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Quality of life after menopause: Effects of hormone replacement therapy, vitamin E and sudarhana kriya yoga practice: A comparative study.

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Abstract

Sudarshan Kriya Yoga (SKY) is a breathing technique introduced by Poojya Guruji Sri Sri Ravishankar, Founder of Ved Vignan Maha Vidya Peeth, Bangalore. This study was aimed to examine the effect of SKY practice and antioxidant enzymes activities on menopausal women. One hundred and ninety subjects of age group 45-60 years, non-smokers and non-alcoholic were selected and divided into three groups. Group 1 consisting of 40 out of 190 subjects received hormone replacement therapy (HRT). The group 2 of 40 subjects received 500mg/day of vitamin E orally for 30 consecutive days.The group 3 of 60 subjects were on daily practice of SKY for cosecutive 30 days. The remaining 50 menopausal women acted as controls. Plasma MDA, erythrocyte SOD and GSHpx concentrations were assessed in all the subjects before and after 30 days of respective treatment. Serum MDA levels were significantly decreased in all the *140* subjects; whereas SOD and GSHpx were significantly elevated in the subjects of all 3 groups after 30 days of respective treatment compared to controls. However, a high significant increase in SOD and GSHpx levels with a corresponding decrease in serum MDA were evident in the subjects who were exposed to SKY compared to the subjects who had HRT or vitamin E. Our study demonstrates that practice of SKY could be beneficial to the menopausal women by increasing *in vivo* levels of antioxidant.

Keywords: Sudarshan Kriya yoga (SKY), MDA, SOD, GSHpx.

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Introduction

Changes in menstrual function are not symbols of ominous "change". There are good physiological reasons for changing menstrual function and understanding physiology reinforce a healthy, normal attitude. Attitude and expectations of menopause are very important.

The symptoms are related to many variables within their lives, hormonal change cannot be held responsible for the common psychosocial and lifestyle problems we all experience. Menopausal women do not suffer from disease (specifically hormonal deficiency disease) and post-menopausal hormone therapy should viewed as specific treatment for symptoms short-term and preventive pharmacology in long-term [1, 2].

Free radicals and peroxides are clearly involved in physiological phenomena such as synthesis of prostaglandins, thromboxanes and pathogenesis of various diseases including atherosclerosis, inflammatory diseases, cancer and are thought to precipitate ageing process. The biological effects of these highly reactive compounds are controlled in vivo by a wide spectrum of antioxidant defence mechanisms; vitamin E, vitamin C, carotenoids and antioxidant enzymes. The enzyme SOD catalyses dismutation of the superoxide anion into hydrogen peroxide, GSHpx detoxifies hydrogen peroxide and also converts lipid hydrogen peroxide to non-toxic alcohols [3,4].

Hormonal replacement therapy (HRT) and oral supplementation of vitamin E (500mg/day) in menopausal women have been shown to exert a protective effect against atherosclerosis [5, 6, 7], osteoporosis [8] and degenerative process of the skin [9] and the brain [10], urogenital atrophy and other diseases associated with aging [11]. Some studies have demonstrated that oestrogens have an antioxidant effect both *in vitro* and *in vivo* by acting as free radical scavengers [12,13]. However, the data concerning the antioxidant properties of oestrogens remain controversial [14,15].

Our earlier research data on SKYP, demonstrated that in normal healthy individuals there were elevation of antioxidant enzymes like SOD, GSHpx with a corresponding decrease in MDA, a marker of membrane lipid peroxidation [16]. Present study was aimed to investigate the effects of synthetic oestrogen, oral antioxidant such as vitamin E and practice of SKY on antioxidant enzymes (SOD and GSHpx) in menopausal women. This study may throw light in understanding the pathophysiology and management of postmenopausal problems.

Materials and Methods

The present study was carried out in the Department of Biochemistry and Department of Obstetrics & Gynaecology, Vani-Vilas Hospital, Bangalore Medical College, Bangalore. The ethical committee clearance obtained from the appropriate authority appointed by the institution.

