

# The Effect of Healthtron on Serum Lipid Levels among the Middle-Aged: Preliminary Report

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## ABSTRACT

An experimental study pretest-posttest design was conducted at the health clinic, Faculty of Public Health, Mahidol University from March - September 1997. This study aimed to determine the effect of Healthtron therapy on serum lipid levels of 41 patients with health problems of arthralgia, myalgia, stress, insomnia, allergy, hypertension and diabetes mellitus. The subjects included in this study were 22 male and 19 female with aged 36-60 years. Subjective symptoms and serum lipids were determined before and after 30 consecutive Healthtron therapy. Results showed that hypertensive and diabetic patients reported clinically the same after the treatment, while the others reported improvement. The baseline of means total cholesterol (TC) and low density lipoprotein cholesterol (LDL-C) were  $238.9 \pm 47.7$  and  $160.9 \pm 40$  mg/dl. Mean triglycerides (TG) and high density lipoprotein cholesterol (HDL-C) were  $145.6 \pm 119.8$  and  $49.3 \pm 11.9$  mg/ dl, respectively. After Healthtron therapy, there were significantly decreased serum LDL-C levels ( $p = 0.003$ ) with the mean differences of 17.83 mg/dl and increased serum HDL-C levels ( $p= 0.024$ ) with mean differences of 4.71 mg/dl. The changes of serum TG and TC after treatment were not significant statistically. After control for age and sex, only mean differences of serum HDL-C levels showed significant increased in male more than female ( $p = 0.046$ ). This study was a preliminary report, the other factors affecting serum lipid level and the effect of long term Healthtron therapy need further study.

*Key words* : Healthtron, serum lipid levels, middle-aged

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## Introduction

There is an increasing trend of non-communicable diseases (NCD) such as obesity, hypertension, coronary heart disease, diabetes mellitus, stroke, etc., especially among the middle and older - aged groups.<sup>1,2,3</sup> Changing life style, high technology, modernization, urbanization, and sedentary life style left people with less time for cooking and preferred ready to eat food. Majorities of ready to eat food are oily, salty and low dietary fiber, which lead to hypercholesteremia and atherosclerosis. In addition, poor environment, stressful work and no exercise are of high risks that precipitate those NCD which turn to be chronic illnesses and ruin the quality of life.<sup>1,2</sup>

The middle-aged are those aged between 30-65 years with the cessation of physical growth and starting of degenerative change.<sup>1</sup> Nutritional needs decrease to just the amount needed to maintain and repair body tissue. Lean body mass declines at a rate of 2%-3% per decade. The resting energy expenditure declines to the same extent. Dietary intake during this age group plays an important role in their health especially when there is excessive amount and less activity leading to nutritional related health problems.

Alternative medicine is presently an another way for better health and improve quality of life. Either healthy food or traditional medicines are presently popular to prevent those degenerative diseases. According to the advance and high technology, various medical equipment for curative and health promotion has been developed. Healthtron (High-tension AC field)

was first invented in Japan by Dr. Toshiyuki Hara in 1928.<sup>4</sup> It uses an AC high-tension electric field and is effective in relieving people from symptoms such as stiff shoulder, insomnia, headache, etc. It was formerly known as an electrostatic curative device. He had explained the effect of high-tension AC field application to human body that it activates body metabolism and ionic movement between cells and serum. The total amount of serum calcium and calcium ions rise after Healthtron therapy and caused relatively alkaline serum, while the magnesium and inorganic sulfur content fall. The blood is considered normal when the pH is relatively more alkaline with normal level of sulfur and magnesium. A large amount of sulfur and magnesium can cause acidosis in the blood and may presumably precipitate the aging of cells and causing the disease. The present study's objective was to determine the effect of Healthtron therapy on serum lipid levels of the middle-aged people.

## Materials and Methods

The subjects recruited from the patients attending Health clinic of Faculty of Public Health, Mahidol University from March to September 1997 with the health problems of arthralgia, allergy, hypertension, insomnia, stress and diabetes mellitus. All patients aged between 36-60 years, had no other illness and did not take lipid-lowering drugs. The subjects were asked to maintain their usual activity and eating pattern. They were given Healthtron therapy 30 minutes a day for 30 days. The 5 mA with 9,000 V was

applied for the first 7 days followed by 13,000 V for another 23 days (Fig.1). Physical examination and fasting blood samples were taken before and after the study. Serum lipids, namely triglyceride (TG), total cholesterol (TC), high density lipoprotein cholesterol (HDL-C) and low density lipoprotein cholesterol (LDL-C) were determined from the blood samples.

## Results

There were 41 subjects included in this study, 22 male and 19 female (Table 1). Their mean age was  $45.8 \pm 5.9$  years, the youngest was 36 and the oldest was 60 years old. Subjective clinical symptom at the end of the study showed that hypertensive and diabetic patients reported clinically the same after the treatment, while the others reported improvement.

