Original Article: Effects of Supplementation on Biochemical Parameters in Patients with Diabetes

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ABSTRACT

Diabetes is one of the most important endocrine diseases and one of the problems of human societies today. In diabetes, due to the occurrence of insulin resistance, plasma insulin levels increase, and due to a disorder in glucose metabolism, it eventually leads to an increase in blood glucose levels. Plasma total cholesterol levels of LDL-C and VLDL-C increase and HDL-C decreases. Changes in lipid profile can be a contributing factor to cardiovascular disease in diabetic patients. In addition, higher triglyceride levels lead to the development of insulin resistance. The main purpose of this study was to evaluate the effect of Familact supplementation, containing seven different probiotic strains, on biochemical parameters of lipid profile and glycemic control in patients with type 2 diabetes. In lipid profile assay; Factors of total cholesterol, LDL cholesterol, HDL cholesterol, and TG are measured. In glycemic control, fasting blood sugar (FPG), blood insulin level, and insulin resistance will be measured.

Introduction

Asians who still follow a traditional, low-cost, hard-working lifestyle have only one percent of adults with diabetes. While Asians who have adopted the Western way of life have become more prevalent. In the case of Chinese immigrants living on a modernized island in the Indian Ocean, 20 percent of the population has diabetes. According to the latest articles published in Iran, the prevalence of diabetes in the total population of Iran was estimated at 7 to 8% in 2008 and this disease was the 16th leading cause of death in men and the 9th leading cause of death in Iranian women. According to the latest statistics available in Iran until 2007, one in 20 Iranians has diabetes and it is expected that 18 years later, in 2025, one in seven Iranians will develop diabetes. Also, according to the latest statistics of the International Diabetes Federation (IDF), in

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2013, more than 3.4 million people in Iran had diabetes, and the prevalence of this disease among the adult population aged 20 to 79 in this year 43, it is estimated at 8%. Also, about 38,002 people died of diabetes and so far, 2198 people with diabetes in Iran have not been statistically diagnosed. Meanwhile, the average health care cost for diabetics in Iran is estimated at 471 $ per person. Diabetes is more prevalent in developing countries that tend to eat more and eat less in the West. Due to the increasing number of people with diabetes in the world and the importance of paying attention to the complications of this disease, finding prevention and treatment methods for this disease has been of interest to researchers for many years [1-15].

Nutrition Therapy

On the other hand, direct medical costs such as hospitalization, outpatient services, home nursing care are high and indirect costs such as disability, job loss, and premature death are equally high. In general, the average medical expenses of people with diabetes are twice as high as those without non-diabetics. Therefore, the creation of nutritional therapy or MNT through dietary interventions to prevent and treat diabetes and reducing costs will be very effective. Today, many studies are being done to produce or evaluate the benefits of active foods, one of which is research on the effects these foods are anti-diabetic. In fact, studies show that dietary interventions and changes in the microbial flora of the intestine can have positive effects on the recovery of patients with diabetes [16-24]. A category of active foods is food products that contain probiotics. Probiotics are considered to be living microorganisms of the gastrointestinal tract and when sufficient amounts of them reach the human body, they have a positive effect on the health of the host body by changing the composition of the intestinal flora. Among them, Lactobacillus and Bifidobacteria play an important role in preventing many diseases. Their beneficial effects on bile salts or improving people with diabetes and the effect on cholesterol levels of inflammatory factors Other effects such as stimulating the immune system, cleansing the gut of pathogenic bacteria, bioactive material production, anti-carcinogenic activity, improving lactose intolerance, prevention They also have intestinal infections.

Effect of probiotics on glucose index

The mechanism of action of probiotics on blood glucose index is not clear, Yadav et al. And his study examined the effect of probiotics in rats with type 2 diabetes for 8 weeks on a fructose-rich diet. In their study, the use of probiotics, led to a clear delay in the onset of glucose intolerance, hyperglycemia, Hyperinsulinemia, compared to the control group. However, its location is still much debated, especially in human studies. The Hypocholesterolemic effects of Lactobacillus have been shown in various studies. Gillian et al. Have identified the decongestion of bile salts and the reduction of cholesterol uptake by bacteria as the main mechanisms for lowering cholesterol by Lactobacillus acidophilus.

The general mechanisms of this effect are as follows:

1. Cholesterol binds to the bacterial cellulose wall, thereby lowering blood cholesterol

2. Bile acid Deconjugation through bile salt hydrolase and interference in the Enteropathic cycle lowering blood cholesterol

3. Production of SCFA by bacteria and reduction of HMG-Coa cholesterol synthesis helps bacteria to reduce Reductase activity and reduce the production of endogenous cholesterol.

As can be seen from the review of probiotic studies, most of these studies have been considered only in recent years. In animal research, the effect of supplements or probiotic foods has been shown to improve the blood counts of diabetic specimens. Human studies have noted similar effects. However, according to our research, natural foods containing several probiotic strains have often been used in human studies. In 2012, for example, Ijtihad et al., in a study of probiotic yogurt on the blood parameters of diabetics, found that their total cholesterol and blood sugar levels improved but did not report changes in HDL, LDL, and TG

cholesterol levels. However, human studies on the effect of supplements containing different probiotic strains are very limited. A study conducted in Iran by Ms. Mazlum et al. In Shiraz in 2011 found that taking probiotic supplements did not change anthropometric parameters and blood sugar levels. Fasting, TG, LDL, remained unchanged. Also, in a recent study by Dr. Despite the favorable outcome within the group, after multidrug probiotic supplementation, there was no decrease in blood sugar in the intervention compared to controls. A very important point about the intervention of probiotic carriers is that these substances can have a significant effect on improving the outcome, because it has been shown that the presence of macronutrients and micronutrients such as carbohydrates and protein, and calcium itself is the cause of the intervention. Gray and have a distinct role in lowering blood sugar or other biochemical parameters even without the presence of probiotics. Therefore, it is necessary to study the effect of probiotics separately and purely [25-32].

Conclusion

Also due to the widespread use of fermented dairy products by different communities, which can naturally contain lactic acid bacteria and other probiotics, as well as differences in the natural flora of indigenous people in different geographical areas and consequently differences in the effectiveness of probiotics in Different people from different geographical areas, it is necessary to conduct human studies specific to each geographical and indigenous region. Undoubtedly, our country is no exception to this rule due to the widespread use of products such as yogurt and buttermilk, but despite its importance, few studies have been conducted in this regard, especially in the field of pure supplements containing probiotics. Therefore, the present study was performed on human and native samples of Tehran to evaluate the net effect of probiotics through dietary supplement intervention. The result of such studies, in addition to evaluating the effect of pure probiotics on the above biochemical parameters and helping to treat diseases such as diabetes, adaptation Indigenous people will evaluate different probiotic products and compounds and their effectiveness.

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