

## SYMBIOTIC MAKHANA

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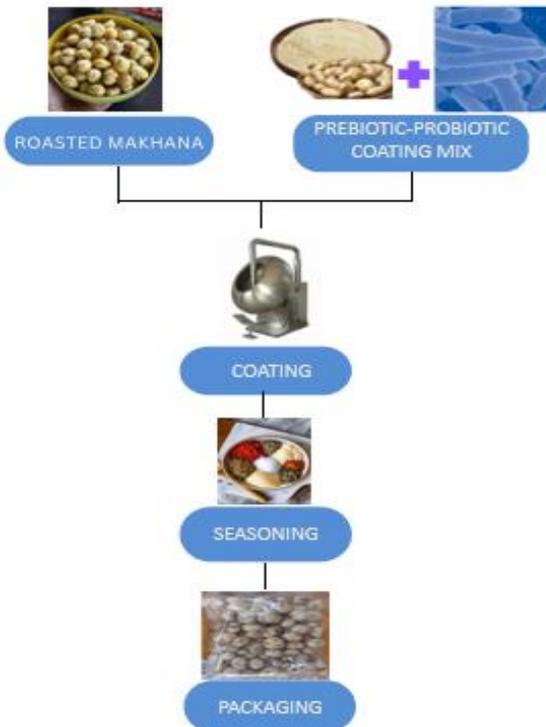
### INTRODUCTION

Symbiotic Makhana is an innovative functional food concept that combines the nutritional richness of fox nuts with the health-promoting benefits of probiotics and prebiotics. Makhana, a traditional superfood valued for its high protein, low fat, and antioxidant content, serves as an ideal base for developing a symbiotic formulation. By integrating live beneficial bacteria (probiotics) and fermentable dietary fibers (prebiotics), Symbiotic Makhana aims to enhance gut health, boost immunity, and support overall well-being. This novel product leverages the synergistic relationship between probiotics and prebiotics to provide a convenient and tasty solution for modern health-conscious consumers. Its development aligns with the growing global demand for gut-friendly, plant-based, and ready-to-eat functional snacks.

### OBJECTIVES

- ✓ To develop a functional food using Makhana.
- ✓ To incorporate probiotics (*L.plantarum*) and prebiotics (Jackfruit seed flour).
- ✓ To evaluate nutritional and functional properties.

### METHODOLOGY



### MARKET POTENTIAL OF SYMBIOTIC MAKHANA

- ✓ Growing demand for Functional foods
- ✓ Rise in digestive health awareness
- ✓ Makhana: A Trending Superfood
- ✓ Snack industry opportunities
- ✓ Target consumers
- ✓ Export potential



### RESULT

- ✓ Probiotic viability: *L.plantarum* maintained at  $10^8$  CFU/g after 21 days at  $4^{\circ}\text{C}$ .
- ✓ Prebiotic content: Jackfruit seed flour contributed 4.1 g dietary fiber/100g, promoting probiotic growth.
- ✓ Synergistic effect: Co-cultured makhana showed 1.6 $\times$  growth enhancement of *L. plantarum* with jackfruit seed flour vs control.
- ✓ pH & acidity: pH reduced to 4.6, indicating active metabolism and organic acid production.
- ✓ Sensory Acceptability: Average score of 8.2/9 (taste, texture, overall) by a 10-

### CONCLUSION

Symbiotic Makhana with *L.plantarum* and jackfruit seed flour showed high probiotic viability, good gut survival, and strong synergistic effects, making it a promising functional snack with proven symbiotic potential.