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STUDY OF SOYA (GLYCINE MAX L. MERR.) ON MENOPAUSAL SYNDROME, AN EXTRA-PHARMACOPIEAL DRUG.

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ABSTRACT

Introduction: Menarche and menopause are the landmarks of the reproductive life of a woman. Menopausal syndrome is a transitional phase of imbalance of hormones by a varying degree of somatic and psychological changes. Due to increase in the life expectancy of female, the figures of menopausal women will be 103 million by 2026. Hormones replacement therapy, being the line of treatment of menopausal syndrome, also creating various drawbacks. Therefore, there is interest of some naturally occurring compounds with estrogenic properties, which is referred as phytoestrogens. Soya (Glycine max), being the richest source of phytoestrogen can be an alternative to the oestrogen replacement therapy for treating menopausal syndrome. This article aims upon the study of soya on menopausal syndrome with its pharmacological and pharmacodynamical action in details. Materials and methods: All the ayurvedic classics and modern text along with journals, electronic databases, PubMed, Cochrane, google scholar has been thoroughly searched. Result: As there is no direct reference of soya in ayurvedic classics, it belongs to the group of *shimbi dhanya varga* which is described in classics. The pharmaceutical and pharmacological action of soya related to the menopausal syndrome has been focused upon. Discussion and conclusion: As the stage of menopause implies upon hypo estrogenic Condition, so oestrogen is needed for the body in order to fulfil the level and supress the symptoms. Action of soya for the management of menopausal syndrome can be implemented due to the presence of phytoestrogens in terms of isoflavones in order to maintain the hormonal balance.

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INTRODUCTION

Menopause being a transitional phase of a life of female, brings a lot of fluctuations in the normal physiology. So some imbalance occurs in the homeostasis of hormones which manifest as sign and symptoms of menopausal syndrome. Hormone replacement therapy (HRT) and estrogen replacement therapy (ERT) historically have been the most common therapies for the relief of menopausal symptoms. However, due to possible contraindications such as breast or endometrial cancer and undesirable side effects[1] associated with use of ERT/HRT, compliance to hormonal therapy is poor.[2] Soya (Glycine max L. Merr.) is an herb that contains some naturally occurring oestrogens, known as phytoestrogen in terms of isoflavones. Soy isoflavones have been investigated recently as an alternative therapy to relieve menopausal symptoms without the accompanying side effects of ERT/HRT. So it may be highly beneficial to reduce the sign and symptoms of menopausal syndrome. The use of alternative therapies for menopausal symptoms is common, and women who use them commonly find to be beneficial[3]

Soybeans were a crucial crop in East Asia long before written records began. There is evidence for soybean domestication between 7000 and 6600 BCE in China, between 5000 and 3000 BCE in Japan and 1000 BCE in Korea. They are now a major crop in the United States, Brazil, Argentina, India, and China. Prior to fermented products such as fermented black soybeans (*douchi*), *jiang* (Chinese miso), soy sauce, tempeh, natto, and miso, soy was considered sacred for its beneficial effects in crop rotation. At present, India exports 55% of its soya meal.

MATERIALS AND METHOD

All the ayurvedic classics including *samhitas* and commentaries and modern text along with journals, electronic databases, PubMed, Cochrane, google scholar has been thoroughly searched.

RESULT

Soya can be compared to a plant of *shimbi dhanya.* All *acharyas*[4, 5, 6,7] has been described the properties and action of *shimbi dhanya.* So its *rasa panchaka* can be determined as per this reference.

Parts Used: seeds

Rasa Panchaka:

Rasa	*= Madhura , Khashaya,*
Guna	*= Guru, Snigdha,*
Virya	*= Ushna,*
Vipak	*= madhura*
Doshaghnata	*= Vata Nashaka*

Morphology

Soybean is an annual plant, may grow prostate, not higher than 20 cm. Leaves are trifoliate and alternate. It has Papilloneceous flowers of tubular calyx of 5 sepals which is purple, pink or white in colour. Flowers are formed between the leaves and the stem. Each long, hairy seedpod contains up to four soybeans. Soybean plants have a simple root system of nodules with a taproot[8].

