Innovative Next-generation Synbiotic for Steatotic Liver Disease

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Technology

- A next-generation synbiotic formulation combining *Lactococcus lactis* strains with biotin and fumaric acid
- The formulation modulates gut barrier integrity, and alleviates hepatic lipid accumulation for metabolic dysfunction-associated steatotic liver disease (MASLD)
- Enteric-coated delivery ensures bacterial viability and targeted intestinal release, enhancing the efficacy potential

Key Advantages

- **Dual-action mechanism:** Synergistic probiotic-metabolite combination rebalances gut dysbiosis and hepatic metabolism.
- **Preclinical efficacy:** Significant reductions in serum ALT and AST, hepatic steatosis, and improved gut barrier function in MASLD mouse model.
- **Targeted delivery:** Enteric-coated capsule maintains bacterial viability and ensures controlled intestinal release.
- **Scalable design:** Compatible with industrial capsule manufacturing.

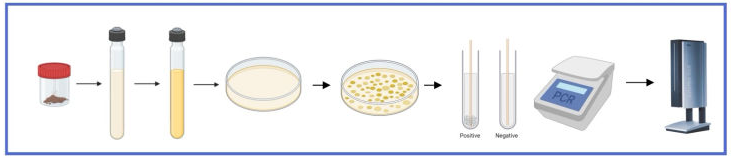
Stage of Development

- **Preclinical proof-of-concept completed** (MASLD mouse model).
- **Optimized enteric coating** validated for gastric protection and intestinal release.
- **Rabbit study ongoing** to compare enteric coated vs. non-coated formulations.

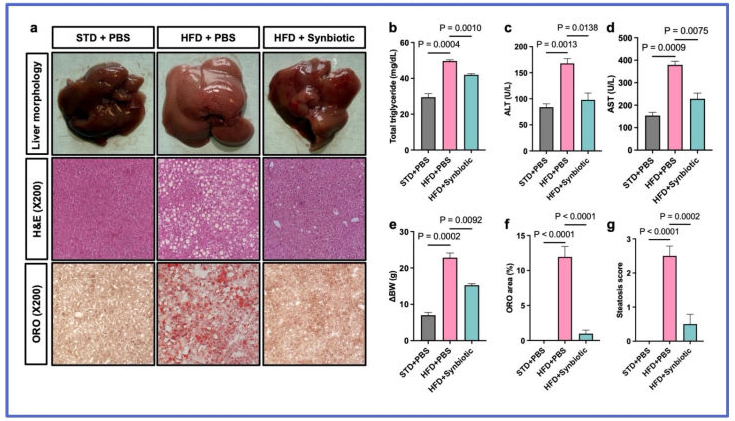
Opportunities

- **Licensing or co-development partnerships** for MASLD and metabolic disorder therapeutics.
- **Expand clinical translation** toward MetALD, liver fibrosis, and hepatocellular carcinoma (HCC) models.
- **Collaboration** on clinical translation and manufacturing.

Phase I: *Lactococcus lactis* strains based synbiotic



Phase II: Preventive efficacy of synbiotic for MASLD



Phase III: Optimized enteric coating to enhance efficacy and delivery efficiency

Intellectual Property

- One US patent related to this project, titled "Fecal Microbial Biomarkers for Non-Alcoholic Fatty Liver Disease," has been allowed (No. 17/716,619). Another provisional US patent application has been filed (No. 63/890,241), and a corresponding Chinese patent application is currently under preparation.

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