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Postmenopause: Physiological changes and role of functional foods for management of postmenopausal symptoms

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Abstract

Several clinical aspects of women throughout menopause, such as physiological, nutritional, and psychological condition, may influence the timing of the menopause transition and postmenopausal quality of life. The primary goal of this review article is to compile the literature on menopause, with a focus on the factors that influence menopausal women's health-related quality of life in both positive and negative way. A number of studies have found a link between these characteristics and menopausal women's health-related quality of life. Regular physical activity, a healthy BMI, balanced nutrition, education, and awareness all improve postmenopausal women's quality of life. At this period, some dietary habits, such as an inadequate diet or nutrition, may have an impact on the quality of life. Inadequate nutrition can lead to a number of serious health problems, including osteoporosis, high blood pressure, cardiovascular risk, and a higher chance of breast and ovarian cancer. Due to frequent variations in oestrogen levels, the majority of women experience numerous psychological changes such as melancholy, anxiety, irritability, and other mood disorders during menopause transition, affecting the quality of life of menopausal women. There are a variety of functional foods and herbal supplements that can aid in the prevention of these health problems as well as improve the quality of life in menopausal women.

Keywords: Menopause, Post-menopause, Functional Foods, CVD, Osteoporosis, Breast cancer, Ovarian cancer, Estrogen level

Introduction

Aging is in the middle of a spread of various factors, like loss of bodily property stability, spatial orientation, and strength, that induce a decrease in health connected quality of life for each men and girls. In women, however, another issue that may have an effect on is menopause. Menopause that the permanent stop of menses resulting in the loss of follicle development (Pronob *et al.*, 2017) [4]. Menopause leads to a loss of female internal reproductive organ sensitivity to gonadotropin stimulation. In alternative words, the ovaries stop manufacturing AN egg every month. During the menopausal transition, aging follicles become a lot of immune to gonadotrophin stimulation, levels of follicle-stimulating hormone (FSH) and ICSH (LH) increase. The loss of functioning follicles results conjointly in a very dramatic decline in current estrogen level throughout amount lasting from concerning two years before climacteric to two years subsequently. The ups and downs of estrogen and, to a lesser extent, progesterone, in all probability manufacture most of the symptoms women expertise throughout this transition.

Serum androgenic hormone levels don't modification. Women's attitudes towards this life transition will influence its apparent impact on their health (Igor Z. *et al.*, 2013) [31].

Post menopause is defined as the time once that a women has experienced twelve consecutive months of amenorrhea (lack of menstruation) while not a period. Once women approach climacteric or menopause their expelling cycles begin to alter and becomes unpredictable that may be a sign of erratic ovulation that cause unpredictable releases of the hormones estrogen and progesterin or progesterone resulting in range of symptoms related to climacteric or menopause together with physical and psychological symptom.

Not every women experiences an equivalent symptoms and to an equivalent degree. These symptoms could persist once menopause. The physical systems like back pain, joint pain and muscle pain. The system instabilities like bleeding, urinary tract infection, urinary frequency, dryness and itching. The dilatation instabilities like hot flushes together with night sweats and sleep disturbances.

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Psychological symptoms like mood disturbance, irritability, fatigue, cognitive state and issues with concentration, depression and/or anxiety, sleep disturbances. The physiological changes are related to biological time symptoms. Hormonal changes that characterize menopause are probably to influence the nutritional status and habits of women. Nutrition is predominant in health maintenance and care, particularly at a time once the population is ageing and sizable efforts should be deployed to forestall and treat chronic diseases (B.P. Sudha *et al.* 2013) [12].

The average age of menopause is 46 years. Postmenopausal condition is related to higher prevalence of obesity or overweight (Lambrinoudak I *et al.*, 2010, Khokhar KK *et al.* 2010) [15, 11]. Women within the midlife face several challenges, like secretion changes, exaggerated weight gain, loss of bone and muscle mass, and biological process problems. Unhealthy diet, obesity, and nutritional deficiencies could result in numerous disorders. There is a requirement to target the results of optimum nutrition on the health and prosperity of women throughout change of life. It's evident that smart nutrition and optimizing the intake of specific nutrients, along with changes in living style will improve maintaining a healthy change of menopause stage (Ranasinghe *et al.*, 2017) [24].

