



Creating Healthier Tortillas with Enzymes and Probiotics

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Global Source for Enzymes & Probiotics

- ◆ Top 10 Global Producer of Enzymes & Probiotics
- ◆ 60+ Years of Manufacturing Experience
- ◆ 70+ Individual Enzymes
- ◆ 25+ Probiotics (Including Shelf & Heat-Stable)
- ◆ 400+ Solutions to Improve Processes, Save Time & Reduce Costs
- ◆ Non-GMO, Organic & Gluten-Free Products Available



What are Healthier Tortillas?

Reduce

- ◆ Fat
- ◆ Sodium
- ◆ Sugar
- ◆ Chemicals

Add

- ◆ Fiber
- ◆ Whole Grains
- ◆ Protein
- ◆ Probiotics



Why Healthier Tortillas?

- ◆ 74% Adults Are Overweight or Have Obesity¹
- ◆ 60% Adults Have 1 or More Diet-Related Chronic Diseases¹
- ◆ FDA Proposal for New Definition of Healthy²
- ◆ WHO Healthy Diet Recommendations³



See References 1-3



Solutions for Formulating Healthier Tortillas

- ◆ Fiber
- ◆ Protein
- ◆ Probiotics



Benefits of Fiber

**Improves
Digestive Health**

**Lowers Blood
Cholesterol**

**Weight
Management**

**Prevents
Constipation**

**Diabetes
Management**

Sugar Reduction

See References 4-7

Challenges with Adding Fiber

- ✗ Dry
- ✗ Harder Texture
- ✗ Bitterness
- ✗ Stiffer Dough
- ✗ Increased Water Absorption



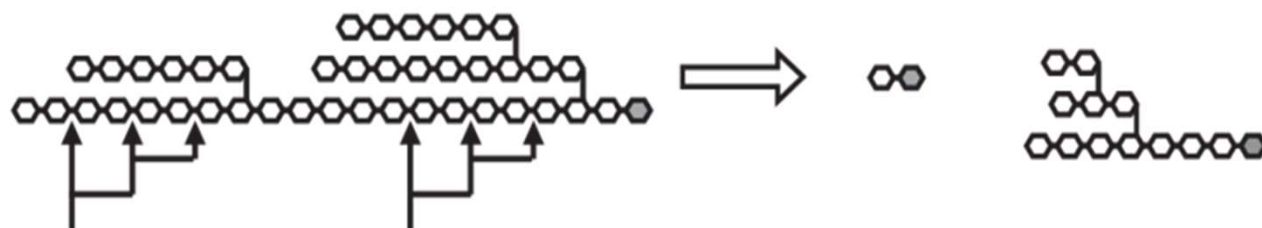
Softer & Moister Mouthfeel with High Performing Maltogenic Amylase

◆ Benefits

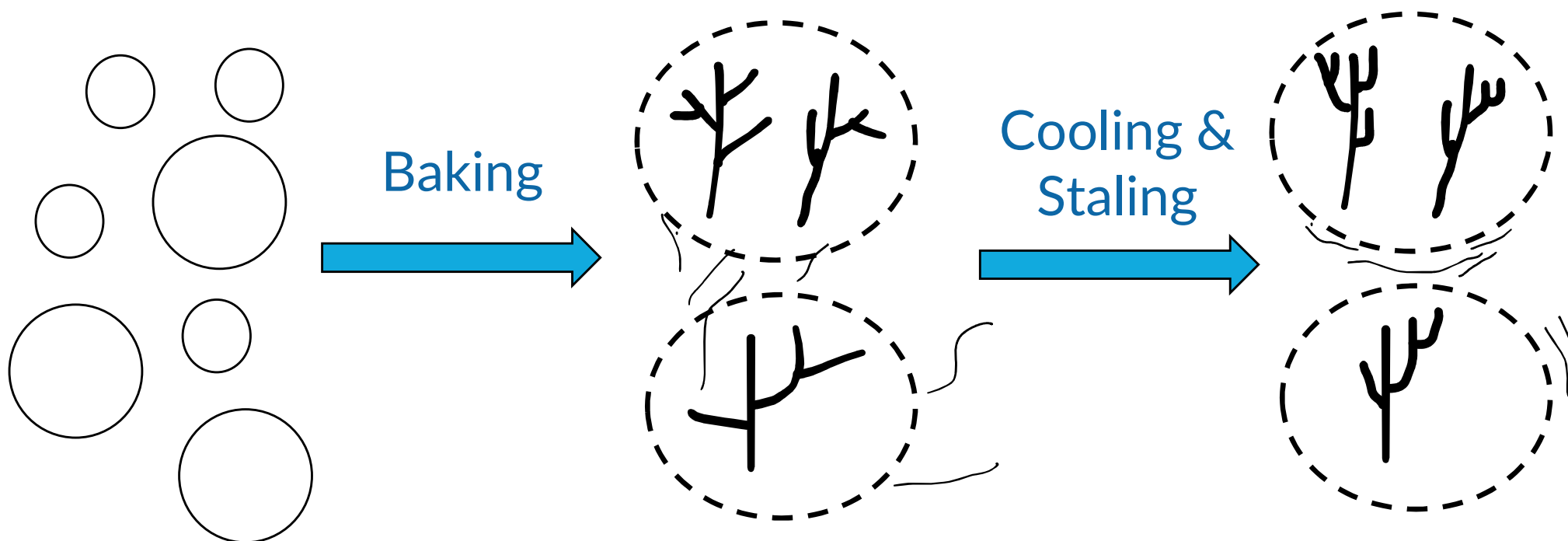
- ◆ Increases water binding
- ◆ Prolongs softness & maintains elasticity/resilience
- ◆ Extends shelf life by delaying staling
- ◆ Helps produce softer, superior quality baked goods

