

# Novel, Plant-Based Wall Materials for Spray-Dry Microencapsulation

**Purdue researchers have developed natural, cost-effective, and highly functional sweet corn-based wall materials for superior spray-dry microencapsulation of various food ingredients, outperforming industry-standard materials.**

Researchers at Purdue University have developed natural, plant-based, functional, and sustainable wall materials from sweet corn for spray-dry microencapsulation of foods. In the food industry, core materials are embedded in wall materials for prolonged protection and convenient use. None of the wall materials currently used by the industry meet all the criteria of: "natural, plant-based, functional, and sustainable." Not only satisfying these qualities, the wall materials developed by the Purdue researchers are also amphiphilic; they are both hydrophilic and lipophilic, allowing compatibility with a wide range of ingredients. Additionally, the materials are cost-effective.

**Technology Validation:** The researchers generated sweet corn extracts to prepare spray-dry microencapsulation solids for blueberry syrup, beet juice, paprika oleoresin, orange oil, and lutein oil. For paprika oleoresin, the sweet corn extracts were stronger emulsifiers and more resistant to light and heat treatments than OSA-starch, which is the industry-standard wall material.

## Advantages

- Natural
- Plant-based
- Functional
- Sustainable

## Applications

- Spray-Dry Microencapsulation of Foods

**Technology ID**  
2021-YAO-69524

## Category

Agriculture, Nutrition, &  
AgTech/Food Safety &  
Traceability  
Chemicals & Advanced  
Materials/Green & Bio-Based  
Chemistry  
GreenTech/Sustainable  
Packaging Materials

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## View online



Webpage for Additional Information:

For additional information, visit Dr. Yao's Purdue webpage:

<https://ag.purdue.edu/foodsci/Pages/Profile.aspx?strAlias=yao1&intDirDeptID=14>

**TRL:** 2

### **Intellectual Property:**

Provisional-Patent, 2021-08-25, United States | PCT-Patent, 2022-08-25, WO  
| NATL-Patent, 2022-08-25, Europe | NATL-Patent, 2024-02-24, United States  
| NATL-Patent, N/A, Japan

**Keywords:** sweet corn wall materials, spray-dry microencapsulation, plant-based food materials, natural food ingredients, sustainable wall materials, functional wall materials, amphiphilic food materials, hydrophilic lipophilic materials, food core materials protection, cost-effective microencapsulation, Food and Nutrition, Microencapsulation, Natural, Plant-Based, sustainable