Private Company

Improving the viability of live probiotics

Background

We are a company focused on developing supplements that support whole-body health by targeting the root causes of wellness concerns. Probiotics, live microorganisms that when administered in sufficient amounts, confer a health benefit in the host, play an important role in maintaining human health by supporting gut flora, enhancing immune function, and contributing to overall well-being. Gummy supplements have become among the most popular formats in the vitamins, minerals, and supplements category due to their appealing taste and ease of consumption. However, the incorporation of live probiotic cultures into gummy vitamins presents significant challenges. The primary issue lies in maintaining the stability and viability of these microorganisms throughout the manufacturing process and shelf life . Factors such as moisture, oxygen, temperature, pH levels, and ingredient (active and excipient) interactions can adversely affect the survival of probiotics in gummy form, potentially diminishing their effectiveness. Consequently, there is a need for innovative technology solutions that can enhance the stability of live probiotics in gummy supplements.

What we're looking for

We are looking for technology solutions that would maintain the viability of live probiotic strains (e.g., Lactobacillus acidophilus, Lactobacillus rhamnosus, Lactobacillus plantarum, Bifidobacterium animalis, Bifidobacterium breve, Bifidobacterium longum, etc.) in conventional gelatin and pectin gummy matrices.
Ideally, these solutions should be compatible with existing gummy manufacturing conditions (> 80°C, water activity (aw) ~0.6-0.7) and have minimal impact on the sensory profile of the product (i.e., changes in texture or taste).

Solutions of interest include:

- Encapsulation
- Novel ingredient processing technology
- Novel stability-enhancing excipients (e.g., functional matrices)
- Conventional and novel stabilizers

Our must-have requirements are:

- Improves the viability of probiotics in a gelatin/pectin matrix by reducing process and stability losses to allow for label claims through end of shelf life (typical probiotic overages can range from 100-1000%)

- Compatible with conventional gummy manufacturing processes
- Compatible with conventional gelatin/pectin formulations with minimal impact on taste and texture
- Holds Generally Recognized As Safe (GRAS) status or has a reasonable basis for achieving it

Our nice-to-have's are:

- Real-time or accelerated stability data demonstrating improvement in probiotic stability with at least one strain in a gummy format

What's out of scope:

- Alternative ingredients to live probiotics (e.g., spore forming bacteria like Bacillus subtilis, prebiotic fibers, or inactivated probiotics/postbiotics). Note: Unless the alternative ingredient is one of the above and integral to conferring probiotic stability such as a protective prebiotic fiber.
- Novel gummy manufacturing processes
- Solutions required to be implemented at the time of microorganism manufacturing (e.g., probiotic preconditioning, specialized drying)

Acceptable technology readiness levels (TRL): Levels 3-8

1. Basic principles observed
2. Concept development
3. Experimental proof of concept
4. Validated in lab conditions
5. Validated in relevant environment
6. Demonstrated in relevant environment
7. Regulatory approval
8. Product in production
9. Product in market

What we can offer you

Eligible partnership models:

- Sponsored research
- Co-development
- Supply/purchase
- Material transfer

Benefits:

Sponsored Research

Funding is proposal dependent, but an accepted proposal could expect support in the range of ~$50,000-100,000 for POC project(s) (tech readiness and milestone dependent) with the potential for follow-on funding

Expertise

Partners will interact with a project lead to mutually develop a project plan and engage in regular meetings to ensure success. Partners will have access to internal team/experts as appropriate.

Please contact the University of South Florida Technology Transfer o8ice representative for submission – Karla Schramm at kschramm@usf.edu