◆ Function | Hydrolyzes maltotriose to maltose & glucose

◆ High Performing Maltogenic Amylase | SEBake Fresh Ultra



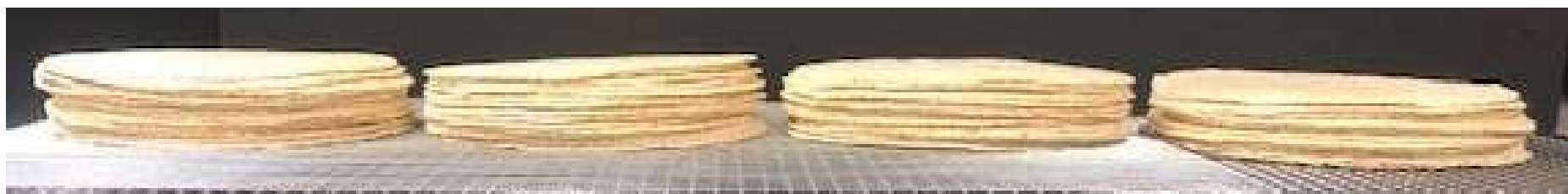
Staling Process



See References 8-11



High Fiber Corn Tortillas with High Performing Maltogenic Amylase

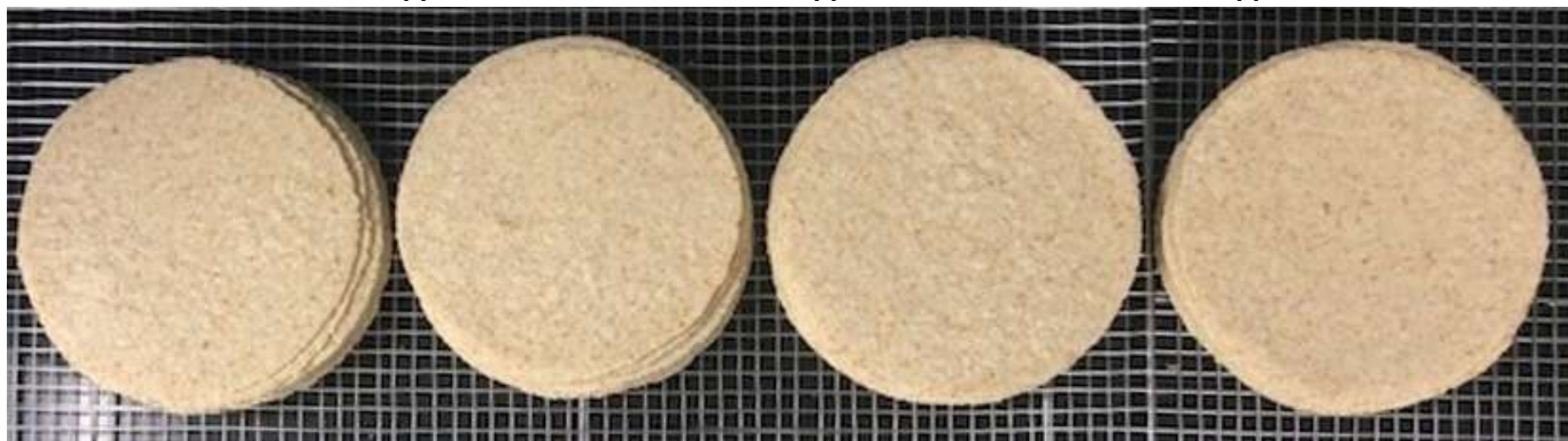


Control

25ppm SEBake Fresh Ultra

50ppm SEBake Fresh Ultra

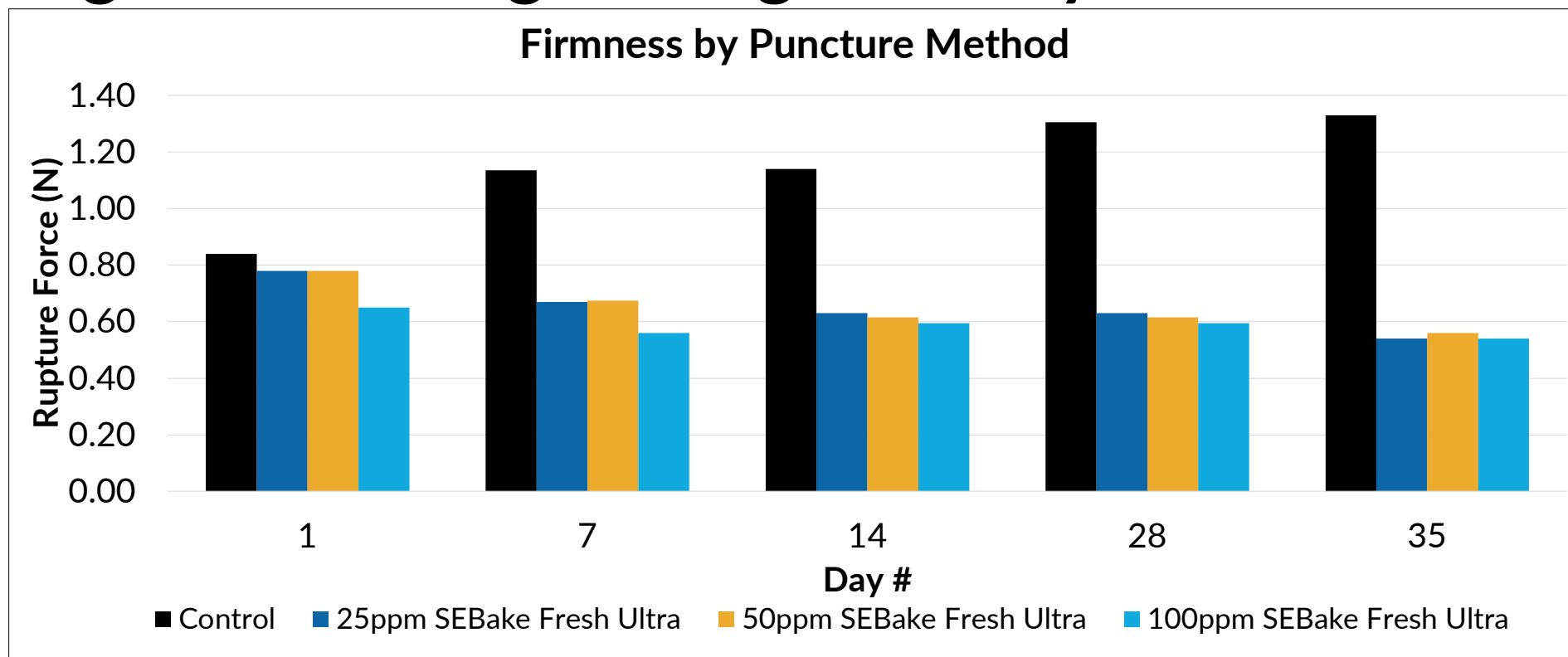
100ppm SEBake Fresh Ultra



8.6g fiber per tortilla (44g)



