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Effect of Probiotics on Triglycerides Levels among Adults (30-45 Years)

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ABSTRACT

At present, cardiovascular diseases are among the major causes of death in the world. The high triglycerides are on at a greater risk. The growing awareness of the relationship between diet and health has led to an increasing demand for food products that support health and providing basic nutrition. Probiotics are components present in food or that can be incorporated into foods, which yield health benefits related to interactions with the gastro intestinal tract. The present study has been undertaken to study the consumption of probiotic foods and their effects on triglyceride of the adults (30-45 Years). The commonly consumed sources of probiotics were mainly curd. Almost 20 percent of the subjects had high triglycerides. Dietary efforts to reduce plasma triglycerides play an important role in the prevention of CHD. It was reported that there was 2 to 9 percent decrease in triglycerides of the subjects during decrease in triglycerides of the subject's during decrease in triglycerides of the subject's during 4 weeks of probiotic intervention. Therefore, it has a significant impact on the serum triglycerides.

Keywords: CHD – Coronary Heart Disease; TAG – Tri Acyl Glycerol

Introduction

The word "Probiotic" comes from the Greek word 'Probios' which means "for life" as opposed to antibiotics which means "against life". The history of probiotics began with the consumption of fermented foods by Greek and Romans. Metchnikoff hypothesized that Bulgarians are healthy and long lived people because of the consumption of fermented milk products which consist of rod-shaped bacteria (Lactobacillus spp.). Therefore, these bacteria affect the great microflora positively and decrease the microbial toxic activity in human intestine (Cakir Chanayana, 2003) Probiotics are called friendly bacteria or good bacteria. These bacteria promote the body's natural immunity, keeps healthy and help in digestion. The joint food and agriculture organisation / World Health Organization working group on drafting "Guidelines for the evaluation of probiotics in food" has recommended that probiotics can be defined as "live microorganisms which when administered in adequate amounts, confer a health benefit on the host". Lactobacillus and Bifido bacteria are gram positive lactic acid producing bacteria that constitute a major part of the normal intestinal microflora in animals and humans.

The most common sources of probiotics are yogurt, cultured buttermilk and cheese. Dahi is the most popular Indian fundamental milk product. Its consumption patterns include direct eating along with sugar/salt or it is consumed along with rice/chapati. It is also used as base material for the manufacture of various drinks like lassi, butter milk and other products such as shrikhand , kadhi etc. curd contains a number of bacteria like Lactococcus lactic, Lactococcus lactic cremoris, L. acidophils, etc. A report was published in the European Journal of linical Nutrition that suggests that the type of useful bacteria present

in curd vary considerably between places. It was also demonstrated that the Indian curd contains nearly 250 different strains of Lactobacillus.

Coronary heart disease is a major cause of morbidity and leading cause of pre mature death worldwide. Recent evidence has highlighted not only cholesterol but also TAG as a rapid risk factor for coronary heart disease. (Williams, 1997). Furthermore, an estimated 15-20 % of the middle age population of developed countries may be affected by this disorder, the etiology of which has been linked with a more sedentary life style and high fat diets.

Sneha Priya and Sumathy (2012) studied the effect of supplementation health mix on the serum TAG levels of the subjects above 40 years of age and found that there is a marked reduction in serum TAG levels. Evidence for similar effects in age group 35-40 years is sparse and more studies are needed. The aim of this study was to investigate the effect of probiotic food on TAG levels of adults (30-45 Years).

Methodology

Three hundred fifty age 30-45 years of both the sex were selected, residing in different areas of Jodhpur city of Rajasthan, using purposive technique. Subjects with high blood TAG levels were selected on the basis of their willingness to co-operate with the investigator. The National Institute of Health sets a guideline for triacyl glycerides levels as less than 150 mg/dl is considered as normal value. A survey was carried out to study the consumption pattern of probiotic foods. A comprehensive list of probiotic foods was prepared and information was then collected using a foods frequency questionnaire. During intervention of 4-week period, subjects were given curd of 100 grams twice a day, TAG levels were again assessed after 4 weeks. Analysis was done by using automated analyser.

Results & Discussion

The general dietary pattern and eating habits are an important indicator in various nutritional studies. As it has direct impact on health of an individuals. It was found that majority of the subjects (almost 60%) followed a three-meal pattern in a day and were vegetarian (77%). This might be due to the reason that most of the subjects were Hindus.

Probiotics are used for the benefits of human since Vedic Times; its uses are as old as human civilization. Traditionally used probiotics may contain a wide variety of bacteria which are not defined qualitatively or quantitatively. The number and type of bacteria also vary from home to home. The number of bacteria can be increased by natural fermentation. However, prolonged fermentation tends to render the product very sour because of excess amount of lactic acetic acid that is produced in the process. Moreover, the exact bacterial count cannot be determined in a process that has not been standardized. (Hajela, N. 2012)

The information regarding the consumption of probiotics was collected and presented in

Table 1 – The sources of probiotics are mainly curd, soya milk, dark chocolates and fermented food which are commonly consumed in the households.