In this study, a total of 190 subjects of age group 45 - 65yrs were included and divided into groups. Forty of the 190 subjects (group 1) received hormone replacement therapy (HRT) for 30 days with transdermal patches containing 8mg of oestradiol. The group 2 of 40 subjects received 500mg/day of vitamin E orally for the period of 30 days. Sixty subjects of group 3 were on daily practice of sudarshana KriyaYoga for 30 consecutive days.The reaming 50 menopausal women acted as controls. Plasma MDA, SOD and GSHpx concentrations were assessed and compared for all the groups before and after 30-day of respective treatment.

Patients on anti-inflammatory drugs, antidepressants, thyroid hormone and patients with history of liver disease, cancer, alcohol consumption, smoking, hypertension, diabetes mellitus were excluded from the study.
From each subject, 5ml of venous blood were collected after overnight fasting. 2 ml of the blood sample were added in heparinized tube and the remaining 3 ml in the sterile plain tube.

The serum sample was used for estimation of MDA by thiobarbituricacid method by using semi auto analyser [17].

RBCs are separated from heparinized blood and used for the estimation of erythrocyte SOD levels. GSHpx concentration was determined by RANDOX kits by using fully automated analyser.

Statistical analysis was performed by *student "t" test* and "p" values of <0.05 were considered significant.

Results

Menopausal women of the control group showed significantly higher levels of MDA and lower levels of erythrocyte SOD and plasma GSHpx activity. Conversely, a significant increase in erythrocyte SOD and GSHpx, after 30 days of HRT(group 1); vitamin E (group 2) or practise of SKY (group 3), with a corresponding decrease in serum MDA levels were evident (Table 2).

Tables 1. *Demographic characteristics of menopausal women*

No of subjects	Mean Age(yrs)	Body Wt(kg)	BMI (kg/m^2)	Time since menopause(months)
190	50.5 ± 9.0	64.8 ± 6.8	25.9 ± 3.8	10 ± 5.0

Table 2. *Levels of MDA and antioxidant enzymes in controls and menopausal women who are on treatment with HRT, vitamin E and SKY.*

Groups		Study Group		
	Controls (n=50)	Group 1 (n=40)	Group 2 (n=40)	Group 3 (n=60)
Parameters	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
MDA (nmol/ml)	4.16 ± 0.26	2.61 ± 0.7*	2.2 ± 0.7*	1.4 ± 0.6**
GSHpx (units/L)	222 ± 29	280 ± 16*	279 ± 24*	470 ± 42**
SOD (units/ml)	1.09 ± 0.21	2.4 ± 0.14*	2.3 ± 0.16*	3.4 ± 0.31**

n = No. of subjects **p<0.01. **p<0.001,*

Discussion

This is one of the preliminary studies where an attempt was made to see the effects of HRT, vitamin E and the practise of SKY on menopausal women. Free radical reactions are involved in several biological process such as membrane lipid peroxidation and oxidative LDL- Cholesterol modification [18]. Membrane lipid peroxidation is

one of the processes determining cell ageing. Present study was under taken to compare the lipid peroxides (serum MDA level) which is a marker of membrane lipid peroxidation and anti-oxidant enzyme activities namely GSHpx and erythrocyte SOD level in menopausal women before and after the treatment of HRT, vitamin E, and practise of SKY.

In this study (Table 2), it was observed that MDA concentration decreased in plasma after 30-day treatment of HRT, vitamin E or SKYP. It was also observed that SOD and GSHpx levels significantly increased after 30 days of respective treatment schedules. Our results showed an inverse relationship between lipid peroxide and antioxidant enzymes (SOD and GSHpx) status in all the three groups. It is, therefore reasonable to assume that the antioxidant effect of oestrogen is decreased in menopause, or during the aging process [19].

The ability of oestradiol to function as free radical scavenger has been well documented [12,13], but the mechanism remains unknown. Oestrogens have phenolic structure in their molecule and may donate hydrogen atom from their phenolic hydroxyl group to lipid peroxy radicals terminating chain reactions. Oestrogen also influences natural antioxidant enzyme activities *[15,19,21]*.

Inal et al. [20, 21] observed that there was significant increase in SOD and GSHpx after the HRT and vitamin E combined therapy rather hormone therapy alone. Our data show , SKYP has a strong tendency towards an increase in antioxidant enzymes (SOD and GSHpx) and decreasing lipid peroxidation compared to HRT or vitamin E therapy in menopausal women. Thus Sudarshan Kriya Yoga practise (SKYP) possibly constitutes a step forward in the search of improvement of quality of life in menopausal woman.

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