Prevalence

Quality of life for postmenopausal women. Life expectancy for women is increasing worldwide, and in most countries women over 50 can expect to live another 30-40 years. As a result, adult women will live almost as long after menopause as they did before. As a result, this community is attracting attention in areas such as political power and health (Leplege A. *et al.*; 2000). Postmenopause has been defined as a time of crisis, although this is no longer the case. Sociocultural and lifestyle factors have a significant impact on women's perceptions of the transition to menopause (Leplege A. *et al.*; 2000). As a result, everyone has a different perspective on postmenopause and a different way of dealing with its symptoms. According to the World Health Organization (WHO), Quality of Life (QoL) is defined as an individual's perception of where they live in relation to their cultural and value judgements, goals, expectations, standards and concerns. The sum of physical health, mental status, beliefs, social ties and environmental relationships is defined as health-related quality of life (QOL) (Fidaner. H. *et al.* 1999). The most common and reportedly most annoying of these symptoms are hot flashes. According to Rebecca C. *et al.*; 2007, in the United States, over 70% of naturally menopausal women experience hot flashes at some point during the menopausal transition (Kronenberg F. 1999). Hot flashes increase in frequency and severity during menopause. Hot flashes are classified as moderate to severe by 43 percent of women. Hot flashes can affect your quality of life, sleep and emotions (Bosworth HB *et al.* 2001, Kravitz HM *et al.* 2003). The prevalence of metabolic syndrome increases with age and glucose intolerance. The increased prevalence of metabolic syndrome in postmenopausal women could be due to both ovarian failure and the metabolic effects of central fat redistribution from estrogen deficiency. According to Jeyasheela K *et al.* 2018, The International Diabetes Federation's IDF-2005 criteria were used to screen postmenopausal women for metabolic syndrome (Alberti KGMM *et al.* 2006). Women with abdominal obesity, defined

as a waist circumference of 80 cm in South Asians, were diagnosed with metabolic syndrome when they met two of four criteria: blood pressure of 130/85 mmHg, fasting blood glucose level of 100 mg/dL, fasting serum triglyceride of 150 mg/dL and high density lipoprotein cholesterol of 50 mg/dL. According to study by Abdoljalal Marjani *et al.* In 2011, the prevalence of metabolic syndrome in PMW was 31%. Postmenopausal women are more prone to vitamin D deficiency and osteoporosis than premenopausal women. Vitamin D deficiency is associated with low bone mineral density (BMD), which can progress to osteopenia or osteoporosis. In the Indian population, there is a high prevalence of vitamin D deficiency associated with poor dietary calcium absorption, particularly in the postmenopausal period. In postmenopausal obese women, lower serum availability of sex hormone-binding globulin leads to increased serum availability of bioavailable estrogen than in thin postmenopausal women. As a result, there appears to be a positive association between obesity and an increased risk of breast cancer in postmenopausal women (Bianchini F. *et al.* 2002). Vasomotor symptoms are the most common in menopausal women, accounting for 70 to 80 percent of signs and symptoms (Hachul *et al.*; 2008, Moilanen J. *et al.* 2010) [33]. After menopause, these vasomotor symptoms appear and are at least largely responsible for sleep disorders (IM Zervas *et al.* 2009, M. Terauchi *et al.* 2010). An epidemiological study conducted in Sao Paulo found that 81.6 percent of respondents suffered from sleep disorders, with 52.1 percent reporting insomnia (S. Taufik *et al.* 1997). Sleep problems are more common in women going through menopause and are likely to worsen with age. According to a study that included both subjective (questionnaires) and objective (polysomnography) evaluations, 61% of postmenopausal women had subjective sleep disorders. However, the objective assessment found that 83 percent of women reported problems sleeping (Afonso Rui Ferreira *et al.* 2012). Menopause is associated with a significant prevalence of sleep disorders, affecting between 28% and 63% of women. Insomnia is associated with poorer quality of life and a higher comorbidity rate (Afonso Rui Ferreira *et al.* 2012). The term anxiety is often used to describe a wide range of symptoms, including those associated with anxiety disorders such as panic disorder (e.g., feeling anxious for no apparent reason) or generalized anxiety (e.g., excessive and uncontrollable worry, irritability) and physical associated symptoms such as shortness of breath, tachycardia and tension. To further complicate the issue, some of these symptoms can be difficult to distinguish from other menopausal symptoms that are prevalent in the aging process (Siegel AM *et al.* 2015). Women are more likely than men to suffer from mood disorders such as anxiety, depression and mental anguish. The lifetime prevalence of mood disorders and anxiety is estimated at 28.8% and 20.8%, respectively, according to the US National Comorbidity Survey Replication, with women having a 5060% higher lifetime risk than men (Kessler RC *et al.* 2005). In addition, according to the 2004 National Survey on Drugs Use and Health. At 12.0%, the prevalence of severe mental stress was 55% higher in women than in men (National Survey on Drugs Use and Health; 2004). Anxiety or panic attacks, mental distress, positive and negative mood, emotional instability, depressive symptoms, feeling of well-being and irritability are some of the symptoms that can be associated with mood. The epidemiological evidence on the

