Sustainability, Agri, Food and Environmental Research, (ISSN: 0719-3726), 12(X), 2024:
http://dx.doi.org/ 10.7770/safer-V12N1-art694

Formulation and standardization of herbal nutritious bar and their sensory evaluation specially reference to menopause women.

Formulación y estandarización de barritas nutritivas a base de hierbas y su evaluación sensorial especialmente referidas a mujeres menopáusicas.

Dr. Dipali Saxena[1*] Dr Shweta Keswani[2] and Aditi Gupta[3]

[1,2] Assistant Professor, Department of Foods and Nutrition, Shri Vaishnav Institute of Home Science Shri Vaishnav Vidyapeeth Vishwavidyalaya Indore, Madhya Pradesh, India

[3] Student, Department of Foods and Nutrition Shri Vaishnav Institute of Home Science Shri Vaishnav Vidyapeeth Vishwavidyalaya Indore, Madhya Pradesh, India

Corresponding author's email: dipalisaxena@svvv.edu.in

ABSTRACT

Women in the menopausal transition commonly report a variety of symptoms such as hot flushes, night sweats, heart discomfort, sleeping problems, joint or muscular discomfort, imbalanced hormones etc. The objective of the current study is to formulate an herbal nutritious bar" specifically for women going through menopause utilizing a variety of components, including popped amaranth seeds, amaranth flour, shatavari and some spices. The ingredients were solely used to relieve menopausal symptoms while still giving women essential nourishment. The organoleptic qualities of the items on the 9-Point Hedonic Scale were assessed using the score card method. It was discovered that T8, T9, and T10 were the most successful therapies for all sensory aspects. acceptance of experimental T7 and T8 as minor components generally. It was found that functional meals made for women at risk of menopause with good nutrition not only assist them but also prevent menopause.

Keywords: menupause, hot flashes, amaranth, score card, nutrients etc.

RESUMEN

Las mujeres en la transición a la menopausia comúnmente reportan una variedad de síntomas como sofocos, sudores nocturnos, molestias cardíacas, problemas para dormir, molestias musculares o articulares, hormonas desequilibradas, etc. Las mujeres que pasan por la menopausia utilizan una variedad de componentes,

que incluyen semillas de amaranto reventadas, harina de amaranto, shatavari y algunas especias. Los ingredientes se usaron únicamente para aliviar los síntomas de la menopausia y al mismo tiempo brindar a las mujeres una nutrición esencial. Las cualidades organolépticas de los artículos en el 9-Point La escala hedónica se evaluó utilizando el método de tarjeta de puntuación Se descubrió que T8, T9 y T10 fueron las terapias más exitosas para todos los aspectos sensoriales Aceptación de T7 y T8 experimentales como componentes menores en general Se encontró que las comidas funcionales hechas para mujeres en riesgo de menopausia con una buena nutrición no solo las ayuda sino que también previene la menopausia.

Palabras clave: menupause, sofocos, amaranto, score card, nutrientes etc.

INTRODUCTION

A healthy woman's reproductive, or premenopausal, phase, which is characterized by normal ovulation and cyclic monthly flow, ends with the postmenopausal phase, which is characterized by amenorrhea. Since the cause of menopause is still largely unknown to mankind, it is an unspoken and unattended reality of existence. Menopause, which signifies the end of a woman's reproductive years, is one step in a continuum of life stages. Except in extremely rare circumstances when specialized fertility procedures are applied, a woman cannot become pregnant beyond menopause (World Health Organization, 2022). In most cases, menopause sets in between the ages of 45 and 55 as a normal byproduct of biological ageing. At least 60% of women experience mild symptoms, 20% experience severe symptoms, and 20% experience no symptoms, according to the research. (Tumbull S., 2010)

Hot flushes, night sweats, heart discomfort, sleeping issues, joint or muscular discomfort, imbalanced hormones, sore breasts, depressive mood, emotional changes, irritability, anxiety, headaches, weight gain, hair loss, physical or mental exhaustion, sexual problems, bladder problems, dryness of the vagina, vaginal symptoms, urinary incontinence, sexual dysfunction, labile mood, fatigue, and headache are among the symptoms that women in the menopausal transition frequently report (Dennerstein L. et al., 2009). However, only vasomotor symptoms, vaginal symptoms, and difficulty sleeping are consistently related with the menopausal transition in longitudinal studies, even controlling for age and other variables (Digumarti L.,2013).