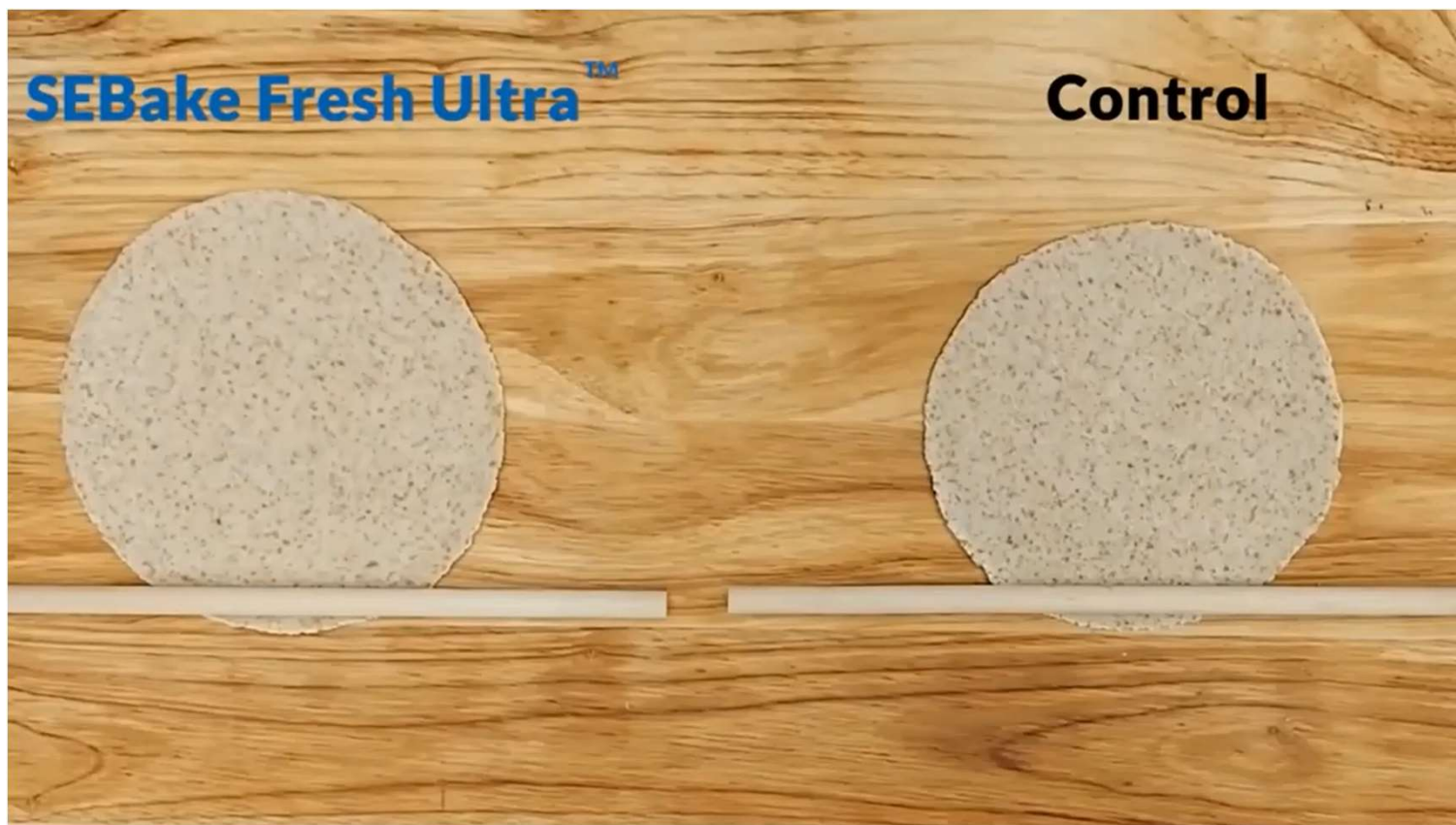
Softer High Fiber Corn Tortillas with High Performing Maltogenic Amylase



High fiber corn tortillas with SEBake Fresh Ultra were 58-59% softer than the control on Day 35



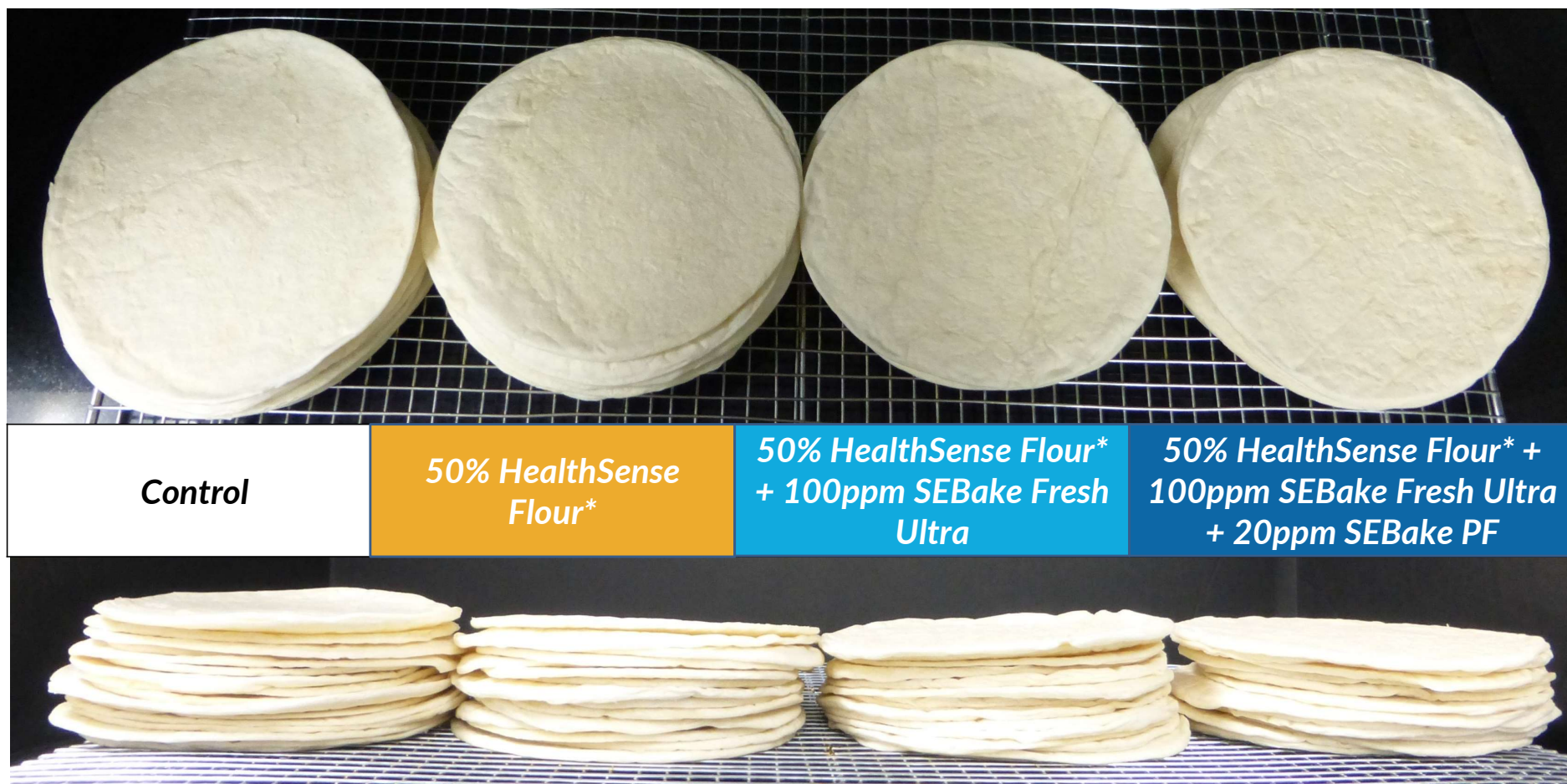
Improved Rollability with High Performing Maltogenic Amylase



High fiber corn tortillas on day 35 (8.6g fiber per tortilla)