effects of menopause on mood is conflicting. Some cross-sectional studies show that psychological distress and depressive symptoms are more common during menopause than before or after (Bromberger JT *et al.* 2001), while others show that this is not the case (Slaven L *et al.* 1998, Maartens LW *et al.*, 2001).

Evidence of estrogen effect in adipose tissue from clinical studies

With the redistribution of body fat that occurs after menopause, women develop greater amounts of visceral fat. Premenopausal women have a reduced risk of obesity-related disorders than men,

but this is no longer the case after menopause, indicating the importance of the female estrogen hormone in adipogenesis and adipose metabolism (Mattsson C *et al.*, 2007). Furthermore, because adipose tissue is a key integrator of glucose homeostasis, estrogen insufficiency plays a significant role in impaired glucose metabolism and the development of type 2 diabetes with aberrant adipose function. Indeed, postmenopausal women and ovariectomized (OVX) rodents have visceral obesity, which can be reversed with 17-estradiol (E2) treatment (Stubbins RE *et al.*, 2012, Rizzo MR *et al.*, 2014). Estrogen has long been recognised as a key regulator of both male and female adipose growth and deposition. The loss of estrogen signalling causes a preferential rise in visceral fat in menopausal women, which is caused by increased adipocyte size and number. Postmenopausal women have reduced postprandial fatty acid oxidation, higher meal fatty acid, and direct FFA storage than premenopausal women (Santosa S *et al.*, 2013). However, postmenopausal women's weight gain is significantly linked to an increase in serious health issues like cardiovascular disease, type 2 diabetes, and breast cancer. (Chen *et al.*, 2005), reported that a 3-year estrogen/progestin intervention maintained lean body mass and reduced upper-body fat distribution in postmenopausal women. (Sites *et al.*, 2005) found that estrogen treatment lowered insulin sensitivity in early postmenopausal women without changing body composition or fat distribution.

Estrogen's role in the formation of adipose tissue

Adipocyte differentiation (adipogenesis) and hypertrophy are two characteristics of the development of adipose tissues. In adipocyte differentiation and function, sex hormones and their receptors play a crucial role. The inhibitory effect of estrogen on adipose growth, mediated mostly through ER-, has been established in experiments utilising ER knockout mice models (Heine PA *et al.*, Naaz A *et al.*).

Adipocyte development and fat distribution are controlled by sex hormones, estrogen and testosterone have different impact on adipocyte physiology. Estrogen and estrogen receptors control a variety of lipid and glucose metabolic processes. The fat distribution pattern in females is often at the breasts, thighs, and buttocks as a result of estrogen, which has a more feminising effect (Cleary MP *et al.*).

Increased BMI is associated to a significant increase in estradiol, estrone, and free estradiol in postmenopausal women; this can be managed by regular physical activity, which lowers estrogen serum levels (James FR *et al.*; 2015). The ovarian sex hormone affects the risk of breast cancer.

