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The place of probiotics in ecology

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Statement of the Problem: Probiotic microorganisms: are the most popular pharmaceutical preparations of the 21st century with additional applications in the protection, treatment and treatment of human and animal health. Although not yet reaching the gold standard, available information indicates that the mechanisms of probiotics are multifaceted with a cumulative trend; studies at the level of family, race and species continue and when examined, extensive information about their activities is brought to the literature. Contrary to popular belief, probiotics form different microbiomes with biodiversity in their localization outside the intestinal tract. Sometimes even with a geriatric human microbiota; common deterioration in the microbiota of a newborn calf can lead to different diseases.

Methodology & Theoretical Orientation: With human and veterinary research; clinical and preclinical studies and meta-analyses were reviewed.

Findings: Microbiota: "ecological communities formed by non-pathogenic, symbiotic and pathogenic microorganisms" and are found on the inner and outer surfaces of all multicellular organisms studied, from plants to animals. One of the most common non-motor symptoms of PD is constipation and occurs in approximately 80% of patients. In studies conducted, lower *Prevotella* spp species and lower *Bifidobacterium* spp were detected in stool samples. In neonatal calf diarrhea, generally negative environmental factors, weak immunity and infectious factors cause a decrease in the productivity of the farms and low *Bifidobacterium* spp in the calf large intestine; It shows a positive correlation with the severity of the disease. The absence of a single group of bacteria in two different organisms and in two different disease states (one progressive neurodegenerative and the other acute infectious disease) can cause different responses.

Conclusion & Significance: The use of probiotics in ecological balance, even if the problems are different, it will contribute to the solution, the use of probiotics in human and animal health, especially common infections, low side-effect profile in maintaining health, it has an important place in the ecosystem without the risk of chemical pollution.

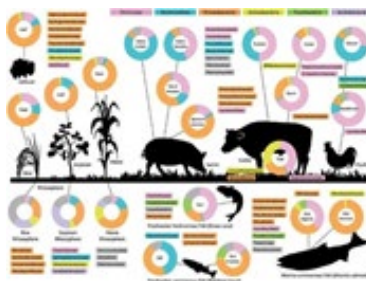


Figure 1. Microbiota in agriculture. The figure provides an overview of the bacterial composition of the microbiota of different parts of livestock animals, gill and intestines of fish, and phyllosphere and rhizosphere of plants at the phylum-level (pie-charts) and lower taxonomic levels

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Recent Publications:

1. Ikeda-Ohtsubo, W., Brugman, S., Warden, C. H., Rebel, J. M., Folkerts, G., & Pieterse, C. M. (2018). How can we define "optimal microbiota?": A comparative review of structure and functions of microbiota of animals, fish, and plants in agriculture. *Frontiers in nutrition*, 5, 90.
2. Morgan, X. C., Segata, N., & Huttenhower, C. (2013). Biodiversity and functional genomics in the human microbiome. *Trends in genetics*, 29(1), 51-58.
3. Scarpellini, E., Ianiro, G., Attili, F., Bassanelli, C., De Santis, A., & Gasbarrini, A. (2015). The human gut microbiota and virome: Potential therapeutic implications. *Digestive and Liver Disease*, 47(12), 1007-1012.
4. Liu, X. (2016). Focus: Microbiome: Microbiome. *The Yale Journal of Biology and Medicine*, 89(3), 275.
5. Li, Z., Liang, H., Hu, Y., Lu, L., Zheng, C., Fan, Y., ... & Xu, P. (2023). Gut bacterial profiles in Parkinson's disease: A systematic review. *CNS Neuroscience & Therapeutics*, 29(1), 140-157.
6. Du, W., Wang, X., Hu, M., Hou, J., Du, Y., Si, W., ... & Xu, Q. (2023). Modulating gastrointestinal microbiota to alleviate diarrhea in calves. *Frontiers in Microbiology*, 14, 1181545.

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