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# Unification of Lactic Acid Bacteria and Aloe Vera for Healthy Gut

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**Abstract :** There exist more than 100 trillion bacteria in the digestive system of human-beings. Such bacteria are referred to as gut microbiota. Gut microbiota comprises around 75% of our immune system. The bacteria that comprise the gut microbiota are unique to every individual and their composition keeps changing with time owing to factors such as the host's age, diet, genes, environment, and external medication. Of these factors, the variable easiest to control is one's diet. By modulating one's diet, one can ensure an optimal composition of the gut microbiota yielding several health benefits. Prebiotics and probiotics are two compounds that have been considered as viable options to modulate the host's diet. Prebiotics are basically plant products that support the growth of good bacteria in the host's gut. Examples include garden asparagus, aloe vera etc. Probiotics are living microorganisms that exist in our intestines and play an integral role in promoting digestive health and supporting our immune system in general. Examples include yogurt, kimchi, kombucha etc. In the context of modulating the host's diet, the key attribute of prebiotics is that they support the growth of probiotics. By developing the right combination of prebiotics and probiotics, food products or supplements can be created to enhance the host's health. An effective combination of prebiotics and probiotics that yields health benefits to the host is referred to as synbiotics. Synbiotics comprise of an optimal proportion of prebiotics and probiotics, their application benefits the host's health more than the application of prebiotics and probiotics used in isolation. When applied to food supplements, synbiotics preserve the beneficial probiotic bacteria during storage period and during the bacteria's passage through the intestinal tract. When applied to the gastrointestinal tract, the composition of the synbiotics assumes paramount importance. Reason being that for synbiotics to be effective in the gastrointestinal tract, the chosen probiotic must be able to survive in the stomach's acidic environment and manifest tolerance towards bile and pancreatic secretions. Further, not every prebiotic stimulates the growth of a particular probiotic. The prebiotic chosen should be one that not only maintains 2 balance in the host's digestive system, but also provides the required nutrition to probiotics. Hence in each application of synbiotics, the prebiotic-probiotic combination needs to be carefully selected. Once the combination is finalized, the exact proportion of prebiotics and probiotics to be used needs to be considered. When determining this proportion, only that amount of a prebiotic should be used that activates metabolism of the required number of probiotics. It was observed that while probiotics are active is both the small and large intestine, the effect of prebiotics is observed primarily in the large intestine. Hence in the host's small intestine, synbiotics are likely to have the maximum efficacy. In small intestine, prebiotics not only assist in the growth of probiotics, but they also enable probiotics to exhibit a higher tolerance to pH levels, oxygenation, and intestinal temperature

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