Menopausal women's food consumption and food preferences are impacted by the menopausal changes. The prevention and control of changes in body composition can be greatly aided by proper nutrition. A nutrient is considered essential if it is necessary for human life but cannot be produced by the body and must be obtained from food and drink. Therefore, there is a need to create wholesome dietary products that would aid in lowering menopausal women's problems (Fouad S, 2018). According to the definition, a functional food is one that has been added new ingredients or more of existing ones to give it a claimed additional function (typically one that has to do

with promoting health or preventing disease). Functional foods have been shown to include numerous bioactive phytochemicals that have been proven to have positive health impacts.

In this study, a novel product that has been created uses herbs, millet, and spices to treat menopause symptoms while also giving women essential nutrients. The symptoms that are being highlighted are :

1. Hot Flushes: Hot flashes are abrupt, strong feelings of heat accompanied by sweating and a frenzied heartbeat that normally last two to thirty minutes (Casper RF and Yen SS. 1985). Apples, bananas, broccoli, soy products, berries, pears, cucumbers, fennel, licorice, shatavari, black cohosh, brahmi, and other foods fight disease.

2.Night Sweats: The frequent occurrence of profuse sweating while you sleep is known as night sweats. Sage herbs, fenugreek, black cumin, oats, berries, panax ginseng, fennel, shatavari, Brahmi, etc. are foods that fight (Aiello EJ., 2004).

3. Hormonal imbalance: An endocrine disorder that develops when the body produces too many or too few hormones (Ray S and Dasgupta A., 2012).

To create a novel product that functions as a food, especially for menopausal women experiencing symptoms including hot flashes, night sweats, insomnia, anxiety, and mood swings because of hormonal imbalances. For this reason, many substances that aid in reducing menopausal symptoms have been researched. The following ingredients were chosen for the recipe.

A. Shatavari: This remarkable plant is referred to as the "Queen of Herbs" in Ayurveda since it fosters attachment and affection. The primary ayurvedic rejuvenation remedy for women is shatavari, and for men, Withania (Japee J. & Pandya M A., 2006). It is regarded as a general tonic and a tonic for female reproduction. It has the power to boost energy and fertility. The roots of plants are thought to be effective in modern Ayurvedic practices as an antispasmodic, appetizer, stomach tonic, aphrodisiac, astringent, antidiarrheal, antidysentery, laxative, anticancer, anti-inflammatory, blood purifier, antitubercular, antiepileptic, as well as in night blindness, kidney issues, and throat complaints (Thompson B., 1973). The Shatvari is known to possess a wide range of phytochemical constituents.

Women who had osteoporosis risk factors who were menopausal, premenopausal, or postmenopausal were administered shatavari. Shatavari both promotes bone growth and inhibits bone loss. It works in both directions and balances bone remodelling, which can stop bone loss and aid in building up bone mass. Shatavari medication should continue in order to reduce the possibility of postmenopausal osteoporosis (Mitra S. K. et al., 2001 & Dwiwedi M and Kulkarni K.S.2003).

Sustainability, Agri, Food and Environmental Research, (ISSN: 0719-3726), 12(X), 2024:
http://dx.doi.org/ 10.7770/safer-V12N1-art694

B. Amaranth Flour: The amaranth is becoming a superfood due to the high quality of its nutrients, which include squalene, tocopherols, phenolic compounds, flavonoids, phytates, omega-3 and omega-6 fatty acids, and vital amino acids. The full nutritional profile of amaranth seed, which is used to analyze the nutritional profile and create the product, is shown in Table 1.

Table 1: Nutritional composition of amaranth and jaggery

S.No.	Nutrients	Amaranth (Pale brown)	Per 100g	Jaggery Per 100g
1.	Energy	1489±10 KJ		1480±9KJ
2.	Carbohydrate	61.46g		84.87±0.63g
3.	Protein	13.27g		1.85±0.19g
4.	Fat	5.56g		0.16±0.02g
5.	Minerals	3.05g		1.92±0.17g
7.	Dietary Fibre	7.47g		-
8.	Moisture	9.20g		11.20±0.49g
9.	Polyphenols	11.75±2.48mg		127±5.1mg
10.	Carotenoids	59.68±3.09μg		18.49±2.26g
11.	Organic Acids	209 ±49.7 mg		-
12.	Folic acid(B9)	24.65±3.21 μg		14.40±2.40g
13.	Iron	8.02±0.93 mg		4.63±1.23mg

Reference: Indian Food Composition Table 2017 by National Institute of Nutrition Hyderabad

Jaggery's nutritional value is also highlighted, and it is specifically employed as a sweetener to raise the product's general acceptability.