Flour Tortillas with Added Fiber and Enzymes



***HealthSense Flour contains 32% fiber**



More Flexible Tortillas with Fiber and Enzymes

Foldability – Day 24



Control



50% HealthSense Flour*



**50% HealthSense Flour* +
100ppm SEBake Fresh Ultra**



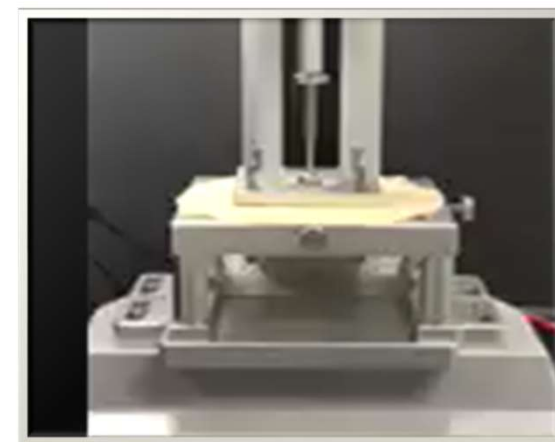
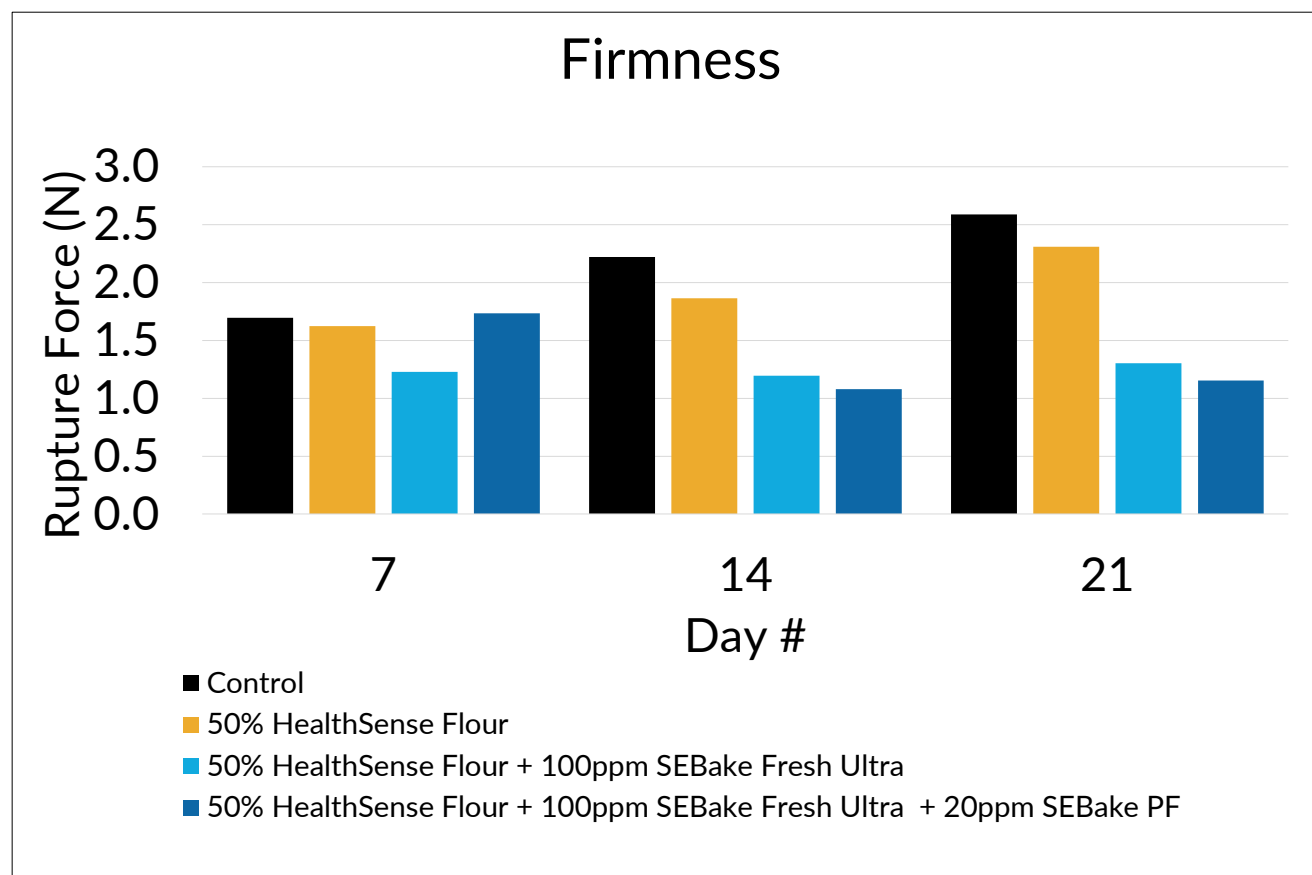
**50% HealthSense Flour* +
100ppm SEBake Fresh Ultra +
20ppm SEBake PF**

***HealthSense Flour contains 32% fiber**



Softer Flour Tortillas with Enzymes

Tortillas with 50% HealthSense Flour with SEBake Fresh Ultra & SEBake Fresh Ultra + SEBake PF were 49-55% softer than control tortillas on Day 21

