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An Antidiabetic Dietary Defence Weapon: Oats and Milk Based Probiotic Fermented Product

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Abstract : In today's world where diabetes has become an epidemic, our aim was to potentiate the effect of probiotics by integrating probiotics with cereals to formulate composite foods using Lactobacillus rhamnosus GG (LGG) and Lactobacillus casei NCDC19 against type 2 diabetes. After optimizing the product by Response Surface Methodology, it was studied for their effect on induction and progression of type 2 diabetes in HFD-fed Wistar rats. After 9 weeks study, best results were shown by the group fed with oat and milk based product fermented with LGG and L. casei NCDC19 which resulted in a significant decrease in blood glucose, HBA1c, improved OGTT, oxidative stress, cholesterol and triglycerides level during progression study of type 2 diabetes. During induction study also, there was significant reduction in blood glucose level, oxidative stress, cholesterol level and triglycerides level but slightly less as compared to progression study. Real time PCR gene expression studies were done for 5 genes (GLUT-4, IRS-2, ppar-γ, TNF-α, IL-6) whose expression is directly related to type 2 diabetes. The relative fold change expression was increased in case of GLUT-4, IRS-2, ppar-γ and decreased in case of TNF-α and IL-6 during both induction and progression study of diabetes but more significantly during progression study. Hence it was concluded that oat and milk based probiotic fermented product showed the synergistic effect of probiotics and oats especially in case of progression of type 2 diabetes. The benefits of these probiotic formulations may be further validated by clinical trials.

Keywords : type 2 diabetes, LGG, L.casei NCDC19, food science
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