C. Spices : Major symptoms like hot flashes, night sweats, hormonal imbalance, mood swings, anxiety, and lack of sleep are treated with a variety of unusual spices. The total nutritional value of spices is shown in table No. 2 and 3 below, which is used to research the nutritional profile and create the desired product.

Table 2: Nutritional composition of other ingredients of bar

S.No.	Nutrients	Fennel Per 100g	Cardamom Per 100g	Nutmeg Per 100g	Sesame seed Per100g
1.	Energy	1274±19KJ	1067±16KJ	1940±11KJ	2174±9KJ
2.	Carbohydrate	22.62±1.05g	47.76±0.47g	27.64±0.70g	10.83±0.50g
3.	Protein	13.91±0.50g	8.10±0.41g	6.30±0.24g	21.70±0.44g
4.	Fat	16.64±0.15g	2.60±0.15g	36.52±0.04g	43.05±0.04g
5.	Minerals	5.90±0.09g	7.21±0.46g	1.99±0.11g	4.13±0.16g
7.	Dietary Fibre	30.35±0.71g	23.10±0.14g	11.99±0.18g	16.99±0.30g
8.	Moisture	10.59±0.51g	11.25±0.51g	15.55±0.55g	3.30±0.28g
9.	Polyphenols	165±4.4mg	117±1.7mg	645±3.9mg	23.00±1.29mg
10.	Carotenoids	553±32.5 *µg*	366±22.6 *µg*	80.91±9.87 *µg*	57.06±19.48 *µg*
11.	Organic Acids	817±117mg	1961±174mg	194±87.7mg	2004±123mg
12.	Calcium	878±78.0 mg	378±40.7mg	148±12.1mg	1283±149mg
13.	Iron	20.58±4.24mg	8.33±1.44mg	2.33±0.20mg	15.04±2.09mg

D. (Reference: Indian Food Composition Table 2017 by National Institute of Nutrition Hyderabad)

Food Safety and Standards Regulation 2016 states that Schedule IV, which was published in the Food Act Schedule, recommends a certain quantity to be used in foods, health supplements, nutraceuticals, foods for special dietary needs, foods for medical purposes, and novel foods (table 4).

Sustainability, Agri, Food and Environmental Research, (ISSN: 0719-3726), 12(X), 2024:
http://dx.doi.org/ 10.7770/safer-V12N1-art694

Table 3: Ingredients of the formulated product and their functions

S.No.	Ingredients	Function
1.	Amaranth Popped Seeds	Energy, Protein, Minerals, Fiber
2.	Amaranth Flour	Energy, Protein, Minerals, Fiber
3.	Shatavari	Hot Flashes, Anxiety, Night Sweats, Sleeplessness, White discharge
4.	Jaggery	Sweetener, Minerals (Iron)
5.	Honey	Sweetener
6.	Ghee	Lubricating & Greasing agent, Healthy fat
7.	Fennel	Hot Flashes
8.	Nutmeg	Blood Circulation, Hormone Balancing
9.	Cardamom	Mood Enhancer, Anxiety
10.	Sesame Seeds	Hormone Balancing, Antioxidants, Garnishing agent, Minerals (Calcium)

Table 4: Permitted range of usage table for functional food (Food Safety and Standard 2016).

S.No.	Botanical name and Part used	Common Name	Permitted range of usage for adults per day
1.	*Asparagus racemosus* Wild (Tuberous root)	Shatavari, Sitawar, Satawari	3-6 g (as powder)
2.	Elettaria cardamomum *(L.)* Maton (Seed)	Choti elaichi	250-500 mg (as powder)
3.	*Foeniculum vulgare* Mill (Fruit)	Saunf	5-10 g (as powder)
4.	*Myristica malabarica* Lam (Seed)	Jaiphala	0.5 -2 g

AIMS & OBJECTIVES

A study can be performed in a systematic manner with predefined objectives. Following objectives have been identified in the present conducted study.

