

The role of yoghurt in the prevention and treatment of obesity and related diseases

Abstract

A total of 67 subjects with central type obesity (26 men and 41 women) were enrolled in the study aiming to determine the effect of yoghurt fermented by *Bifidus essensis* (0.5% fat) in the treatment of patients with obesity and related diseases. A decrease of BMI, fat mass, visceral fat, waist circumference, hip circumference and sagittal diameter has been observed and presented in the current article.

Keywords: anthropometric study, yoghurt, probiotics, metabolic syndrome

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Introduction

Obesity is a chronic metabolic disease which leads to many comorbidities and high prevalence of mortality. The incidence of obesity and related diseases increases constantly. The role of the dairy products in the treatment and prevention of obesity has been discussed. The effect of yoghurt, respectively probiotics in the treatment and prevention of obesity has been discussed.

The aim of our study was to investigate the effect of yoghurt fermented by *Bifidus essensis* (0.5% fat) in the treatment of patients with obesity and related diseases.

History

Even since the end of 19th century, the Russian scientist and pioneer immunologist Ilya Ilyich Mechnikov (or Elie Metchnikoff, as his name is often written), investigating the factors that could enhance or decrease health and longevity, advanced the idea of the harmful intestinal bacteria as the source of the inflammatory process; the thermal preparation of all fruits and vegetables and the regular consumption of yogurt or other types of sour milk were proposed as solutions for the intestinal putrefaction that precipitated the aging process. He emphasized, in particular, the positive, neutralization effect of the so-called Bulgarian Bacillus from the Bulgarian yogurt upon intestinal microbiome, as proven by the health and longevity of the highlanders who include large amounts of soured milk in their diet.¹⁻⁵

The actual discovery of the *Lactobacillus bulgaricus* is due to Stamen Grigoroff, a Bulgarian student who studied medical science in Geneva, Switzerland. Immediately after he identified the bacteria that cause the milk to curdle, his professor, Léon Massol wrote to Prof. Ilyja Mechnikoff at the Institut "Louis Pasteur", announcing the great scientific results. His discovery was presented in the paper entitled "Étude sur le lait fermenté comestible: le "Kissélo-mléko" de Bulgarie" and published in *Revue médicale de la Suisse romande*:

organe officiel de la Société médicale de la Suisse romande, issue 10, dated 20.10.1905, Genève, Georg & G., Librairies-Éditeurs. Librairie de L'Université. Then, it was validated by Metchnikoff, who invites the young scientist to Paris; his assistants, Luerssen and Kuhn, were those who in 1908 gave to this microorganism the designation of *Lacto bacterium Bulgaricum* the Bulgarian lactic bacteria.

In 1905 Radush Titkov, MD, defend a thesis in Toulouse concerning the healthy features of the yoghurt. Prof. Asen Zlatarov in 1933 said: "The yoghurt is an elixir of long-life". Acad Tasho Tashev and his school (1980-2001) research the role of the dairy products in the treatment and prevention of the metabolic diseases.

Materials and methods

A total of 67 subjects with central type obesity (26 men and 41 women) were enrolled in the study. Baseline mean subject characteristics were: age-46.2 year old, body mass index (BMI)-35.4, fat mass (FM)-39.4%, visceral fat (VF)-14.1, waist circumference (W)-109cm, hip circumference (H)-120.2 cm and sagittal diameter (SD)-27cm. All obese patients underwent a dietary regimen, included 290g yoghurt fermented by *Bifidus essensis* for dinner for a 6-month period. The product consisted of proteins-4.3g, carbohydrates (lactose)-3.9g, fat-0.5 g, and 7 kilocalories per 100g yoghurt product. At the beginning and at the end of the study several anthropometric parameters (Height, Body weight, Body Mass Index, Fat Mass, Visceral Fat, Lean Body Mass (LBM), relation Lean body mass/Fat mass) have been measured by bioimpedance device (Tanita 420) and sagittal diameter by caliper.⁶

Results

The study demonstrated decrease of BMI with 9.8% of fat mass with 9.6% of fat mass with 9.6% of visceral fat with 14% as well as a decrease of waist circumference-11.9% hip circumference-5.8% and sagittal diameter-10.3%. (Table 1)

Table I (n= 67)

Parameters	BMI	F (%)	M (%)	L (%)	B (%)	M (%)	LBM/FM	VF	W(CM)	H (CM)	W/H	Sag. diameter
Before treatment	36.1	40.7	59.3				1.45	13	109.5	122.6	0.9	24.7
After treatment	32.2	36.2	63.8				1.8	11	98	114.6	0.87	22.8

Moreover, in the end of the treatment we observed a trend in the improvement of the values of blood sugar, total cholesterol, triglycerides as well as of the systolic and diastolic blood pressure.

Discussion

Probiotics are substance that regulate the normal intestinal flora, influence metabolism and have an effect on various diseases. Our studies were performed on the effect of *Lactobacillus bulgaricus* and *Bifidus Essensis* carbohydrate and lipid metabolism in obesity. The results indicated that the probiotics improved the impaired glucose and lipid metabolism. The probiotics affected the concentration of free radicals in the blood. Taken together, the results give reason to assume role of the effect of probiotics on oxidative stress in the mechanism of influence on the metabolism.⁷⁻¹¹

A number of studies on the properties of lactic acid bacteria strains suitable for the inclusion in a lot of functional starter cultures and fermented products were reported. *L. bulgaricus* strains with established *in-vitro* immunomodulating effect, *L. helveticus*-producer of bioactive peptides with ACE-inhibitory activity, *L. Gasseri*- with a strong adhesion to the epithelial cells of the gastrointestinal tract, and anti-cholesterol effect are selected. A variety of effective food additives and /or biologically active agents, probiotics are used in the management of obesity.

The foods containing physiologically active components (yoghurt) can improve considerably the health effect of every diet, e.g: normalizing of the body mass, increasing the resistance capacity of the immune system; decreasing the risk of some serious modern diseases such as cancer, ischemic heart disease, atherosclerosis, sugar diabetes, osteoporosis and others. The probiotics have been functional components of health foods for more than 100 years and their manufacturing has been continuously developed till the present day.

Conclusion

1. The regular consumption of yoghurt fermented by *Bifidus essensis* (0.5% fat) in the diet of obese patients leads to improvement of the studies anthropometric parameters as well as to significant decrease in the cardio-vascular risk.
2. Our study emphasizes the significance of yoghurt and other dairy product in the prevention and management of metabolic and cardiovascular diseases.

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None.

Conflict of interest

The author declares there is no conflict of interest.

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