Research Article

Reducing oxidative stress through Vipassana meditation

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Abstract

Vipassana is one of India's most ancient meditation techniques. The study is undertaken to find out the effect of Vipassana intervention on serum MDA levels through a self controlled trial at Government Medical College and Hospital, Latur, by Department of Physiology and pathology. It is observed that before and after Vipassana practices the mean serum MDA levels in the subjects was 3.12±0.67 and 2.51±0.55 respectively. The average fall in serum MDA level was 0.71. Vipassana could contribute as mechanisms, which result in decrease in oxidative stress.

Keywords: Vipassana, serum MDA levels, Oxidative Stress.

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INTRODUCTION

Vipassana is one of India's most ancient meditation techniques. The word Vipassana means seeing things as they really are. It is the process of self- purification by self-observation. One begins by observing the natural breath to concentrate the mind. With a sharpened awareness one proceeds to observe the changing nature of body and mind and experiences the universal truths of impermanence, suffering and egolessness. It is claimed that it can be freely practiced by everyone, at any time, in any place, without conflict due to race, community or religion, and will prove equally beneficial to one and all. Many people have claimed beneficial effects on health.[1] Free radical injury has been postulated as one of the casual factor in some diseases and psychological stress. Free radicals have been implicated in atherogenesis and in diabetics, in the development of micro vascular complications. Peroxidation of fatty and containing two or more double bonds i.e. polyunsatured fatty acids will produce aldehydes like malondialdehyde (MDA). The presence of this oxidation byproduct correlates with the extent of lipid peroxidation. MDA indicates indirectly the concentration of free radicals in serum. This indirectly indicates "Oxidative Stress" and can result in serious cell damage if the stress is invasive or prolonged. With this background and encouraged by the fact that only a few studies have been carried out in India. The present study is undertaken to assess the magnitude of serum MDA levels level before and after "Vipassana intervention programme" through a self controlled trial at Government Medical College and Hospital, Latur, by Department of Physiology and pathology.

AIMS AND OBJECTIVES

Aim: To study Vipassana as a method of cost-effective practice. The objective of the present study is to study the effect of Vipassana on serum MDA levels in the study subjects.

MATERIAL AND METHODS

Type of study: The present study was designed as a self controlled trial.

Duration: The study subjects were enrolled between 1st jan to 11jan 2014.The active intervention period was one10 days. Each enrolled subject was followed for a period 10 days during the intervention programme.

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Place: The present study was carried out at dhammavas vipassana center, Latur. A Vipassana camp was organized by the vipassana center, Latur. The training of Vipassana a was given by a Vipassana teacher. This camp was free for all people.

Study subjects: 30 subjects in the age group of 20-55 years, men were included in the study.

Criteria for inclusion: Those subjects who had voluntarily enrolled for this programme during study from 1st Jan to 11Jan 2014in the age group of 20-55 years.

Criteria for exclusion: Subjects with addictions (smoking, tobacco chewing, alcohol intake), hypertension, diabetes mellitus, unstable angina pectoris, left ventricular failure, cardiomegaly, ventricular arrhythmia or any other systemic diseases were excluded. There were 30 subjects who had enrolled, were selected for study. Remaining were not selected due various reasons.

OBSERVATIONS

Table 1: Comparison of average serum MDA levels before and after Vipassana

Parameter	Before Vipassana mean ± SD	After Vipassana mean ± SD	't'	'p'	Significance
Serum MDA levels (nmol/ml)	3.12± 0.67	2.51 ±0.55	11.2	<0.01	Significant

It is observed from table-I that before and after Vipassana practices the mean serum MDA levels in the subjects was 3.12±0.67 and 2.51±0.55 respectively. The average fall in serum MDA level was o.71. This indicates decrease in serum MDA after Vipassana and it was found to be statistically significant ($p<0.01$). To assess the free radical load before Vipassana and after Vipassana we have measured serum Malondialdehyde, a product of lipid peroxidation. Normal range of serum MDA is 1-7 nmol/mol. This indicates decrease in serum MDA level after Vipassana and it was found to be statistically significant ($p<0.01$).The present study findings are in agreement with the following studies. Schneider *et al* (1999) [2] analyzed venous sample for lipid peroxide by TRARS assay. They found reduced levels of serum MDA in meditators as compared to non-meditators. The lower serum lipid peroxide levels may be associated with stress reduction Tiwari, Gusain, Shrivastava (2001)[3], found significant decrease in serum MDA after meditation. Singh S *et al* (2001)[4] were studied to see the effect of specific yoga asanas including Pranayama serum malondialdehyde (MDA) Serum MDA was estimated before and after 40 days of yoga asanas regimen. Statistically significant reduction was seen in serum MDA from 6 nmol/l to 3 nmol/l ($p<0.001$ Department of Physiology, Medicine and Biochemistry, University College of Medical Sciences and GTB Hospital, Delhi). Bhattacharya *et al* (2002)[5] conducted study to assess the effect of yogic breathing exercises (Vipassana) on the oxidatives stress. The free radicals and Super oxide dismutase levels were measured before the study and at the end of the study. The free radicals were decreased significantly in the study group but the SOD was increased insignificantly as compared to the control group.(Department of Physiology, King George's Medical College, Lucknow.) Srimahachota *et al* (2003)[6] After 4 months of yoga exercise intervention, patients in the experimental group revealed a statistically significant increase in plasma total antioxidants, plasma vitamin E and erythrocyte glutathione (GSH). (Department of Biochemistry, King Chulalongkorn Memorial Hospital, Bangkok, Thailand.) Yadav *et al* (2005)[7] have measured the concentration of thiobarbituric acid reactive substances (TBARS) in blood as an indicator of oxidative stress in a comprehensive yoga-based lifestyle modification program including Vipassana. The serum concentration of TBARS decreased significantly from 1.72 +/- 0.72 nmoles/ml on day 1 to 1.57 +/- 0.72 nmoles/ml on day 10 ($P<0.05$ Department of Physiology, All India Institute of Medical Sciences, New Delhi.). Chitrawina Mahagita (2005)[8] Long term transcendental and Zen meditators have been showed to diminish oxidative stress seen by areduction of lipid peroxidation and biophoton emission. One year of Tai Chi training has been reported to promote superoxide dismutase activity and lessen lipidperoxidation. Performing diaphragmatic breathing after exhaustive exercise has attenuated oxidative stress faster than control. These data suggest possible roles of meditation and meditation-based techniques on the decrease of oxidative stress. Martarelli *et a l* (2011)[9] study show similar findings. The probable mechanism responsible for decreased levels of serum MDA after meditaion are:

- Meditation causes decreased metabolism and decreased Basal Metabolic Rate leading to decreased production of free radicals in body and hence decreased serum MDA levels.
- When catecholamines are oxidized they are capable of supplying electrons for the formation of free radicals.It is observed that catecholamines are decreased after meditation. Therefore for

formation of free radicals less number of electrons comes from catecholamines and thus it causes decreased levels of serum MDA.[10]

- It is also observed that, meditation causes reduction in serum cholesterol of FFA in body.[11] Thus if FFA are decreased the lipid peroxidation reaction is decreased, because this reaction involves polyunsaturated fatty acids. Thus probably Vipassana causes decreased serum MDA levels. This study concludes that Vipassana could contribute as a mechanism, which results in modification in serum MDA levels.

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