1. To formulate the functional food.

2. To standardize the functional food.

3. To conduct a sensory evaluation of formulated functional food.

Material and Methodology

a) Preparation of ingredients: Amaranth grains, and other ingredients used in snack bar making were purchased from the local supermarket of Indore. Amaranth grains were hand washed to eliminate stones, grit, chaff, and other contaminants after being sun dried for one day. To make flour, the dried grains were then ground. The prepared sample was then manually sieved out of the flour, put in airtight containers, and kept at room temperature until it was utilized to make bars. The raw amaranth grains were used in popped form.

Shatavari, the herb, was sun-dried before being pulverised and squeezed into powder. Additionally, the employed spices are ground and filtered into powder. Every ingredient has unique properties that are used in the formulation of functional foods.

b) Formulation of product

Ten trails given table 5 with various ingredients were developed in the nutrition lab of the food and nutrition department at the Shri Vaishnav Institute of Home Science under the supervision of the faculty and lab assistants.

Table 5: Formulation Table of the Executed Trials

S.No.	Ingredients(g)	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10
1.	Amaranth Seeds	35	35	35	35	20	20	20	20	20	20
2.	Amaranth Flour	-	-	-	-	12	15	12	12	12	12
3.	Jaggery	15	20	20	25	30	30	30	30	30	30
4.	Honey	10	15	15	15	10	10	10	10	10	10
5.	Ghee	15	10	10	10	10	10	10	10	10	10
6.	Shatavari	6	6	6	5	5	5	5	5	5	5
7.	Cardamon	6	3	4	2	3	2	3	3	3	3
8.	Nutmeg	3	3	2	3	3	2	3	3	3	3
9.	Fennel	10	8	6	5	5	5	5	5	5	5
10.	Sesame Seeds	-	-	-	-	2	1	2	2	2	2

Sustainability, Agri, Food and Environmental Research, (ISSN: 0719-3726), 12(X), 2024:
http://dx.doi.org/ 10.7770/safer-V12N1-art694

c) Procedure of formulation of bar

Weigh all the ingredients and place them in individual bowls.

↓

Take a bowl; add Honey and Powdered form of Shatavari, Fennel, Cardamom, and Nutmeg. Mix it well. Keep it aside for few minutes.

↓

Parallelly, take a pan, heat it up to high temperatures. (To check the temperature, add few seeds in pan, if seeds popped up then add all other seeds.)

Add seeds to the pan. Take out all the popped seeds in the plate.

↓

In the same pan add jaggery and few drops of water to melt it. Switch off the flame. Add Ghee, Amaranth popped seeds and flour. Mix it well.

↓

Now, add Honey mixture to the pan.

↓

Mix the whole mixture properly.

↓

Take greased mold and add mixture to it. Take it out on plate from mold and give the shape of bar with help of hands and spoon.

↓

Garnish the bar with Sesame seeds.

↓

Pack the snack bar tightly in zipper-lock pouch.

d) Sensory Evaluation

Sensory evaluation has been defined as the sensory attributes of colour, appearance, texture, flavour, taste and overall acceptability by using nine-point hedonic scale score and scientific discipline used to evoke, measure,

analyze and interpret those responses to products as perceived through the senses of sight, smell, touch and hearing (Sipos, L et al.,2021).

Acceptability trials were conducted by a semi-trained panel of the respondents from the Department of Food and Nutrition. Sensory evaluation of the samples was carried out using 9-point Hedonic scale. The degree to which a product was liked expressed as like extremely (9), like very much (8), like moderately (7), like slightly (6), neither like nor dislike (5), dislike slightly (4), dislike moderately (3), dislike very much (2), and dislike extremely (1).

RESULTS AND DISCUSSION

Fifty participants were subjected to sensory evaluation by a semi-trained food and nutrition department panel from the Shri Vaishnav Institute of Home Science. T1 in the provided figure 1 was unacceptable in terms of appearance and texture, but acceptable in terms of flavour, aroma, and taste. However, the bitter taste of fennel overpowered the flavours of cardamom and nutmeg. The texture was greasier because there was a lot of ghee used (Figure 1, Trail 1).

