

Living Gut Health Improvement through Time-Managing Nutrient Assimilation: An Evolutionary Probiotic

Akbar Nikkhah*

Department of Animal Sciences, Faculty of Agricultural Sciences, University of Zanjan, Foremost Highly Distinguished Elite-Generating Scientist, Iran

*Corresponding author: Akbar Nikkhah, Chief Highly Distinguished Professor, Department of Animal Sciences, Faculty of Agricultural Sciences, University of Zanjan, Foremost Highly Distinguished Elite-Generating Scientist, National Elite Foundation, Iran, Tel: +98-24-33052801; E-mail: anikkha@yahoo.com

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Abstract

This article describes an innovative postmodern strategy to optimize function and health of the living gut in human by time-managing of nutrient assimilation. Inspired by the probiotic nature, at certain times of the circadian phase, microbial metabolism especially in hindgut can be improved. Discovering such occasions of food intake can serve the symbiotic microbial fermentation of the gut while improving gut integrity and overall health.

Keywords: Probiotic; Microbial fermentation; Living gut; Evolution

Innovations

This article develops a philosophy for optimizing the living gut physiology and health through natural probiotic determinants of mainly time-management of nutrient consumption and assimilation. It is premised that at certain times of the circadian 24-h period, microbial maintenance requirements are minimal, thus not challenging the intestinal cells integrity and health during extensive fermentation of especially cell wall fibres and incompletely-digested starches and proteins entering the lower gut. The probiotic nature of nutrient assimilation timing along the gastrointestinal tract emphasizes the evolutionary trends of human gut development and specialization of action in different luminal sections.

For instance, any given food (e.g., milk, high-starch foods, and high-fibre plants) will have different assimilative fates during the gut fermentation depending on when during the 24-h circadian phase it is taken and exposed to microbial degradation. From a gut health perspective and as far as gut diseases and cancers are concerned, optimal time-management of nutrient assimilation offers perspectives to manipulate circadian patterns of microbial population diversity, fermentation outputs, and indeed gut mechanics and biochemistry. At certain circadian times, gut cells may be more tolerant of unfavourable conditions such as excessive prolonged pH fluctuations and inefficient waste management.

The above contemplations gain support from the most recent discoveries on timing of nutrient intake in ruminant animal models [1-6]. Notable, rumen volume and fermentation capacity was found to be larger when the same feed was delivered to lactating dairy cows in evening vs. morning under thermo neutral conditions. In light of the increased likelihood of glucose intolerance, insulin resistance, and

splanchnic metabolic challenges in human during later times of the circadian phase namely overnight [7,8], opportunities exist to improve the human gut's own and microbial metabolism through optimizing the timing of nutrient intake.

Implication

The innovative science described how optimal time-managing of nutrient intake and assimilation provides opportunities to improve the living gut physiology, cellular integrity, and functional health. However, research is required before definitive global and local guidelines on such time management strategies may be formulated. The new science is an evolutionary probiotic approach instigated by the nature.

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