from PMS had relatively high levels of magnesium ions after the onset of menstruation, but that there was a statistically significant decrease during ovulation and a large drop in magnesium when serum progesterone peaked in the third week.¹²

According to Carolyn Dean, M.D., N.D., premenstrual cravings for chocolate are a sure sign of magnesium deficiency. Chocolate is a rich source of magnesium, but it is also rich in sugar and fat. Rather than indulging in chocolate, Dean advises increasing one's magnesium intake, which should eliminate chocolate cravings and may alleviate certain PMS symptoms.¹²

Dean also states that magnesium may be helpful for women that experience painful periods (dysmenorrhea). She cites a group of European research trials consisting of small groups of women who experienced painful periods and consistently showed relief while taking high doses of magnesium.¹²

Several studies have shown that supplementation with magnesium can lessen the severity of certain PMS symptoms.

Recent clinical studies of 192 women taking 400 mg of magnesium daily reported that

- 95 percent experienced less breast pain and weight gain
- 89 percent suffered less nervous tension
- 43 percent had fewer headaches¹²

This finding is not an anomaly. Other studies have shown that women may find relief with magnesium supplements, especially if they suffer from mood swings.

In a 1991 double-blind, randomized study,

researchers administered an oral magnesium preparation to 32 women ranging in age from 24 to 39 years whose PMS symptoms were confirmed by the Moos Menstrual Distress Questionnaire. After two months, patients were given magnesium (360 mg) or a placebo three times daily commencing from the fifteenth day of the menstrual cycle to the onset of menstruation. Blood samples were taken from both groups before the onset of menses, during baseline, and during the second and fourth month of treatment. At the study's conclusion, patients receiving magnesium reported their pain was significantly reduced. The study's authors concluded that "magnesium represented an effective treatment of PMS symptoms related to mood changes."¹¹

Calcium

Calcium performs a number of vital functions in the body: It is a major constituent of bone and teeth, but it is also needed for muscle contraction, blood coagulation, the beating of the heart, and nerve conduction.¹³

Calcium is closely interrelated with magnesium in the human body. Nutrition researchers have speculated that disturbances in calcium and magnesium regulation may explain PMS.

Recalling the earlier study that measured premenstrual women's magnesium ion levels, researchers from that same study also made another discovery: Women with PMS had imbalanced calcium and magnesium levels during the last week of their menstrual cycle. Specifically, researchers found a significant increase in the serum calcium to magnesium ratio both during ovulation and the fourth week after the onset of the period.

According to Dean, imbalanced calcium and magnesium levels can cause PMS symptoms during the last week of the menstrual cycle, but can be corrected by taking equal amounts of both calcium and magnesium daily in a divided dose.¹² MRI's Menstrual Health Formula provides optimal levels of both calcium and magnesium.

In addition to the studies Dean cites, there is additional evidence that calcium may be an effective approach to treating PMS, *e.g.*, reducing water retention, food cravings, and pain.

In one clinical study made up of 497 healthy premenopausal women between the ages of 18 and 45, volunteers were given either 1,200 mg of calcium (as carbonate) or a placebo for three menstrual cycles and asked to rate its effectiveness. At the end of the study, the calcium-supplemented group reported a 48 percent reduction in the severity of symptoms, compared with a 30 percent reduction in the placebo group.¹⁴

Zinc and Copper

Low levels of copper and zinc have been detected in patients with PMS. A study conducted in Denmark found that the mean plasma copper to zinc ratio was significantly lower in PMS patients versus women without PMS.

Further, plasma zinc levels (and magnesium) were diminished significantly during the luteal phase compared to the follicular phase in PMS patients.¹⁵

Iron

Iron is an essential trace mineral in human nutrition.¹⁶ This element is necessary to produce hemoglobin, which is the oxygen-carrying protein found in red blood cells. It is estimated that approximately 25 percent of adolescent girls in the U.S. are iron deficient, and that, worldwide, 25 percent of the world's population is iron deficient.¹⁶

Iron deficiency can lead to decreased hemoglobin production and iron-deficiency anemia. Ensuring an optimal intake of iron is an important nutritional concern for premenopausal women because they lose iron through menstrual bleeding each month.¹⁶ MRI's Menstrual Health Formula provides optimal amounts of iron that meet U.S. RDA levels.

Boron

An additional and equally important nutritional concern for premenopausal women is bone and joint health.

Osteoporosis is estimated to affect nearly 100 million worldwide, and women are disproportionately affected.¹⁷ Women reach peak bone mass between the ages of 25 through 30, but after age 30, bone mass begins to decline. Therefore, for women, maintaining optimal bone density both before and during menopause is important in order to reduce the risk of osteoporosis and bone fractures.