Long-term estrogen exposure, such as menarche at a young age or postponed menopause, may increase the risk of breast cancer. This link between ovarian hormones and breast carcinogenesis has been established several times, with higher sex hormone levels in women with breast cancer compared to those in control cases (Geyer FC *et al.* 2012).

In postmenopausal obese women, less serum availability of sex hormone binding globulin leads to increased serum availability of bio-available estrogen than in thin postmenopausal women. As a result, it appears that there is a positive link between obesity and increased breast cancer risk in postmenopausal women (Bianchini F *et al.*; 2002).

Large amounts of clinical data have revealed the fundamental role of estradiol and its receptors in the pathological origin and progression of breast cancer (Huang B *et al.* 2015, Reznikov A *et al.* 2015). E2-activated ER regulates breast carcinogenesis via complex signalling pathways that affect many cellular functions such as angiogenesis, migration, proliferation, and apoptosis (Gerard C *et al.* 2015, Pesiri V *et al.* 2014) [34]

The regulation of glucose metabolism in adipose tissue by estrogen signaling

Adipocytes are highly specialised cells that regulate glucose and lipid metabolism to maintain energy homeostasis throughout the body (Boden G *et al.* 2002). Increased visceral fat is linked to a number of metabolic disorders, such as impaired glucose metabolism (J Tiano *et al.* 2012, F Mauvais-Jarvis *et al.* 2013), hyperinsulinemia (Geyer FC *et al.* 2012, Cleary MP *et al.*), dyslipidemia (RE Stubbins *et al.* 2012) and hypertension (Rizzo MR *et al.*, 2014).

The increased circulating FFA level, combined with increased lipolytic activity in visceral fat cells, is a primary cause to these problems. Excess adipocyte-derived FFA causes muscle insulin resistance by inhibiting insulin-mediated glucose uptake, as well as hepatic insulin resistance by affecting insulin-mediated hepatic glucose production suppression (Boden G *et al.* 2002). However, chronic FFA exposure decreases insulin production from pancreatic β -cells (J Tiano *et al.* 2012) and causes β -cell death (Shimabukuro M *et al.* 1998). In human experiments, it was shown that an increase in circulating FFA inhibited insulin-stimulated glucose absorption in both healthy people and type 2 diabetes patients (Boden G *et al.* 1994-2002). As a result, circulating FFA may play a role in the pathogenesis of type 2 diabetes and the development of insulin resistance (Boden G *et al.* 1994-2002). Certain researchers have revealed that estrogen-deficient women have higher serum FFA concentrations than postmenopausal women receiving estrogen treatment (MD Jensen *et al.*, F Pansini *et al.*) suggesting that estrogen treatment has positive effects in postmenopausal women by preventing FFA transport into the circulation.

Body fat is a vital component in estrogen biosynthesis

Premenopausal and postmenopausal women have variable estrogen biosynthesis. In premenopausal women, estrogen is primarily generated by the ovaries; however, in postmenopausal women, ovarian biosynthesis is supplemented by secondary sites production, with body fat serving as a major source of estrogen biosynthesis (Cleary MP *et al.* 2009).

Aromatase, an enzyme prevalent in breast adipose cells as well as cancer-affected tissues, is the principal mediator of

postmenopausal estrogen production. Aromatase can also convert androgens into estrogen, which are synthesized by the

ovary and adrenal cortex in postmenopausal women (Khan M *et al.* 2014) [10].