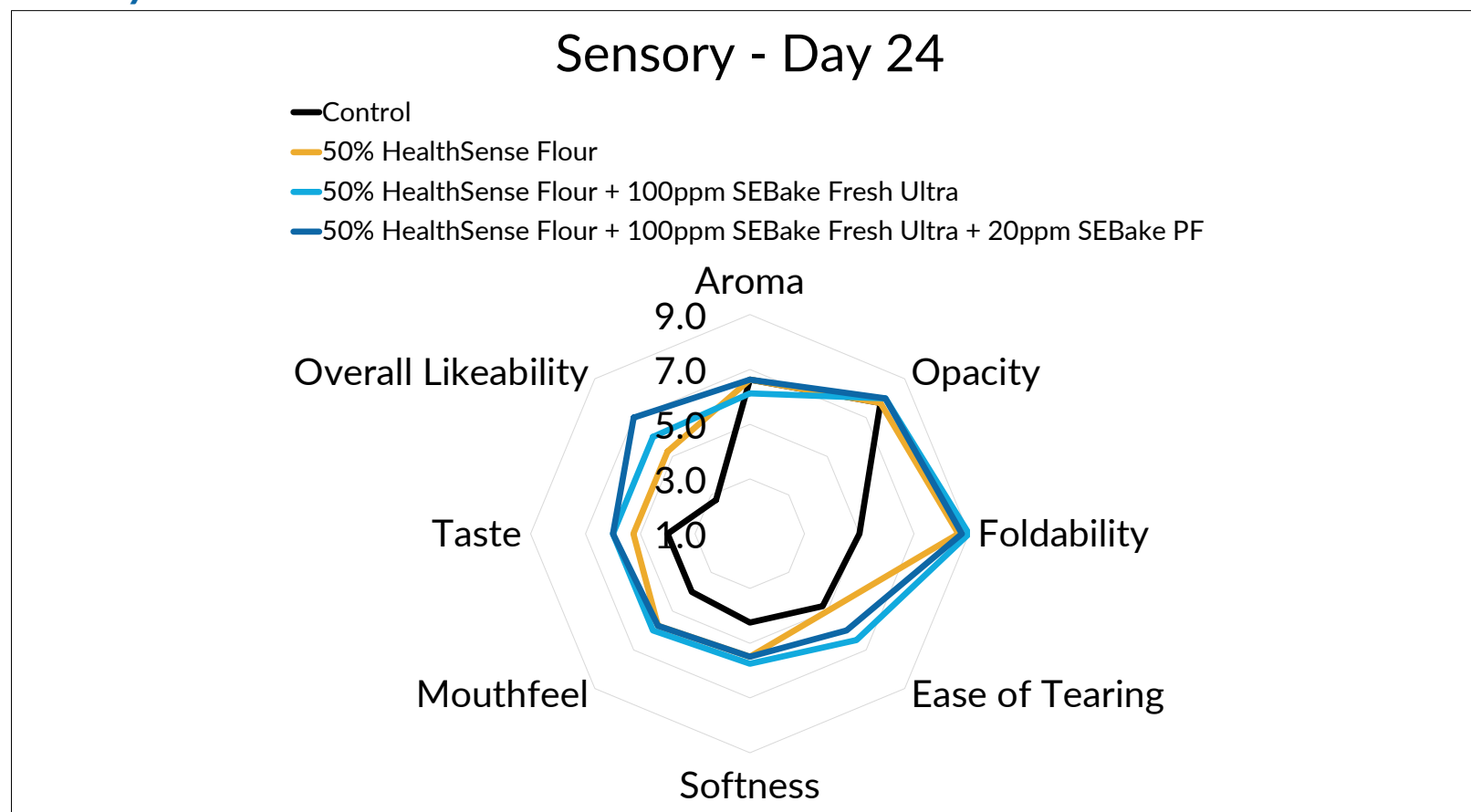


****HealthSense Flour contains 32% fiber***



Better Tasting Flour Tortillas with Enzymes

Test tortillas rated better in mouthfeel, ease of tearing, foldability, taste, & overall likeability than the control



***HealthSense Flour contains 32% fiber**



Xylanase

◆ Benefits

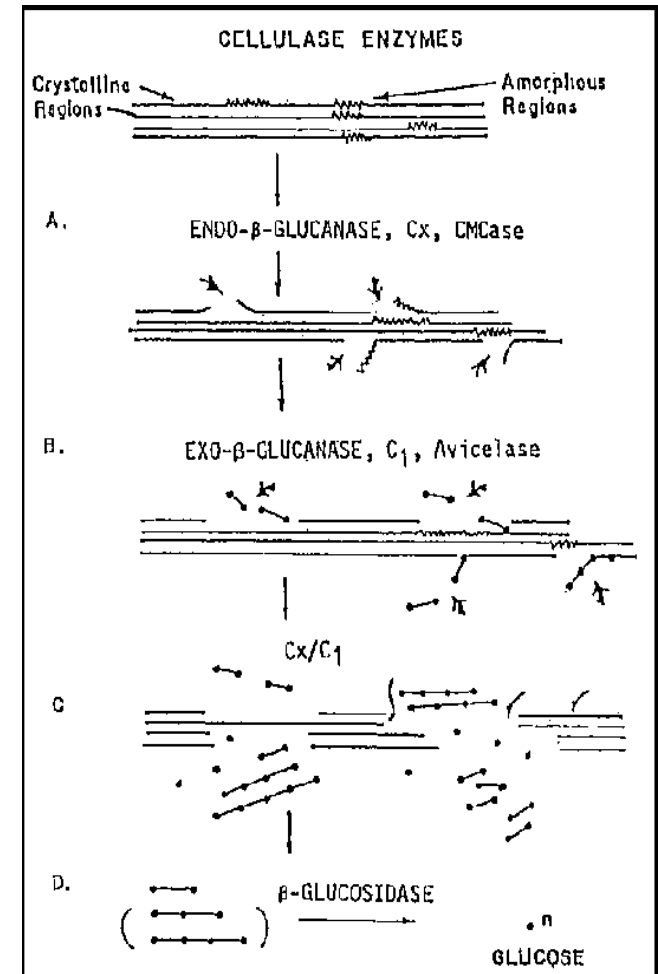
- ◆ Prolong softness
- ◆ Improves dough handling

◆ **Function** | Hydrolyzes soluble & insoluble xylans into xylo-oligosaccharides