Boron is a trace element that appears to be particularly important for bone and joint health.¹⁷ Boron affects mineral metabolism, which, in turn, affects bone calcification and maintenance.¹⁸

One research study of postmenopausal women, the group at highest risk for osteoporosis, disclosed that women given boron supplements of 3 mg/day resulted in higher retention of calcium and magnesium—an important factor in reducing the risk for osteoporosis.¹⁷

Vitamins

Vitamin B Complex

As early as the 1940s, researchers observed a relationship between a vitamin B complex deficiency and PMS. Patients who reported symptoms including

menstrual cramping, excessive bleeding and fibrocystic breasts improved with B-complex therapy.¹⁹

Vitamin B₆

Vitamin B₆ has received considerable recognition for its beneficial effect on PMS, especially relating to emotional symptoms.

Researchers have hypothesized that its efficacy is due to its role as a cofactor in the synthesis of serotonin and dopamine, deficits of which are believed to influence PMS.²⁰

A randomized, double-blind trial that measured the effects of daily supplementation with 50 mg of vitamin B₆ daily reported a significant beneficial effect on emotional symptoms including depression, irritability, and tiredness.²¹

A separate study published in the *Journal of Women's Health and Gender-Based Medicine* in 2000 reported that pairing 200 mg/day of magnesium with 50 mg/day of B₆ had a mild synergistic effect in reducing anxiety-related PMS symptoms including nervous tension, mood swings, irritability, and anxiety.²²

Vitamin E

Mastalgia or breast pain and tenderness is a common symptom reported by women with PMS. Preliminary research shows that vitamin E may be effective for some women.

One double-blind study reported a significant decrease of breast symptoms with vitamin E supplementation.²³ In a double-blind, placebo-controlled trial, varied dosages of vitamin E (150, 300 or 600 IUs administered daily for two months) significantly outperformed placebo.²⁴

Another trial using 400 IUs of vitamin E for three menstrual cycles also reported an improvement in affective and physical symptoms.²⁵

Herbs

Black Cohosh

Black cohosh consists of the fresh and dried root of the plant. This herb is useful for the treatment of PMS and menopause, and is approved by the German Commission E for this use.²⁶

It has been reported that black cohosh has estrogenic properties.²⁷ Compounds from black cohosh root bind to estrogen receptors where it suppresses luteinizing hormone secretion without affecting FSH (follicle stimulating hormone).²⁷

Clinical trials have been conducted evaluating black cohosh in menopause, and these studies have reported positive results. Black cohosh has been

reported to improve premenstrual symptoms including dysmenorrhea due to its ability to relax uterine muscle and tissue.²⁷

Blue Cohosh

This herb has a long and varied traditional use in many countries. According to James Duke, Native Americans used the flowers to promote menstruation.²⁸

In India, blue cohosh is used as a treatment for gynecological disorders.²⁹ In English and American medicine, blue cohosh has been used since the 20th century for menstrual ailments and cramps.²⁹

In the *Handbook of Medicinal Herbs*, Duke states that blue cohosh is better for uterine pains while black cohosh is better for lower back pains during menstruation.²⁸

Chamomile

The herb chamomile is composed of the fresh or dried flower heads. This well-known herb has demonstrated anti-inflammatory, anti-spasmodic, and smooth-muscle relaxing action.³⁰ Chamomile contains apigenin and other flavonoids that have muscle relaxant and anti-spasmodic properties.³⁰

The main uses indicated for this herb include its use for menstrual problems and gastrointestinal complaints (*e.g.*, colitis, gas, and cramps).³⁰

Chaste Tree Berry (Vitex)

Chaste Tree Berry or vitex, as it is also known, is derived from the dried fruit and leaves of the chaste tree. Chaste tree has been approved the German Commission E for the treatment of premenstrual syndrome.³¹ This herb inhibits follicle stimulating hormone (FSH) and prolactin.³¹

A recent study published in the *British Medical Journal* reported that vitex was "an effective and well tolerated treatment for the relief of symptoms of the premenstrual syndrome."³² That study, which consisted of 178 women (with an average age of 36), measured patients for three full menstrual cycles. Half of the women were given a placebo, and the other half was administered 20 mg per day of standardized vitex. The women were assessed for six symptoms including irritability, mood alteration, anger, headache, bloating, and breast fullness. At the study's conclusion, the control group reported an improvement of 52 percent compared to the 24 percent improvement rating from the placebo group.³²

A separate, small clinical trial has reported that vitex may reduce acne flareups associated with PMS.³³

Dong Quai

In Traditional Chinese Medicine, dong quai is used in combination herbal formulas for dysmennorrhea, abnormal menstruation, and suppressed flow. Dong quai is believed to have an adaptogenic or balancing effect on the female hormonal system.