Table – 1 : Frequency of consumption of Probiotic foods.

Probiotic Foods	Percentage of samples consumed probiotic foods				
	None	Daily	Weekly	Rarely	Total
Curd	11.1	31.1	35.4	22.3	88.9
Soya Milk	5.6	18.3	7.1	18.6	44
Dark Chocolates	5.6	1.4	10.6	32.0	44

Fermented foods	40.3	1.1	23.7	34.9	59.7

As shown by the Table-1, 88.9 percent of the subjects were consuming curd, while 59.7 percent were taking fermented food. Soya milk and dark chocolates were consumed by 44 % of the subjects It was also noted that majority of the subjects (35.4 %) were taking curd weekly, while consumption of soya milk, dark chocolates and fermented food was rarely as 18.6 %, 32 % and 34.9 % respectively. It shows that consumption pattern of probiotic foods was not regular. Expect curd, consumption of soya milk, fermented food and dark chocolates was not in the practice.

Table 2 : Mean TAG levels of the subjects selected

Triglyceride level (Reference Volume)	N (%)	Mean (mg/dl)	Range (mg/dl)
< 150 Normal	279 (79.7)	89.2	25-149
150-199 Borderline High	39 (11.1)	170.6	151-195
200-499 High	30 (8.6)	233.1	201-313
≥ 500 very high	2 (0.6)	534	534-534

Elevated levels of TAG increase patient's susceptibility to the development of coronary heart disease. The various levels of TAG are shown in table – 2 with a mean value under different Biological Reference Interval given by NHANES, 2003-2004. The results of this study shows that 79.7 percent of the subjects had normal triglycerides levels (< 150 mg/dl) with a mean level of 89.2 mg/dl, ranges between 25 to 149 mg/dl. Remaining 20.3 percent had triglycerides above normal as borderline high (11.1 %) high (8.6%) and very high (0.6%). Two subjects had relatively very high risk of CHD as their TAG was 534 mg/dl. They were not consuming any probiotic food in their daily diets. In NHANES, studies reported that Indians tend to have high TAG levels due to consumption of high carbohydrates diets in Indian population.

TAG and Probiotic Foods.

Table 3 : Association of Probiotic foods with TAG levels

Probiotic Food	TAG Level	Frequency (n)		χ^2 Value
		Not consumed	Consumed	
Curd	Normal High	20 (51) 19 (49)	177 (57) 134 (43)	2.054*
	Total	39	311	
Soya Milk	Normal High	110 (56) 86 (44)	87 (56) 67 (44)	5.000*
	Total	196	154	
Dark Chocolates	Normal High	103 (53) 93 (47)	94 (61) 60 (39)	3.513*
	Total	196	154	
Fermented Foods	Normal High	80 (57) 61 (43)	117 (56) 92 (44)	11.505*
	Total	141	209	

Figures in Parenthesis denotes the percentage
* Significant at 5 % and 1 %

Table 3 revealed the association of probiotic with TAG levels. The probiotic foods include curd, soya milk, dark chocolates and fermented foods. It was depicted that prevalence of TAG was high (49%) among subjects who do not consumed curd. Similarly, subjects with high TAG levels were also found greater in number who do not consume dark chocolates (47%) consumption of soya milk and fermented foods showed almost equal percentage (44 %) in both the groups, who consumed and who do not consume. The association between consumption of probiotic food and blood lipid profile was assessed by using χ^2 test. The χ^2 value shows that there was a significant association between consumption of probiotic food and TAG levels at 5 % and 1 % level of significance. It can be stated that regular consumption of probiotic foods can maintain the normal levels of TAG levels in the blood, thus , it can lower the risk of CHD to some extent.

Experimental group was given probiotic supplement and values of TAG before and after intervention has been presented in table – 4 as mean ± SD.

Table – 4 : TAG values of Probiotic Intervention Phase (n = 50)

Phase	TAG Values	
	Mean ± S.D. (mg/dl)	Range (mg/dl)
Pre-Intervention	145.04 ± 57.85	30 – 264
Post- Intervention	136.02 ± 42.47	47-231
% change	- 6.2 ± 26.6	Nil

The mean value of 145.04 ± 57.85 mg/dl tag during pre-intervention phase decreases to 136.02 ± 42.47 mg/dl during post intervention phase with 6.2 percentage negative change. Kaur etal (2002) suggested that probiotics caused a 40% reduction in tag levels. This shows that probiotic foods have a positive effect in lowering TAG levels.

Conclusion

For the past 20 years, the focuses of public health strategies for reducing the risk of CVD have been at lowering cholesterol levels. However, recent findings have high highlighted that TAG is a lipid risk factor for CVD. It can be concluded that regular consumption of curd as probiotic food product resulted in a positive change in TAG levels and could be used to assess in maintaining tag levels in adult population without any side effects to the consumer.

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