Figure 1: Photographs of all the trials performed.

T2's appearance and texture were unacceptable, but its flavor, scent, and taste were still good. The fennel and cardamom amounts were slightly altered. T3 and T4 were unsatisfactory in terms of texture and look, but it was a successful experiment in terms of flavour, aroma, and taste. However, the bar's binding was still not seen. As amaranth was utilized in the product in two different forms, popped seeds and flour, a minor binding capacity was seen in T5 (Figure 1, Trail 5). The number of popped seeds decreased, and flour addition was seen. The quantity of the remaining ingredients remained constant. Sesame seeds are shown being used as a garnish. In the given Fig. 2 the T7 was considered as the idea trial for all the sensory parameters as the proper appearance and texture was observed. The proper flavour, taste and aroma were observed.

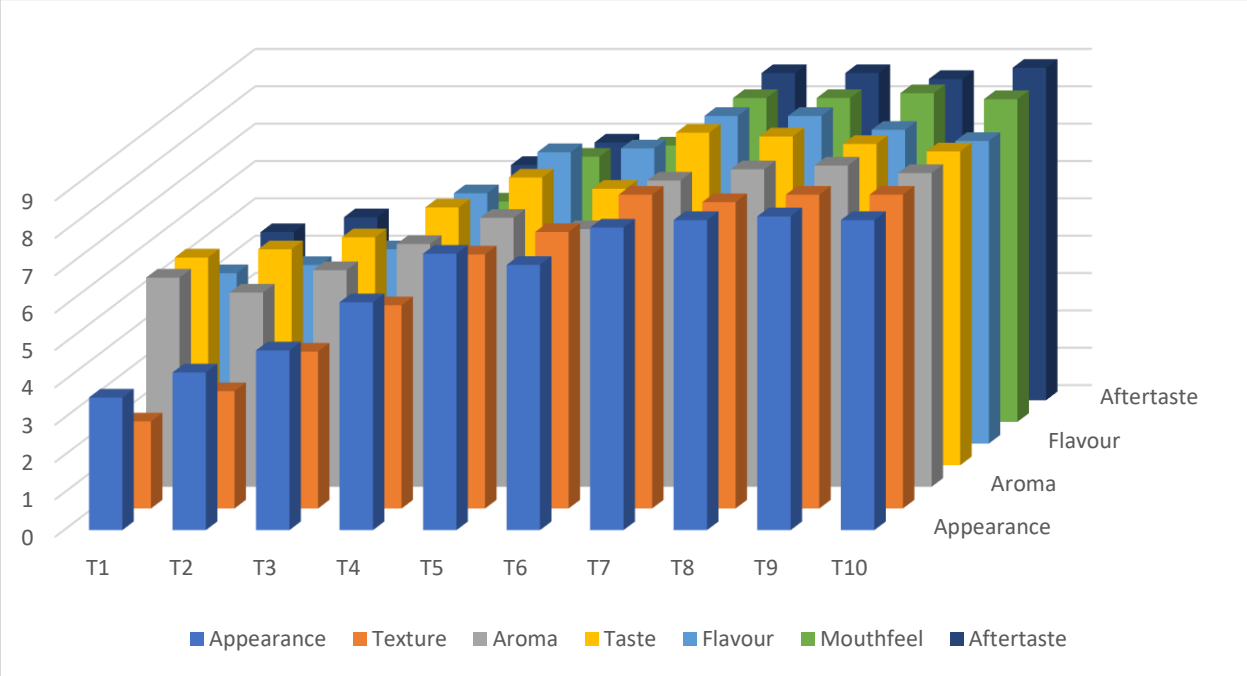

Fig 2: Graphical representation of sensory evaluation from Trail 1 to trail 9

The panel generally found the product to be high in acceptability and acceptable. To determine the ideal bar shape, additional trials (T8, T9, and T10) are conducted. Despite variations in shape, size, and weight, the product's overall formulation remains the same. The correct snack bar was set in T9 based on the intended shape, and T10 was taken into consideration for the product's repeatability.

