

# Natural food preservation ingredients and processes against spoilage LAB

## Background

There is a rising consumer demand for natural food ingredients, especially in the preservation space, to inhibit spoilage and prolong shelf life. Lactic acid bacteria spoilage (e.g., *Leuconostoc mesenteroides* etc.) in cured bacon and ready-to-eat (RTE) meat products leads to 'slime' formation, souring etc. Similarly, in sauces, condiments, and dressings, lactic acid bacteria spoilage (e.g., *Lactobacillus buchneri*, *Lactobacillus plantarum* etc.) causes off-odor and off-taste. Some common preservatives used in these products to mitigate bacterial spoilage are sodium benzoate (in sauces & dressings), salt, organic acids, and curing ingredients (in meat). While these preservatives are considered safe, some consumers prefer to avoid foods containing synthetic additives. Natural preservatives, such as buffered vinegar and cultured dextrose are already in use in the industry to mitigate bacterial spoilage, but they are not broadly effective for lactic acid bacteria spoilage.

## What we're looking for

We are looking for natural ingredients and process techniques that can replace artificial preservative ingredients in foods such as meat, sauces, condiments, and dressings. These solutions should inhibit spoilage lactic acid bacteria like *L. mesenteroides* (in cured bacon and RTE meat), *L. buchneri*, and *L. plantarum* (in sauces, condiments, and dressings).

## Solutions of interest include:

- Plant-derived ingredients
- Organic acids
- Processing techniques
- Microbially-derived ingredients

## Our must-have requirements are:

- Effective against spoilage lactic acid bacteria (e.g. *Leuconostoc* spp., *Lactobacillus* spp. etc)
- Inhibits bacterial growth over shelf-life period (3+ months for meat; 6+ months for sauces, condiments, and dressings)
- Suitable for food application
- Clear pathway for regulatory approval in USA and Canada (or other countries with pathway to approval in USA and Canada)
- Ability to scale-up using commercially available processes for industrial application

**Our nice-to-have's are:**

- Minimal impact on organoleptic attributes of the food product
- Limited sodium contribution
- Achieve bacterial kill of at least 1-2 log-reduction over shelf life
- Ingredient stability for a wide range of pH and temperature (heat stability)
- Plan to commercially scale ingredient or process, with scalability in approximately 1 year timeline
- Low-capital solution for processing technologies, preferably continuous processes
- Clean/simple labeling options

**What's out of scope:**

- Artificial ingredients
- Solutions for which continuity of supply is difficult to maintain
- Solutions below TRL 5 (i.e., discovery research programs)

**Acceptable technology readiness levels (TRL): Levels 5-9**

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****Material transfer****Licensing****Supply/purchase****Benefits:****Sponsored Research**

Funding is proposal-dependent starting with proof-of-concept, typically ranging from \$25,000 to \$100,000 for a 6-month length project with the potential for expansion based on results and opportunities.

**Expertise**

Work directly with food preservation subject matter experts.

**Facilities and Services**

Testing of ingredients under material transfer agreement.

**Who we are**

We are driving transformation at The Kraft Heinz Company, inspired by our Purpose, Let's Make Life Delicious. Consumers are at the center of everything we do. With 2021 net sales of approximately \$26 billion, we are committed to growing our iconic and emerging food and beverage brands on a global scale. We leverage our scale and agility to unleash the full power of Kraft Heinz across a portfolio of six consumer-driven product platforms. As global citizens, we're dedicated to making a sustainable, ethical impact while helping feed the world in healthy, responsible ways. Learn more about our journey by visiting [www.kraftheinzcompany.com](http://www.kraftheinzcompany.com) or following us on LinkedIn and Twitter.

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