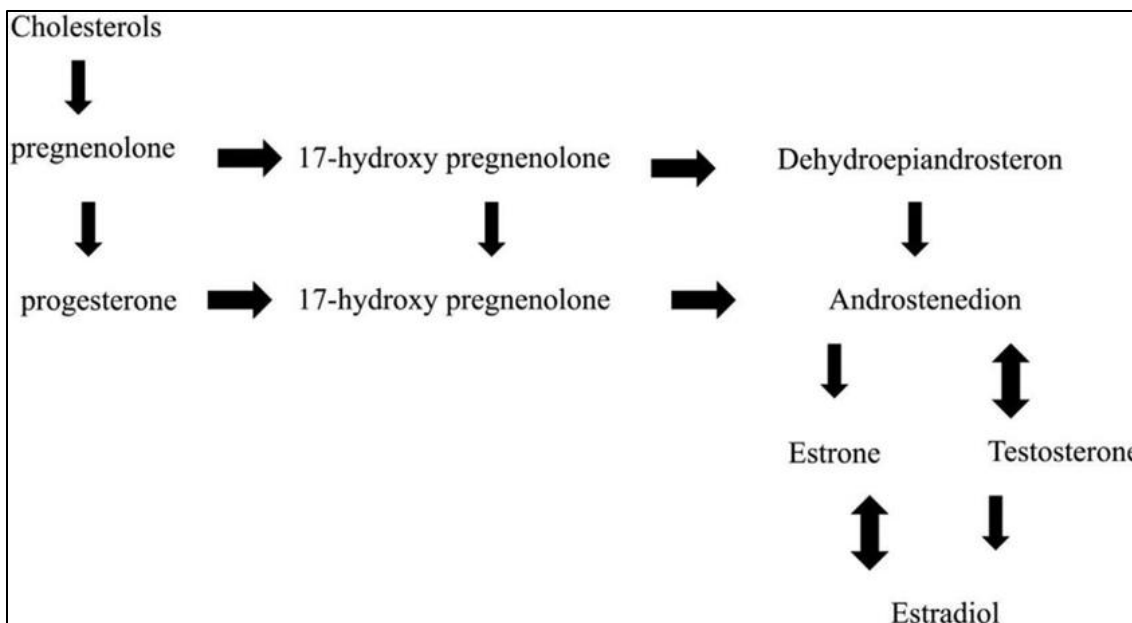


Fig 1: Biosynthesis of Estrogen Hormone (Mohanty Swati *et al.* 2019)

Mechanism of Production of Estrogen in adipose tissue by Aromatase enzyme

Aromatase, which is found in the endoplasmic reticulum, converts testosterone to estrogen (Simpson ER *et al.* 2002). Premenopausal and postmenopausal women's estrogen biosynthesis differs significantly. For premenopausal women, the ovary's granulosa cells are the sites where estrogen is produced abundantly with each menstrual cycle, while other organs such as the vascular aortic smooth muscle, adipose tissue, bone, endothelium, or the brain also produce low levels of estrogen (Brown KA *et al.* 2012).

As a result, the primary location of oestrogen production in postmenopausal women is the ovary. Obesity in women is thought to be caused by extra adipose tissue, which causes circulating estrogen levels to rise dramatically (Brown KA *et*

al. 2012).

Fibroblasts, pre-adipocytes, mature adipocytes, nerve cells, immune cells, and endothelial cells are the key components of adipose tissue, which is classed as a highly diverse tissue (Zhang Y *et al.* 2010). Pre-adipocytes are the main source of aromatase expression (Brown KA *et al.*; 2012) which controls estrogen biosynthesis in the breast and may lead to breast cancer (Bulun SE *et al.* 2012).

Because it is closer to the breast epithelial cells, aromatase expressed in mammary preadipocytes is more potent in the development of carcinogenesis than aromatase expressed elsewhere in the body (Bulun SE *et al.* 2012). Aromatase expression, as well as estrogen production, has been discovered in breast cancer tissue, leading to proliferation in response to autocrine signals (Barakat R *et al.* 2016).

