

## Probiotic yogurt effect on macronutrients ingredients, blood glucose and lipid profile in type 2 diabetes

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Madam, in last decade probiotics were introduced as a useful supplement on human health. As a result lactobacilli acidophilus and bifidobacterium have been more often used in dairy products.<sup>1</sup> It is said that Lactobacillus can reduce the transferring of triglycerides in lymph and increase the excretion of fatty acids in faeces, therefore prevent the lipid absorption in intestinal tract.<sup>2</sup> Recent researches in Iran indicated that consumption of various probiotics have yielded mixed results. Probiotic yogurt could help in reduction of lipids in diabetic patients,<sup>3</sup> decreasing the levels of total cholesterol and LDL<sup>4</sup> and a beneficial effect on glycaemic level, insulin action, oxidative Stress, and inflammatory markers.<sup>5</sup>

Therefore a parallel group randomized controlled clinical trial on sixty diabetic type 2 patients was conducted, to assess the effect of probiotic (lactobacilli acidophilus and bifidobacterium) yogurt versus conventional yogurt (each groups 100mg twice a day) on macronutrients ingredients, blood glucose and lipid profile. Eligibility criteria were including: Diabetic patients, age between 25 and 65 years and fasting blood glucose  $\geq 126$  mg/dl. Exclusion criteria were: no positive history of chronic illnesses, patients on insulin therapy; smoking; lactose intolerance; thyroid dysfunction; chronic inflammatory diseases; pregnancy; breast feeding; and those on weight loss or weight gain regimes. The study protocol was approved by the Ethics committee of ARUMS (IR.ARUMS.REC.1394.143), and all participants were informed about the process of experiment and signed the consent papers.

The LDL blood concentration was checked by Friedwald formula<sup>5</sup> and TG, total cholesterol, by photometry method (pars Amazon kit<sup>5</sup>).<sup>3</sup>

A 24 hours recall on intake of food and physical activity was

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noted (With modified International physical activity Questionnaire<sup>6</sup>). Results showed that energy and carbohydrate decreased in probiotic group with no significant difference, the average fasting glucose and 2 hour post meal glucose adjusted with baseline measurements, had no significant difference too. The mean triglyceride levels after taking probiotic yogurt were significantly reduced from  $257.9 \pm 33.9$  to  $189.5 \pm 68.1$  mg/dl ( $P < 0.001$ ), Cholesterol levels were decreased in both groups with probiotic group having a statistically significant difference ( $p = 0.013$ ), also HDL levels increased significantly from  $49.8 \pm 10.2$  to  $56.2 \pm 7.35$  mg/dl ( $P < 0.001$ ) and LDL levels decreased significantly from  $175.56 \pm 32.8$  to  $123.06 \pm 25.5$  mg/dl ( $P < 0.001$ ) in probiotic group. No significant changes of HDL and LDL were observed in the control group. Our study concludes that probiotic yogurt can improve diabetic patients' lipid profile with no lowering effect on blood glucose.

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**Conflict of Interest:** None.

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