**Table 1** Number and Percentage of the study group by sex and age.

Characteristics	Number	Percent
Sex		
Male	22	53.7
Female	19	46.3
Total	41	100.0
Age (years)		
36-39	10	24.4
40-44	12	29.2
45-49	9	22.0
50-54	8	19.5
55-60	2	4.9
Total	41	100.0
Mean age $\pm$ SD = $45.8 \pm 5.9$		

Serum lipid levels of the study group, the baseline mean values of TC and LDL-C were  $238.9 \pm 47.7$  and  $160.9 \pm 40$  mg/dl which were higher than recommended levels.<sup>5</sup> Baseline mean values of TG and HDL-C were with in the normal levels,  $145.6 \pm 119.8$  mg/dl and  $49.3 \pm 11.9$  mg/dl, respectively. After Healthtron therapy, mean values of serum TG and HDL-C were increased and mean values of serum TC and LDL-C were decreased (Table 2). Table 3 shows paired differences of mean serum lipid levels before and after treatment. There were

significantly increased serum HDL-C levels ( $p = 0.024$ ) with mean differences of 4.71 mg/dl and decreased serum LDL-C levels ( $p = 0.003$ ) with the mean differences of 17.83 mg/dl. Comparing the individual change of HDL-C levels, 27 patients (65.8%) had increased HDL-C levels and 14 patients had decreased HDL-C levels (50% of 14 were older than 50 years old). Comparing the individual change of LDL-C levels, 28 patients (68.3%) had decreased LDL-C levels and 13 patients had increased LDL-C levels with no particular age group observed significantly



Fig. 1. Healthtron therapy

increased. However the changes of mean serum TG and TC after treatment were not significant statistically.

The distribution of mean differences of serum lipids after treatment by age and sex when adjusted for factors, mean differences of HDL-C level increased more among those who aged  $\leq 50$  years as also observed in individual change previously mentioned. LDL-C levels decreased more among the age group of 40-49 than those older and younger age groups (Table 4). After the treatment, there was no difference in changing of serum TG, TC, LDL-C after controlling for age and sex, except for HDL-C level that showed significant different among male and female ( $p=0.046$ ). As 86.4% of male had increased levels of HDL-C and only 42.1% of female did.

Table 2 Serum lipid levels before (pre-treatment) and after (post-treatment) Healthtron application of 41 patients.

Types of Lipid	Minimum (mg/dl)	Maximum (mg/dl)	Mean $\pm$ SD (mg/dl)
TG			
Pre-treatment	31.0	602.0	145.6 $\pm$ 119.8
Post-treatment	53.0	393.0	151.6 $\pm$ 84.8
TC			
Pre-treatment	158.0	358.0	238.9 $\pm$ 47.7
Post-treatment	154.0	303.0	228.4 $\pm$ 40.4
HDL-C			
Pre-treatment	30.0	73.0	49.3 $\pm$ 11.9
Post-treatment	29.0	83.0	54.0 $\pm$ 11.9
LDL-C			
Pre-treatment	98.0	272.0	160.9 $\pm$ 40.6
Post-treatment	80.0	217.0	143.1 $\pm$ 36.5

The standard serum lipid levels in adult: TC  $\leq 200$  mg/dl, TG  $\leq 150$  mg/dl, LDL-C  $\leq 130$  mg/dl and HDL-C  $\geq 35$  mg/dl.<sup>5</sup>

**Table 3** Paired differences of serum lipid levels before (pre) and after (post) Healthtron application.

Paired differences	Mean difference	S.E	95% confidence interval		Paired t-test	P value
			lower	upper		
TG pre - TG post	-5.97	14.93	-36.15	24.20	-0.40	0.691
TC pre - TC post	10.43	6.43	-2.55	23.43	1.62	0.112
HDL pre - HDL post	-4.71	2.01	-8.77	-0.65	-2.34	0.024*
LDL pre - LDL post	17.83	5.64	6.43	29.23	3.16	0.003*

\*Statistic significant

**Table 4** Mean differences of serum HDL-C and LDL-C levels after treatment by age and sex.

Study groups	n	Predicted mean differences of serum lipid levels		Deviation		
		Unadjusted	Adjusted for factors	Unadjusted	Adjusted for factors	
HDL	Age 36-39	10	-7.70	-7.99	-2.99	-3.29
	40-49	21	-6.05	-5.38	-1.34	-0.67
	50-60	10	1.10	1.29E-02	5.81	4.69
	Sex male	22	-8.77	-8.48	-4.06	-3.78
	Female	19	0.00	0.33	4.71	4.37
LDL	Age 36-39	10	5.50	5.29	-12.33	-12.54
	40-49	21	24.43	24.91	6.59	7.07
	50-60	10	16.30	15.51	-1.53	-2.32
	Sex male	22	16.05	15.13	-1.78	-2.69
	female	19	19.89	20.95	2.06	3.12

## Discussion

Previous report of Siripanichgon, et al<sup>6</sup> on the clinical observation of Healthtron therapy revealed that there was no significant change of the hemoglobin concentration, white blood cell counts, platelets, electrolyte, uric acid, BUN and creatinine after the treatment. The effect of

