ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24JUN1619

Reintegration of Dairy in Daily American Diets: A Biochemical and Nutritional Perspective

Ezzelddin Shoary

Abstract:- This paper explores the reintegration of dairy products into the daily diets of Americans, with a focus on the biochemical role of lactase, the enzyme responsible for lactose digestion. It examines the benefits of dairy consumption, practical strategies for reintroducing dairy into the diet, and the use of lactase supplements to manage lactose intolerance. This approach aims to enhance nutritional intake and overall health in the lactose-intolerant population.

I. INTRODUCTION

Dairy products are a critical source of essential nutrients, including calcium, vitamin D, and high-quality proteins, which are vital for bone health, muscle function, and overall well-being. However, lactose intolerance, characterized by the inability to digest lactose due to low levels of the enzyme lactase, affects approximately 36% of Americans (Lomer, Parkes, & Sanderson, 2008). This condition often leads to the avoidance of dairy products, potentially resulting in nutrient deficiencies. This paper discusses the role of lactase in lactose digestion, strategies for the gradual reintroduction of dairy, and the use of lactase supplements to aid in managing lactose intolerance.

II. BIOCHEMICAL ROLE OF LACTASE

Lactase is an enzyme located in the brush border of the small intestine. Its primary function is to hydrolyze lactose, a disaccharide found in milk and dairy products, into its constituent monosaccharides, glucose and galactose (Swallow, 2003). These monosaccharides are then absorbed into the bloodstream and utilized by the body for energy and other metabolic processes.

Lactase activity is highest during infancy, allowing for the efficient digestion of breast milk. However, in many individuals, lactase activity declines after weaning, leading to lactose intolerance. This condition results in the malabsorption of lactose, which can cause gastrointestinal symptoms such as bloating, diarrhea, and abdominal pain (Vesa, Marteau, & Korpela, 2000).

III. GRADUAL REINTRODUCTION OF DAIRY

For individuals with lactose intolerance, a gradual reintroduction of dairy products can help increase tolerance and improve nutritional intake. The first steps could involve consuming foods with low lactose content, such as butter and hard cheeses. Butter, for example, contains only trace amounts of lactose, making it a suitable option for those with lactose intolerance (Misselwitz, Butter, Verbeke, Fox, & Wanke, 2013).

IV. LACTASE SUPPLEMENTS

Lactase supplements are another effective strategy for managing lactose intolerance. These supplements provide the exogenous enzyme needed to digest lactose, thereby reducing or eliminating symptoms associated with lactose malabsorption. Studies have shown that lactase supplements can significantly improve symptoms and allow for the consumption of moderate amounts of dairy without discomfort (Shaukat, Levitt, Taylor, & MacDonald, 2010).

V. CONCLUSION

Reintegrating dairy into the diets of lactose-intolerant individuals can provide significant nutritional benefits. Understanding the role of lactase and employing strategies such as the consumption of low-lactose foods and the use of lactase supplements can facilitate this process. This approach not only helps in managing lactose intolerance but also ensures adequate intake of essential nutrients found in dairy products.

REFERENCES

[1]. Lomer, M. C. E., Parkes, G. C., & Sanderson, J. D. (2008). Review article: lactose intolerance in clinical practice--myths and realities. *Alimentary Pharmacology & Therapeutics*, 27(2), 93-103.

[2]. Swallow, D. M. (2003). Genetics of lactase persistence and lactose intolerance. *Annual Review of Genetics*, 37, 197-219.

[3]. Vesa, T. H., Marteau, P., & Korpela, R. (2000). Lactose intolerance. *Journal of the American College of Nutrition*, 19(2 Suppl), 165S-175S.

[4]. Misselwitz, B., Butter, M., Verbeke, K., Fox, M. R., & Wanke, M. (2013). Update on lactose malabsorption and intolerance: pathogenesis, diagnosis and clinical management. *Gut*, 62(6), 1024-1033.

[5]. Shaukat, A., Levitt, M. D., Taylor, B. C., & MacDonald, R. (2010). Systematic review: effective management strategies for lactose intolerance. *Annals of Internal Medicine*, 152(12), 797-803.