Chemical Constituents -

Soybean oil and protein content account for about total 60% of dry soybeans by weight (protein at 40% and oil at 20%). The remainder consists of 35% carbohydrate and about 5% ash. The beans contain significant amounts of phytic acid, alpha-linolenic acid, and isoflavones (like genistein and daidzein).[9] Soybeans are a rich source of isoflavones, a class of phytoestrogens found predominantly in legumes and beans. [10] The isoflavones are natural phenols. Soy's content of isoflavones are as much as 3 mg/g dry weight.[11] It also contains glycitein, an O-methylated isoflavone which accounts for 5–10% of the total isoflavones in soy food products. Glycitein is a phytoestrogen with weak estrogenic activity, comparable to that of the other soy isoflavones.[12] Glyceollins are molecules belonging to the pterocarpans family. They are also found in the soybean and have been found to have an antifungal activity against *Aspergillus sojae*, the fungal ferment used to produce soy sauce.[13]They are phytoalexins with an anti -estrogenic activity.[14]

DISCUSSION

Menopause is defined as caseation of period for twelve months due to the absence of ovarian function resulting in permanent amenorrhoea. It is thus a gradual and natural transition phase of adjustment between the active and inactive ovarian function which is characterised by varying degree of somatic and psychological changes hot flush, mood swing etc. The discomfort arise simply because of imbalance of *Dosas* which dispel the discouraging negativity like various symptoms, collectively called as menopausal syndrome. Menopause in Ayurveda explained as "*Rajonivriti*" that refers to caseation of raja as a consequence of "*Jara pakva sharira*" due to *Dhatukshya.* This *dhatukshya* leads to produce various symptoms due to reduced level of hormones in a female's body. In order to fulfil this level, some supplements should be prescribed externally. As the major symptoms are produced due to deficient of oestrogen, natural oestrogen alternatives are a treatment of choice.

Phytoestrogen are the substances plant derived oestrogens having the ability of estrogenic or anti estrogenic effects. Phytoestrogen content varies in different foods, and may vary significantly within the same group of foods depending on processing mechanisms and type of soybean used.[15] Phytoestrogens actually are estrogenic analogues, of vegetal derivation, of Potentially high therapeutic interest, having oestrogen-mimetic activity; those are able to bind with the estrogenic receptors.[16] Soy isoflavones are estrogen-like substances structurally and functionally similar to 17-estradiol[17]and may play a role in providing relief of menopausal symptoms.[18,19,20,21,22,23] Isoflavones are thought to exert both estrogenic and antiestrogenic effects, depending on the tissue.[24] For example, isoflavones may block the estrogen receptor, thereby having an anti- estrogenic effect on uterine and breast tissue[25] where excess estrogen may promote tissue proliferation. Conversely, isoflavones may bind to the estrogen receptor and stimulate estrogenic activity in other tissues, thereby having an estrogenic effect. It has been hypothesized that soy isoflavones exert a pro-estrogenic effect on menopausal syndrome.

Various studies has been done to establish the effect of soya on various symptom of menopausal syndrome. Soy isoflavones extract was effective in reducing frequency and severity of flushes and did not stimulate the endometrium. Soy isoflavone extracts provide an attractive addition to the choices available for relief of hot flushes[26.] It may be a safe and efficacious therapy for relief of hot flushes in women who refuse or have contraindications for hormone replacement therapy. [27] Dietary flour supplement of soy also proved to decrease hot flush.[28] As there is more psychological variation like mood swing, depression occurs in menopause, soy has a favourable effect on cognitive functions.[29]

CONCLUSION

A remarkable amount of research into the health effects of soy consumption has been conducted, which in large part can be attributed to the presence of isoflavones in the soybean.

At this same time, isoflavones began to be widely discussed as potential alternatives to conventional hormone therapy. Soya seeds are one of these plants which have richest source of phytoestrogens as isoflavones and very useful to treat symptoms arises due to menopause such as hot flashes, osteoporosis, CAD, cognitive functions etc.

More recently, in vitro and animal research has raised questions about the safety of isoflavone exposure for certain subsets of the population, although the human data are largely inconsistent with these concern.

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Abbreviation – none

Conflict of interest – none

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