Dong quai is rich in phytoestrogens.^{34,35} When estrogen levels are high, phytoestrogens bond to estrogen-binding sites, reducing some of the excess estrogenic effects in the body.³⁴⁻³⁶

Licorice

According to the *British Herbal Compendium*, licorice has been used medicinally for over 3,000 years and has a very wide range of pharmacological and therapeutic uses.³⁷ Licorice has a mild estrogenic action³⁸ as well as anti-inflammatory effects.³⁹

Raspberry Leaf

In traditional herbal medicine and midwifery, red raspberry leaf has been used for many aspects of female health. It was considered a remedy for excessive menstrual flow (menorrhagia) and as a uterine relaxant.⁴¹ According to the German Commission E, raspberry leaves are used for menstrual problems.

The active agents of this plant are tannins, and it has been suggested that tannins may affect the smooth muscle of the uterus, relaxing uterine spasms. In addition, raspberry leaf is used in traditional herbal medicine as a diuretic and to purify the skin and blood.⁴¹

Siberian Ginseng

Ginseng has a long history of use in China. Siberian ginseng is derived from the dried roots or rhizome. Ginseng is believed to boost the body's ability to handle physical stresses, and is one of the primary reasons why MRI added it to this formula. Siberian ginseng has exhibited anti-fatigue, anti-stress, and immuno-enhancing effects.⁴²

Ginseng is approved by the German Commission E for lack of stamina, which the commission states can be used "as a tonic for invigoration and fortification in times of fatigue and debility."⁴³ Ginseng acts on the central nervous, cardiovascular, and endocrine systems.

Numerous animal studies have reported improved learning, memory, physical capability, resistance to infection, and enhancement of energy metabolism.⁴⁴ It is reported that for women with PMS, Siberian ginseng may positively affect hormone levels and tone the large uterine muscle.

Wood Betony

Wood Betony has astringent, expectorant, and sedative effects.⁴⁵ In folk medicine, it has been used for the treatment of neuralgia (pain affecting the nerves), anxiety, and nervousness.⁴⁵

Yarrow

In folk medicine, yarrow has traditionally been used for menstrual irregularities (a disturbance in the usual pattern of a woman's menstrual cycle).⁴⁶ Yarrow exerts similar effects to chamomille⁴⁶: It has demonstrated anti-spasmodic and anti-inflammatory effects.

Yarrow has traditionally been used to strengthen and tone the stomach and soothe inflammation and cramps.⁴⁶ Yarrow also exerts diuretic effects, which may alleviate fluid retention.

Yellow Dock

Yellow dock is reported by the literature to have astringent, laxative and mildly tonic properties.⁴⁷ Yellow dock has traditionally been used as a "blood cleanser" and as a tonic for the stomach.⁴⁷ MRI added yellow dock to improve the assimilation of iron in this formula.

Suggested Use

This product can be taken every day of the month up to and including menses, or it can be taken on an as-needed basis.

The suggested use is six tablets daily, divided with meals (two tablets with each meal) or as needed.

For best results, follow the instructions on the label. This product can also be taken with three tablets of either of MRI's two multivitamin / mineral formulas: Hair, Skin, and Nails or Multi Complete.

Safety

Do not take this product if you are pregnant or if you think you may be pregnant. Some of the herbs in this formula, including black cohosh, blue cohosh, dong quai, yarrow, and ginseng are contraindicated during pregnancy.

If you are allergic or may be allergic to chamomile or yarrow, or if you have hay fever, pollen, and/or food allergies, do not take this product.

Due to the amount of B-vitamins in this formula, slight discoloration of the urine may occur.

Conclusion

Until recently, there was debate within the medical community whether PMS was a real condition experienced by women or merely a psychosomatic condition. In the last twenty years, however, medicine and science have made great strides, and today PMS is recognized as a very real disorder that affects a significant number of women.

In recent years, extensive research has been conducted into the cause of PMS as well as treatments and therapies, including the use of certain nutrients, to treat this condition. Numerous studies have demonstrated that nutrition plays a central role in PMS. Research has revealed that a deficiency of magnesium as well as inadequacies of calcium, zinc, copper, and B-vitamins are associated with PMS.

Research has also yielded substantial evidence demonstrating that an optimal intake of certain minerals, vitamins, and nutrients, in addition to the use of certain herbs, may alleviate the pain and discomfort of certain PMS symptoms. Some of the nutrients that have shown promise include magnesium, calcium, B-vitamins, vitamin B₆, vitamin E in addition to certain herbs such as black cohosh, chamomile, dong quai, raspberry leaf, and Siberian ginseng.

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