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Development of next generation probiotics in the Bioindustry

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The field of microbiome research has profoundly reshaped human health. Especially, the potential of fecal microbiota transplantation (FMT) and probiotics as preventive or therapeutic interventions are highlighted. Whereas the benefits of traditional probiotics are well-reckoned, their efficacy and mechanisms of actions (MOA) remain not totally clear. Also, the long-term FMT effects are still being evaluated. Recent advancements in next generation sequencing (NGS) have revealed gut microbes with significant health benefits, paving the road for identification of important next-generation probiotics (NGPs). NGPs, unraveled through synthetic biology and bioinformatics, are rapidly developed to address chronic inflammation disease. In this presentation, I will present the current research on NGP safety, efficacy, stability, and their applications in preventing and treating chronic diseases including diabetes, obesity, and cardiovascular diseases ... etc.. I will explore the physiological characteristics, safety profiles, and MOA of various NGP species/strains, while also addressing the challenges and opportunities in the aspect of their application in clinical practice. The potential of NGPs to revolutionize microbiome-based therapies and improve clinical outcomes is expected, which underscored the necessity for further research to optimize their efficacy and ensure their safety.



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