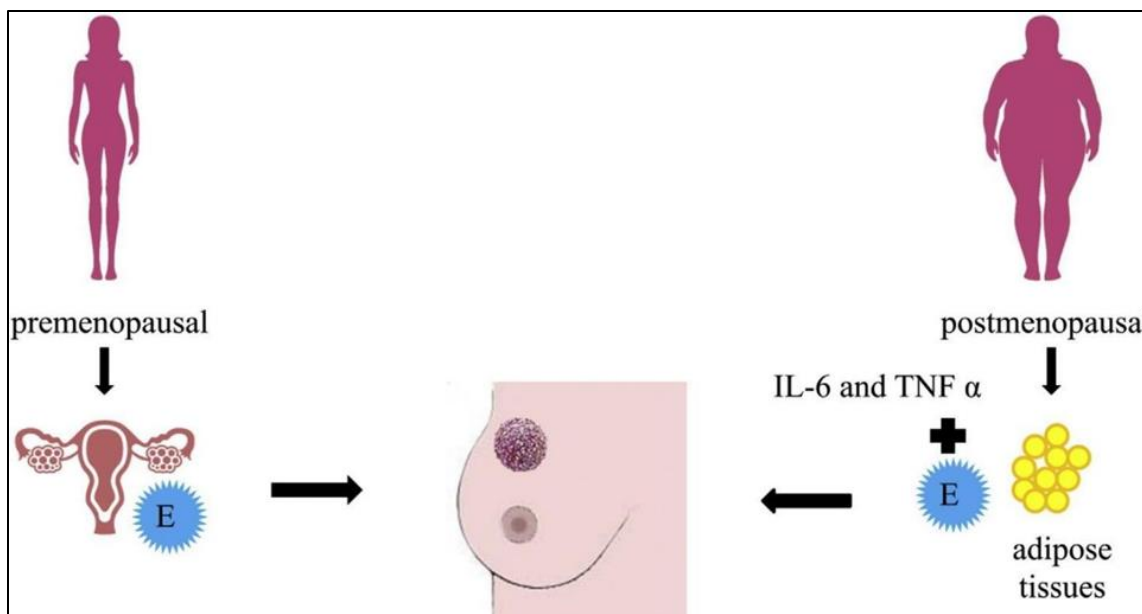


Fig 2: Estrogen synthesis sites in Premenopausal and postmenopausal females, Mohanty Swati *et al.* 2019

Table 1: Physiological changes in Postmenopausal Women

Health Problems	Symptoms	References	Conclusion
Psychological changes	Anxiety, most common symptom that may seen in post-menopausal women	Bremer Eleanor <i>et al.</i>	They conducted qualitative study post- menopausal women
	Depression	Pronob K. Dalal (2017) ^[4] <i>et al.</i>	They conducted study on health related problems which is associated during menopause and postmenopause. They studied on their symptoms, pathophysiology and management
Physiological changes	Obesity is public health problem. The prevalence of obesity in postmenopausal women is higher as compared to premenopausal women	Lambrinouadaki Irene (2010) ^[15] <i>et al.</i>	They studied on management of the postmenopause in obese or obesity women. The aim of this study to provide evidence- based advice on the management of obesity in postmenopausal women
	Cognitive function (memory problems) is common in postmenopausal women	Dalal Ponob K. (2017) ^[4] <i>et al.</i>	They conducted study on health related problems which is associated during menopause and postmenopause. They studied on their symptoms, pathophysiology and management.
Physiological changes	Vaginal atrophy is occurs due to low level of oestrogen leads vaginal dryness and lost lubrication during postmenopause	K. Dalal (2017) ^[4] <i>et al.</i>	In this study, they identify the symptoms and physiological changes in menopausal women and introduced related treatment like non-hormonal treatment and alternative therapies
	Vasomotor symptoms includes hot flushes and night sweat	Pronob K. Dalal (2017) ^[4] <i>et al.</i>	They conducted study on health related problems which is associated during menopause and postmenopause. They studied on their symptoms, pathophysiology and management
	Circulating PCSK9 and Increasing level of LDL may leads to CVD and other heart related problems. This levels can be increased due to fluctuation or low level of estrogen.	Ghosh Momita (2018) <i>et al.</i>	They studied on physiological changes in estrogen level which influences the circulation of PCSK9 and increase level of LDL cholesterol.
Nutritional deficiency	Osteoporosis is a condition with a very high prevalence and occurs due to calcium deficiency	Khanna Vikram (2017) ^[10] <i>et al.</i>	They studied on important aspects of osteoporosis and its treatments in postmenopausal women
	Metabolic syndromes is constellation of metabolic abnormalities that increases the risk of T2DM and CVD. Menopause and postmenopausal conditions are vulnerable period for developing metabolic syndromes	Sharma Sandeep (2021) ^[25] <i>et al.</i>	They conducted cross- sectional study of 350 women in the age group of 45-55 years and to determined the prevalence of metabolic syndrome and its components on pre and postmenopausal women in North Indias