Healthtron therapy has shown in the present study that after daily 30 minutes Healthtron application for 30 consecutive days of treatment, there were significant changes of mean serum lipid levels. The levels of serum LDL-C decreased ( $p=0.003$ ) and HDL-C levels were increased significantly ( $p=0.024$ ). The mechanism of how high-tension

AC field affects on serum LDL-C levels and HDL-C levels has not been known. The high tension AC field therapy is considered selectively effective against the sympathetic and parasympathetic nervous system. The increase of metabolism could produce thermogenic effect and vasodilatation, and consequently improve blood circulation throughout the body.<sup>4</sup> These effects would probably increase LDL activity and caused reduction of serum LDL-C levels. Furthermore it might also increase hepatocyte function in HDL synthesis leading to increase in serum HDL-C levels.

However, there was no difference in changing of serum TG, TC, LDL-C after controlling for age and sex except for HDL-C level that showed significant increased in male more than female. After it had been adjusted for factors in sex and different age group, mean differences of HDL-C level increased among those whose ages  $\leq 50$  years. These should be due to physiologic effects of human body at active reproductive age and had active LDL activity.<sup>7</sup>

HDL-C may prevent the entry of cholesterol in the process of atherogenesis or even remove cholesterol from atherosclerotic lesions, so-called reverse cholesterol transport.<sup>5,7</sup> It is indicated that hyperlipidemia especially high LDL-C is the leading cause of coronary heart disease<sup>8,9</sup> and high TC in male is two times

more at risk than in female.<sup>10</sup> Sirikulchayanonta<sup>11</sup> had demonstrated that there were statistically significant associations between coronary heart disease and high levels of TC (OR=2.04,  $p < 0.005$ ) and high level of LDL-C (OR=2.91,  $p < 0.05$ ) among middle-aged male patients. In most menopausal women, the physiologic lack of estrogen will affect on the decreased level of serum HDL-C which is the protective factor for atherosclerosis, coronary heart disease and hypertension.<sup>1</sup> The findings of this preliminary study need further study in order to show the effect of Healthtron on improvement of serum lipid levels, especially in increasing HDL-C and lowering LDL-C for the benefit of prevention of chronic illnesses among the middle-aged people. The other factors such as overweight, cigarette smoking, drinking alcohol, stress and physical inactivity are know risk factors of coronary heart disease and stroke.<sup>7</sup> The long term Healthtron therapy and these other risk factors would be included in the future research.

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## References

1. Eschleman MM. Nutrition in the various stages of life. In: Eschleman MM, ed. Introductory nutrition & diet therapy. 2<sup>nd</sup> ed. Pennsylvania: JB Lippincott, 1991 : 294-5.
2. John A. Risk factor of coronary artery diseases. In: Braunwald E, ed. Heart disease. A textbook of cardiovascular medicine, 4<sup>th</sup> ed, vol 2. Philadelphia: JB Lippincot, 1992 : 1125-59.
3. Health Information Division, Bureau of Health Policy and Planning, Ministry of Public Health. Public health statistics 1997. Bangkok: War Veteran Welfare Organization, 1997 : 140.
4. Hara T. High-tension AC field Therapy. Tokyo: Hakuju Institute for Health science, 1985 : 19-38.
5. Assmann G. At what levels of total low - or high - density lipoprotein cholesterol should diet/drug therapy be initiated? European guidelines. Am J Card 1990 ; 65 : 11-5.
6. Siripanichgon K, Otrakul A, Suparp J, Sirikulchayanonta C, Charkpoonpol P. Clinical observation of Healthtron Therapy. (in Thai) J Public Health 2000 ; 30(1) : 19-29.
7. Ross R. Atherosclerosis. In Wyngaarden JB, Smith LH Jr, Bennet JC, eds. Cecil Textbook of Medicine. 19<sup>th</sup> ed, vol 1. Philadelphia: WB Saunders, 1992 : 293-8.
8. Eschleman MM. Cardiovascular disease: Atherosclerosis. In Eschleman MM, ed. Introductory nutrition & diet Therapy. 2<sup>nd</sup> ed. Pennsylvania: JB Lippincott, 1991 : 414-20.
9. Frost PH, Davis BR, Burlando AJ, et al. Serum lipids and incidence of coronary heart disease. Findings from the systolic hypertension in the elderly program (SHEP). Circulation 1996 ; 94 : 2381-8.
10. Haapanen-Niemi N, Vuori I, Pasanen M. Public health burden of coronary heart disease risk factors of coronary heart disease among middle-aged and elderly men. Prev Med 1999 ; 28 (4) : 343-8.
11. Sirikulchayanonta S, Sritara P, Pattaraarchai J, Azis MC. Modified major risk factors of coronary heart disease among Thai male 35-65 years old at Ramathibodi Hospital, Bangkok, 1994-1996. Thai J Epidemiol 2000 ; 8(1) : 1-9.