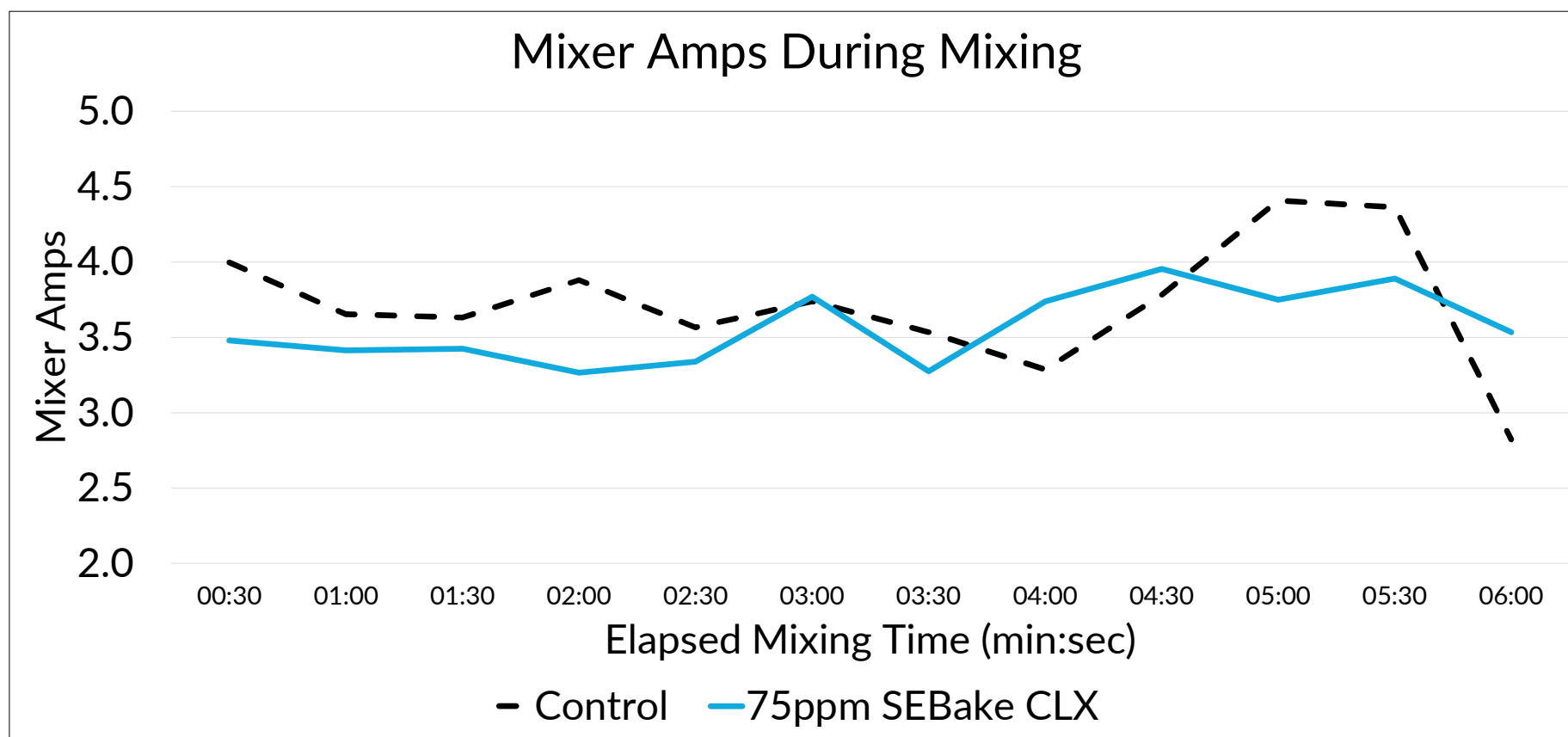
◆ **Xylanase** | SEBake FX Ultra

Cellulase

- ◆ **Benefits**
 - ◆ Helps make softer baked goods
 - ◆ Improves dough machinability and quality
- ◆ **Function** | Modifies fibers in flour
- ◆ **Cellulase** | SEBake CLX



Easier to Process Dough with SEBake CLX



Benefits of Protein

Builds Muscle

**Increases
Energy**

**Weight
Management**

Nutrition

**Helps Regulate
Blood Sugar**

**Maintains
Muscle**

See References 7 and 12-14



Challenges of Adding Protein

- ✗ Stiffer Dough
- ✗ Extra Water
- ✗ Smaller Tortillas

Smoother Dough with Protease

◆ Benefits

- ◆ Improves dough extensibility & can reduce mix times
- ◆ Increases diameter of tortillas
- ◆ Improves dough handling

◆ **Function** | Hydrolyzes gluten to lower molecular weight peptides & amino acids

◆ **Proteases** | SEBake PP, SEBake NP



Dough w/17% added protein



Dough w/17% added protein
+ SEBake PP



Benefits of Probiotics

**Promote
Overall Health**

**Improve
Digestive Health**

**Competitive
Exclusion**

**Natural
Alternative**

**Boost
Immune System**

**Support
Barrier Function**

Alleviate Stress

Improve Sleep

Improve Mood

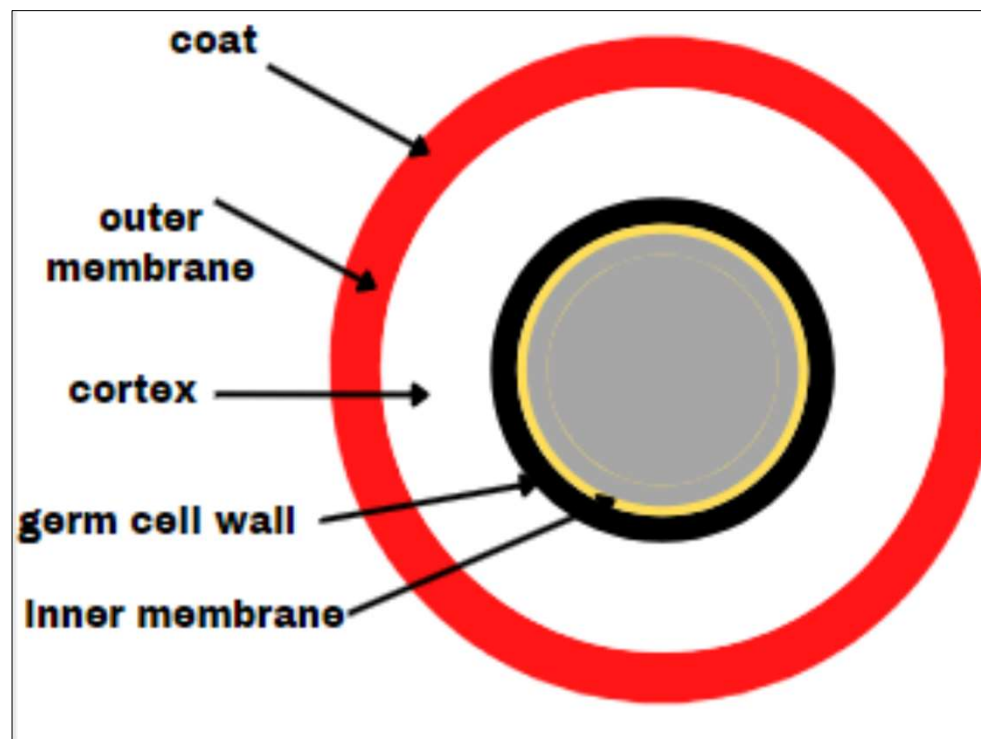
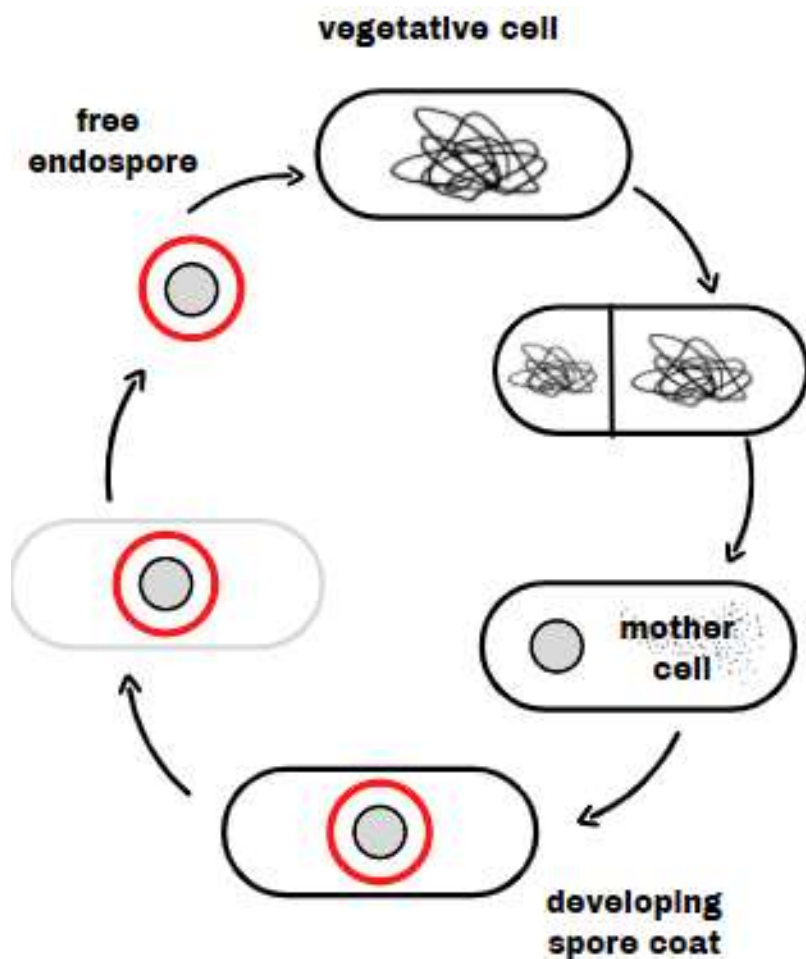
See References 15-17