CONCLUSION

According to the results of the current study, menopausal and post-menopausal women have a variety of physical, mental, and vasomotor health issues that are caused by menopause hormone changes. Since there hasn't been a specific health programme for those women in remote areas, it is necessary to address the women's group

separately and provide nutrition instruction. They were ignorant of the advantages of eating nutrient-rich foods. Similar to this, it is important to promote and practice counselling during this stage, as well as the dissemination of knowledge on physical and psychological activities.

To improve the product's acceptability and friendliness to consumers of all ages and genders, research should be done further and the practice of adding other ingredients such as nuts, seeds, powdered fruits and vegetables, millet flours, other herbs and spices should be used.

ACKNOWLEDGMENT

We were grateful to our coordinator of Shri Vaishnav Institute of Home Science Prof. Uttam Sharma for all the facilities and opportunities that we have been provided. We would like to thank our friends and family for their motivation and encouragement.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

Aduni, A.U. Bernard, T. Noel, T. Hilaire, W.M. Marcel, M. N. Lucy, E. T. 2016. Quality Evaluation of Nine Instant Weaning Foods Formulated from Cereal, Legume, Tuber, Vegetable and Crayfish. International Journal of Food Science and Nutrition Engineering. 6(2):21-31 2.

Aiello, E.J. Yasui, Y. and Tworoger, S.S. 2004. Effect of a yearlong, moderate-intensity exercise intervention on the occurrence and severity of menopause symptoms in postmenopausal women. Menopause.11:382.

Alina, S. Alisha, S. Kumananda, A. Mithileshwer, R. & Bharat, J. 2015. Study of metabolic syndrome in postmenopausal women. Department of Biochemistry, Institute of Medicine. ACCLM.1(1):6-11 3.

Bharathi, Sindhu. 2015. Development of antioxidant rich instant biscuit mix. International Journal of Current Pharmaceutical Research.7(2).

Casper, R.F. and Yen, S.S. 1985. Neuroendocrinology of menopausal flushes: an hypothesis of flush mechanism. Clinical endocrinology.22:293–312

Dennerstein, L. Dudley, E.C. Hopper, J.L. Guthrie, J.R. Burger, H.G. 2009. A prospective population-based study of menopausal symptoms. Obstetrics & Gynecology. 96(3). 351–358.

Digumarti, L. Agarwal,N. Vaze, N. Shah, R. Malik, S. 2013. Clinical practice guidelines on menopause: An executive summary and recommendations J Midlife Health. 4:77–106.

Dwiwedi, M. and Kulkarni, K.S. 2003. Evaluation of efficacy of menosan in women with menopausal syndrome. A placebo-controlled study. Obst. and Gyn.3. 153-156.

Fouad, S. E. Shebini, S. Moaty, M. Ahmed, N.H. Hussein, A.S. Gendy, A. Essa, H.A., & Tapozada, S.T. 2018. Nutritional supplement prepared from whole meal wheat flour, soya bean flour, Flaxseed and Anise seeds for alleviating the menopausal symptoms. J Biol Sci 18(7). 381–388.

Japee, J. and Pandya, M A. 2006. A Clinical Study on the role of Shatavari in minimizing the risk of postmenopausal osteoporosis. IPGT & RA., Jamnagar.

Jiang, K. Jin, Y. Huang, L. Feng, S. Hou, X. Du, B. Zheng, J. & Li, L. 2015. Black cohosh improves objective sleep-in postmenopausal women with sleep disturbance. Climacteric. 18(4). 559–567.

Lu, J. Liu, J. & Eden, J. 2007. The experience of menopausal symptoms by Arabic women in Sydney. Climacteric.10. 72–9.

Ma, L. Lin, S., Chen, R.Wang, X. 2010. Treatment of moderate to severe premenstrual syndrome with Vitex agnus castus in Chinese women. Gynecol Endocrinol. 26(8). 612–616.

Mahajan, N. Aggarwal, M. Bagga, A. 2012. Health issues of menopausal women in North India. J Midlife Health.3:84

Mehersihi, S. Khandelwal, S. Swarankar, M. Kaur, P. 2010. Attitudes and practices of gynecologists in Jaipur towards management of menopause. J Midlife Health. ; 1:74–8.

Mitra, S. K. et al. 2001. the beneficial effect of OST – 6 (Osteocare) a Herbo mineral formulation in experimental osteoporosis. Phytomed. 8. 195.

Omidvar, S. Bakouie, F. & Amiri, FN. 2011. Sexual function among married menopausal women in Amol (Iran) J Midlife Health.2:77–80.