Table 2: Effects of functional foods on Postmenopause

Functional foods	Bioactive Compounds	Effect on postmenopause	References
Broccoli	Glucosinolates (GLS)	Consuming broccoli helps reduce weight and lipid parameters in obese postmenopausal women	M. Zaira (2014) <i>et al.</i>
Soybean or its products	Isoflavone	Soy foods can improve the quality of muscle and bone density and reduce body weight. It is considered a breakthrough in preventing osteosarcopenia and obesity that can occur after menopause.	Tang Sijia (2020) <i>et al.</i>
Flaxseeds	ALA, lignin, fiber	Have protective effects against postmenopausal symptoms like hot flashes etc.	Parikh Mihir (2019) <i>et al.</i>
Oats	Tocopherol and tocotrinols, phenolic acids, selenium	Helps in reduction of weight in Postmenopausal obese women and also helps in prevention of T2DM and CVD	Gani Adil (2012) <i>et al.</i>
Ragi or finger millet	Rich in calcium and potassium, quercetin, ferulic acid	Helps in maintenance of bone health and also contains high fiber to reduce the body weight	Udeh Henry Okwudili (2017) <i>et al.</i>
Moringa oleifera	Carotenoids, Polyphenols, flavanoids, phenolic acid, Isothiocyanate, Tannins, Saponins	It helps in prevention of Several chronic conditions like High BP, Hypercholesterolemia, Diabetes and certain types of cancers and Oxidative stress	Vergara (2017) <i>et al.</i>
	Calcium, Potassium, Beta-carotene, Vit C,	Helps in maintenance of bone health in postmenopause when estrogen level is decreased	Brown Jason (2016);
		Supplementation of moringa leaves powder increases hemoglobin level to prevent from iron deficiency anemia	Choudhary Manisha (2020) <i>et al.</i>
Amaranth leaves	Mg, Folic acid, tannins, saponins, flavanoids, quercetin, Minerals like Iron, calcium, potassium and zinc	Supplementation of amaranth leaves powder on oxidative stress and antioxidant levels in postmenopausal women	Kushwaha Shalini (2014) <i>et al.</i>
Red clover	Isoflavones aglycones, formononetin and biochanin, diadzein, genistein, glycitein and prunetin	Reduced hot flashes, help in lowering blood lipid profile level, and reduced vasomotor symptoms	Kanady's Wieslaw <i>et al.</i> ; 2019, Lipovac Markus <i>et al.</i> ; 2012, Luis. A <i>et al.</i> ; 2018

Black cohosh (Cimicifuga racemose)	Phenoloic acids, flavanoids, tannins	Help in lowering vasomotor symptoms, sleep disturbances mood swings and vaginal atrophy	Leach Matthew J <i>et al</i> ; 2012, Mohapatra Sradhanjali <i>et al</i> ; 2022,
Dong qual		Help to prevent from breast cancer	B. Clara <i>et al</i> ; 2005, Shou Chong <i>et al</i> ; 2011
Evening primrose		Help in prevention of vasomotor symptoms, psychological symptoms, anxiety, hot flashes	Farzaneh Farah <i>et al</i> ; 2013, Sharif Seyedeh Nazanin <i>et al</i> ; 2020, Kazemi Farideh <i>et al</i> ; 2021

Products Available in the Market for Postmenopausal Women

In the market, there so many multimineral and multivitamin pills (as a supplement) are available for postmenopausal women which can helps in the prevention of postmenopausal symptoms. These products are:

Menopause Support: Menopause support is type of supplement for postmenopausal women. The aim of this supplement to reduced to postmenopausal symptoms like hot flases, night sweats, mood swings, insomnia etc. Ingredients which is used in this supplement is include: 63.5 mg of soybean dry extract (40% isoflavones), 35mg of Hibiscus extract, 0.25 mg of essential oils of lemon, lemongrass and Litsea cubeba. In this supplement, also contains 405 mg of tri-magnesium dicitrate anhydrous. Magnesium helps in a reduction of tiredness and fatigue and also helps in normal functioning of the nervous system.