Challenges of Adding Probiotics

- ✗ Heat Sensitive
- ✗ May Require Refrigeration
- ✗ Acidic Flavor

Better Heat Stability with Spore-Forming Probiotics

Protective Endospore



See References 18-19



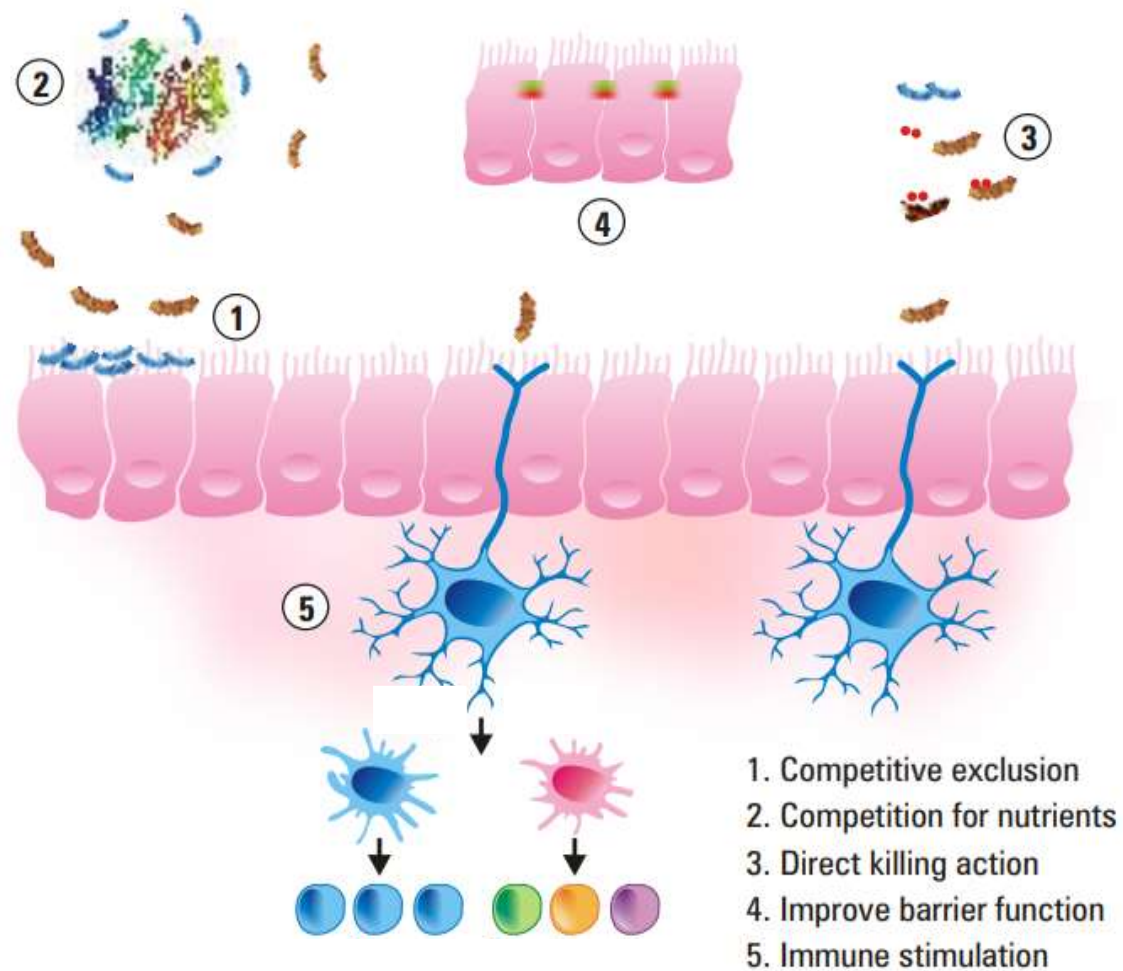
Spore-Forming Probiotic SEB LBSC

- ◆ *Bacillus coagulans* LBSC
- ◆ Received GRAS No Objections Letter
- ◆ NSF GMP Certified
- ◆ FSSC 22000 Certified Facilities
- ◆ Halal & Kosher
- ◆ The Non-GMO Project Verified
- ◆ Gluten-Free & Organic Options Available
- ◆ Heat-Stable, Shelf-Stable & pH Stable
- ◆ Shown in Clinical Trials to Promote Relief From
 - ◆ Diarrhea
 - ◆ Abdominal pain
 - ◆ Bloating
 - ◆ IBS

See References 20-25



How SEB LBSC Works



Formulating with Probiotics

- ◆ Product Claim(s) to Make
- ◆ Research-Supported Probiotic Strain
- ◆ How Probiotic Will Be Added
- ◆ Survival Rate & Shelf-Life
 - ◆ Use Same Test Method as Manufacturer
- ◆ Product Quality & Sensory