Pines A. 2010. Guidelines and recommendations on hormone replacement therapy in menopause. J Midlife Health.1.41–2

Prior, J. C. (2008). The Ageing Female Reproductive Axis II: Ovulatory Changes with Perimenopause. Endocrine Facets of Ageing. 172

Priya, B. Anurag, C. Soni, R.K. Pushapindra, K. 2013. Menopausal problems among rural middle-aged women of Punjab. International Journal of Research in Health Sciences.1(3). 23.

Puri, S. Bhatia, V. Mangat, C. 2008. Perceptions of menopause and postmenopausal bleeding in women of Chandigarh, India. Internet J Fam Pract. 6(2):1–6.

Rania, L. Mohamed, L. Mohamed, K. 2012. Nutritional status of Menopausal women. International Journal of Science and Engineering Investigations. 1(1). 24.

Ray, S. and Dasgupta, A. 2012 An assessment of QOL and its determining factors of postmenopausal women in a rural area of west Bengal, India: A multivariate analysis Int J Med Public Health.;2:12–9.

Report of a WHO Scientific Group. 1996. Research on the menopause in the 1990s World Health Organ Tech Rep Ser.; 866:1–7

Ruchita, G. Rajani, R. Manisha, P. Lalitha, G.M. Renu R. 2015. Menopausal symptoms among post-menopausal women of North India, Journal of south Asian Federation of Menopause Societies. 3(5).

Schoppen,S. Ángeles, C. & Vivas, F. 2005. Food, energy, and macronutrient intake of postmenopausal women from a menopause program. Nutricon Hospitalaria. 101–109.

Sagdeo, M.M. and Dimple, A. 2011. Menopausal Symptoms: A Comparative Study in Rural and Urban Women. JK science.

Saka, M. Saidu, R. Jimoh, A. Akande, T. Olatinwo, T. 2012. A. Behavioral pattern of menopausal Nigeria women. Ann Trop Med and Public Health.;5:74–9.

Shah, R. Kalgutkar, S. Savardekar, L. Chilang, S. Iddya, U. 2004. Menopausal symptoms in urban Indian women. Obstet and Gynecol Today.;11:667–70.

Silvina, L. Marcio, L. Griebeler. T. 2010. The Role of Soy Foods in the Treatment of Menopausal Symptoms. The Journal of Nutrition.

Sipos, L. Nyitrai, Á. Hitka, G. Friedrich, L.F Kókai, Z. 2021. Sensory Panel Performance Evaluation—Comprehensive Review of Practical Approaches. Appl. Sci. 11. 11977

Somibala, T. and Manju, C. 2014. Prevalence for Osteoporosis and Osteopenia in Pre and Post Menopausal Women in India. International Journal of Science and Research (IJSR). 4(10).

Sudhaa, S. Vishal, R. Annil, M. 2007. Menopausal symptoms of Urban women, JK science, 9(1).

Swaraj, R. Amatya, A. Kanti G. 2013. Relation of Ethnicity and Menopausal Symptoms in Nepal, Journal of South Asian Federation of Menopause Societies. 1(2):50-55.

Thompson, B. Hart, S.A. Durno, D. 1973. Menopausal age and symptomatology in general practice. J Biosoc Sci.5(1):71–82

Tumbull, S. 2010. Yoga as a treatment for menopausal symptoms. J Yoga Ontogenet and Therap Investig.14–5.

Venkateswari, P Parameshwari, S. 2016. Formulation of wheat - soya bean Biscuits and their quality characteristics. International Journal of Academic Research and Development.1(2). 4.

Received: 26th April 2023; Accepted: 11th Jule 2023; First distribution: 31th August 2023

Sustainability, Agri, Food and Environmental Research, (ISSN: 0719-3726), 12(X), 2024:
http://dx.doi.org/ 10.7770/safer-V12N1-art694

Sustainability, Agri, Food and Environmental Research, (ISSN: 0719-3726), 12(X), 2024:
http://dx.doi.org/ 10.7770/safer-V12N1-art694

Observations

Sustainability, Agri, Food and Environmental Research, (ISSN: 0719-3726), 12(X), 2024:
http://dx.doi.org/ 10.7770/safer-V12N1-art694