Femarelle Unstoppable Postmenopausal Capsule:

FUPC is a pills for postmenopausal women and is a unique formulation that includes the fermented soybean derivate (DT56a), Vit B2, biotin (B7), Vit D3 and calcium. Vit D helps to maintain the normal bone health and reduces the risk of fracture and muscle weakness. In addition, the substance which is present in the capsule helps to maintain normal mucous membranes, skin, and neurological system function, as well as normal hair and psychological function. Femarell Unstoppable is made utilising a unique manufacturing approach that eliminates the use of harsh chemicals during the manufacturing process. DT56a's patented soy extract is made up of the entire soy complex. This method boosts the bioavailability of Femarelle Unstoppable's active ingredients. Femarelle Unstoppable is not an isoflavone isolate and does not include estrogen. This tablet should be taken twice a day with some water. It is India's most effective natural supplement for ladies over the age of 50-60. It is high in Omega 3 fatty acids, as well as B vitamins, iron, zinc, and antioxidants. Soy aids in the maintenance of healthy oestrogen levels in the body. Flax seeds are high in nutrients that help you maintain a healthy level of energy. Calcium carbonate is ideal for keeping bones and muscles in good shape. Vitamin B2 is beneficial to skin health. Hair and nails are strengthened by vitamin B7. It helps in protection of the neurological system and liver metabolism. Vitamin D3 improves skin elasticity and immunity. It is also helps in weight loss.

Trexgen Menostop Tablets

Trexgen Menostope tables is an advanced natural, NON-HRT based, advanced formula with standardized isoflavones, European black cohosh, multivitamins, multi minerals, micronutrients and trace elements to reduce symptoms in menopause, peri-menopause and post-menopause. This tablets should be taken after breakfast or meal. The ingredients which

is used in this tablets are included: Soy Isoflavones 40% (Daidzein & Genestein), black cohosh Extract 2.5% triterpenes, Vit A (beta-carotene), Vit B complex, Vit D, Vit C, Zn, Se, Mg, Mn, Cu and boron. This is the multivitamins and multimineral tablets which help to protect the body from chronic diseases in postmenopause. These tablets helps to reduced night sweats and hot flashes, irritation and enhances hydration of the skin. It aids in the reduction of vaginal dryness, improve bone and cardiovascular health. During menopause, it lowers the risk of osteoporosis. It aids in weight loss and enhances metabolism. It may also helps in the reduction of nighttime chills.

Menopace ISO: This is the menopause supplement for women. It is UK's most trusted menopause supplement and its brand also available in India now. This supplement contains Vit B6 which helps in regulation of hormonal activity, active lifestyle, maintenance of bone health and also helps to maintain skin and hair.

All these supplements are made for postmenopausal women. All these supplements are rich in vitamins minerals and antioxidants which help in maintenance of health. But these supplements are high in price which is not convenient for all people to buy that products.

Conclusion

Post menopause is defined as the time once that a women has experienced twelve consecutive months of amenorrhea (lack of menstruation) while not a period. Once women approach climacteric or menopause their expelling cycles begin to alter and becomes unpredictable that may be a sign of erratic ovulation that cause unpredictable releases of the hormones estrogen and progesterin or progesterone resulting in range of symptoms related to climacteric or menopause together with physical and psychological symptoms. Evidence support that increasing many women area unit laid low with one or a lot of chronic diseases associated risk factors following the ending of their menstrual cycle. Diet and food intake have a major role in maintaining human health. Unhealthy diet, obesity, and nutritional deficiencies could result in numerous disorders. There is a requirement to target the results of optimum nutrition on the health and prosperity of women throughout change of life. As compared to other cereals such as wheat, rice, maize and barley, ragi is rich in polyphenols is present in seed coat. Moringa leaves powder comprises a significant source of macronutrients (protein, carbohydrates and fat) and micronutrients, polyphenols, flavanoids, tannins, vit C, calcium and also has good bioactive properties respectively. The major objectives of this study was to use of moringa leaves powder as an ingredient which was incorporated in ragi flour to prepare laddoo of high nutritional quality for postmenopausal women. Laddoo made from ragi flour and moringa leaf powder. The product made from moringa leaves powder was helps in prevention health related problem in postmenopausal women. Ragi flour rich in

calcium, iron and dietary fibers which also helps to prevent from osteoporosis, fracture, anemia and diabetes

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