See Reference 18



SEB LBSC in Corn Tortillas



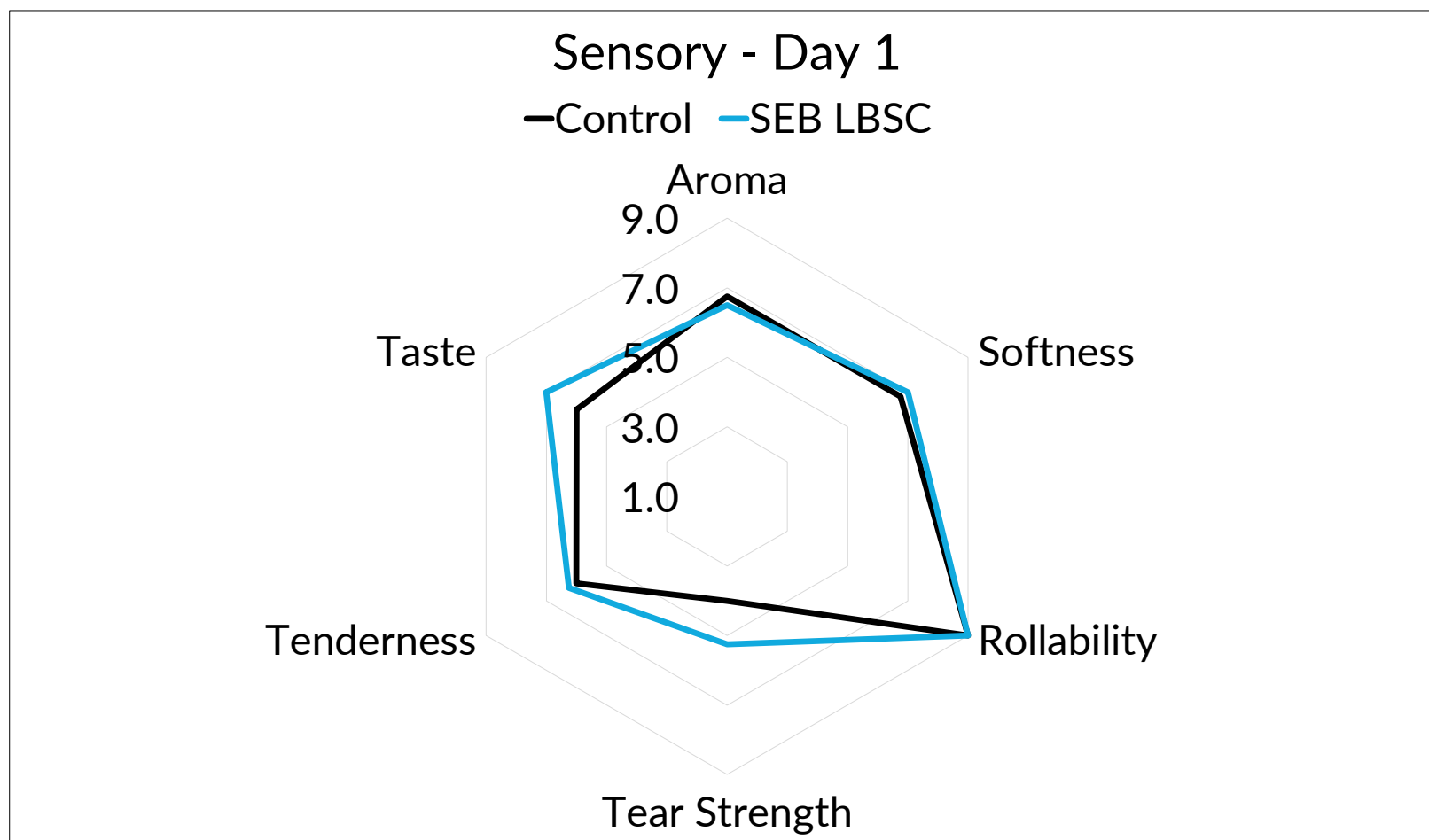
Control

With SEB LBSC

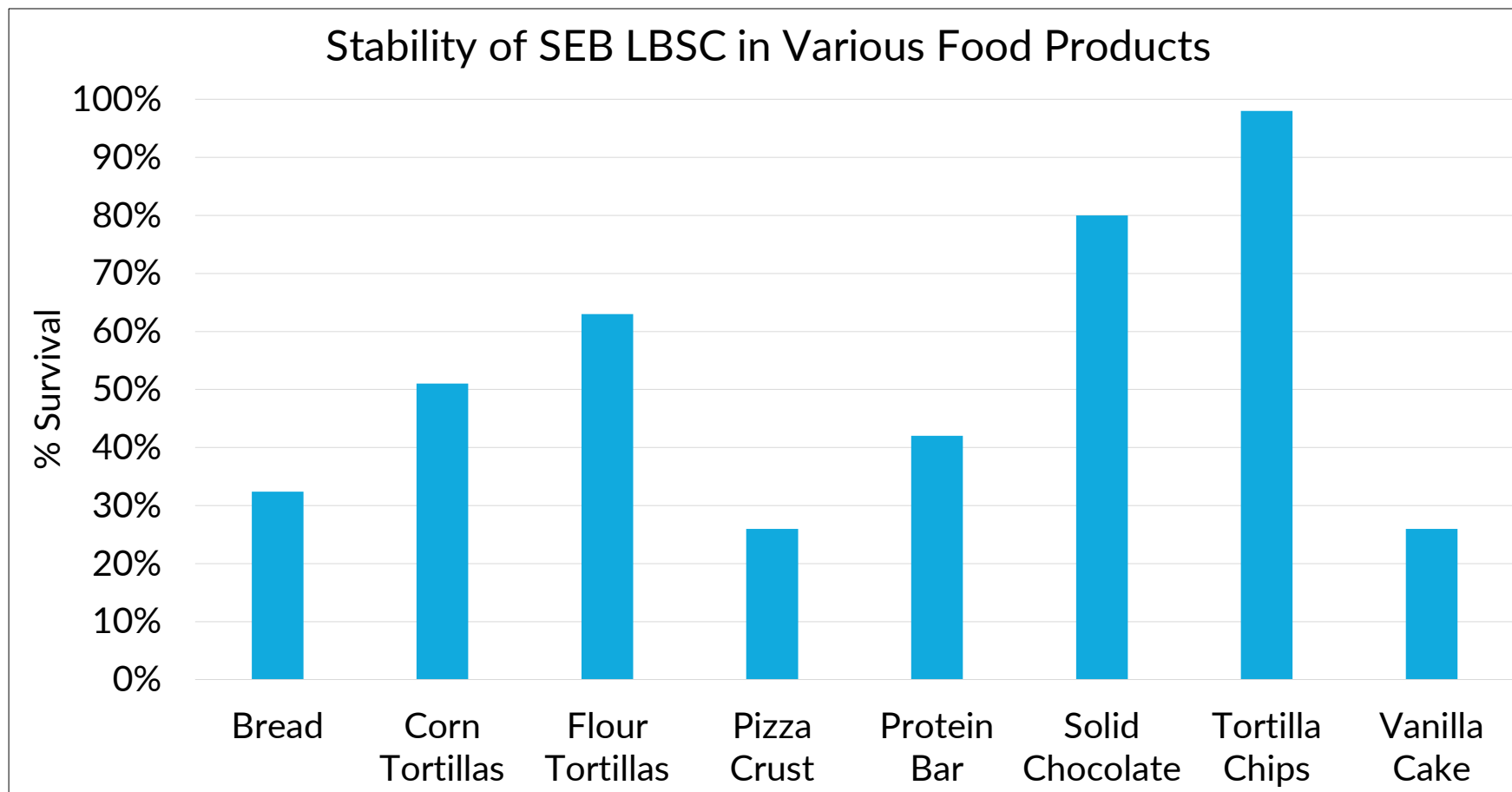
50% Survival Rate



Similar Sensory Results with SEB LBSC



SEB LBSC Has Good Stability in Various Foods



Summary

| Healthy Tortillas with | Ingredient | EI Product | Description |
|------------------------|------------------------------------|--------------------|---|
| Fiber | High Performing Maltogenic Amylase | SEBake Fresh Ultra | Binds moisture, keeps softer & flexible longer |
| | Cellulase | SEBake CLX | Improves dough handling & prolongs softness |
| | Xylanase | SEBake FX Ultra | Improves dough handling & prolongs softness |
| Protein | Protease | SEBake PP | Increases dough extensibility |
| Probiotics | <i>Bacillus coagulans</i> LBSC | SEB LBSC | Spore-forming probiotics that provide health benefits |



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