Clean Label Stabilization with Oat Fiber

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Presentation Overview

What is SenseFi?
- Oat Fiber
- Manufacturing Process
- Value Propositions

Hydration & Sensory
- Shear Application
- Expert Sensory Evaluation
- Low-Fat Cream Prototype

Application Highlights
- Ready-to-Drink Coffee Beverage
- Ice Cream
- Plant Based Yogurt
What is SenseFi?

Brand Name for Line of Functionalized Fibers
- Insoluble, non-functional fibers physically modified through shear to create functionality
- 3 commercial products which are labeled as
  - Oat Fiber (PF16002)
    - Produced from oat hull waste stream
  - Sugar Cane Fiber (PF16001)
    - Produced from sugar cane bagasse waste stream
  - Cellulose Fiber (WP108373)

Stabilizer Functionality
- High viscosity
- High degree of water binding
- Excellent organoleptic qualities
- Suspension stability
- Shelf-Life stability
- Stabilizer dose rates
  - Not intended to be used for fiber fortification, although it is on the list of FDA approved fibers
Oat Fiber Value Propositions

Excellent Sensory Qualities
- Natural, smooth, and creamy eating experience without any gumminess
  - Perfect for low fat products (and full fat!)
  - Beverages, Ice Cream, Yogurts, Pudding, Dressings & Sauces etc.
  - Excels in plant based sector

Suspension
- At higher dose rates are able to suspend particulates such as cocoa, minerals, or spices
  - Chocolate Milk, Plant Based Milk, Dressings & Sauces

Cost Savings
- Highly functional which allows for reduced dose rates and therefore cost savings
- Replacement of expensive fat sources such as butter fat without sacrificing quality

Clean Label Gum Replacement
- Deliver all the functionality of a wide variety of common stabilizers with a functional fiber
  - Replace Carrageenan, MCC, CMC, Locust Bean Gum, Xanthan Gum, Gellan Gum, etc.
Hydration Protocols

Relative Hydration Efficiency

All high shear equipment was used for 3 minutes. Longer hydration times will increase hydration efficiency.

All efficiencies relative to 1 pass through a homogenizer at 150/50 bar.

1.4% SenseFi solutions in water at 25°C
Conclusion from blind expert sensory panel: SenseFi is the most “fat-like” in terms of initial mouthfeel and melt/dissolve properties.
Conclusion from blind expert sensory panel: the SenseFi containing low-fat cream seemed even “fattier” than heavy cream and its flavor was more similar to heavy cream than the MCC containing low-fat cream. Additionally, the SenseFi sample will be more economical (~half the MCC dose rate)
Sensory
Low-Fat Cream

Biplot (axes D1 and D2: 90 %)
after Varimax rotation

477 = Low Fat Cream with SenseFi
412 = Low Fat Cream with MCC
Application Highlight

Coffee RTD

Stability
- No Depletion Flocculation occurred at any doses tested
  - No Color change
  - No Sedimentation
  - No Phase separation

Sensory
- 0.2% preferred sample
- All samples were liked. Came down to personal preference rather than a point of negative attributes arising
- Additional body without gumminess

From left to right: Control, 0.1%, 0.2%, 0.3%, and 0.4% Oat Fiber
Data taken on Brookfield RST Rheometer with a double gap spindle at 4C.
Commercial Sample #1 and negative control are nearly indistinguishable at higher shear rates.
Application Highlight

Ice Cream

Soft Serve Benefits
- Phase compatible with milk proteins
  - No need for carrageenan
- Creamy mouthfeel
- Excellent overrun

Hard Pack Benefits
- Premium quality low-fat formulations
- Excellent heat shock resistance
- Can be used as the sole stabilizer or in conjunction with other stabilizers
- Butter fat replacement → cost savings without sacrificing quality

Plant Based
- All the above benefits
- Natural texture which mimics a dairy product

Picture of carrageenan-free soft serve mix 5 days post manufacture
Application Highlight
Drinkable Almond Yogurt

Ingredients
- Almond Milk (water, almonds), Cane Sugar, Soluble Corn Fiber, Oat Fiber, Tamarind Seed Gum, Natural Color, Natural Flavor, Cultures

Oat Fiber Functionality
- Body, Texture, Creaminess
- Prevents Phase Separation
- Clean Flavor
- Also suitable for spoon-able plant-based yogurts
  - High dose rates create a very pleasant “paste” (i.e. not an unnatural cut-able texture)
Thank you

Questions?
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