Clean Label Preservative for Flour Tortillas

II Technical European Tortilla Conference
7th September 2018, *Mercè Pinol del Olmo*

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Easy to read label

clean label

Not harmful

Reduced E numbers

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BAKESHURE® Clean Label Preservative

Benefits:

- Clean label
- Allergen-free
- “Preservative free” system that controls mold growth
- Reduced E numbers – from 3 to 1

Ingredient declaration:

- Cultured Corn Syrup Solids, Citric Acid, vegetable oils

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Background

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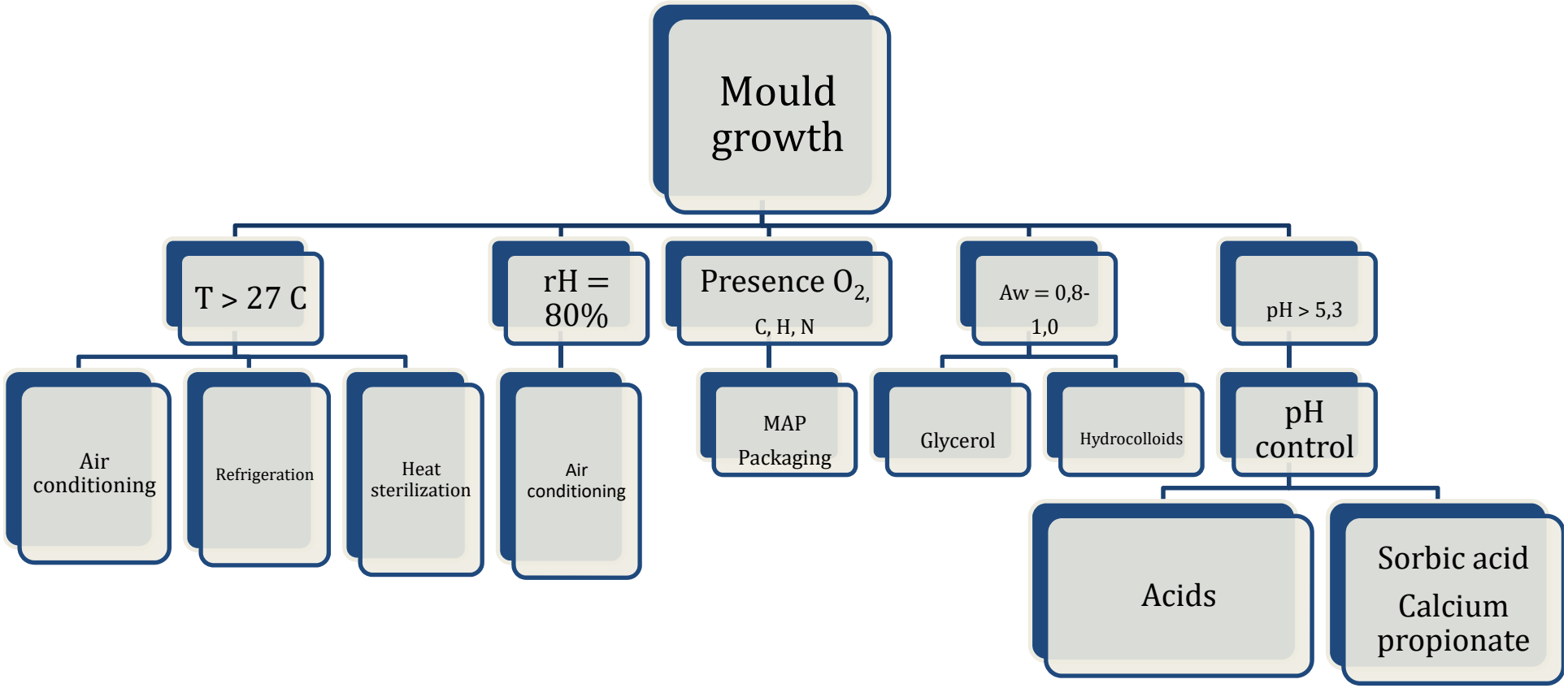
Conditions for Mould Growth



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Microbial Spoilage

Traditional methods to reduce microbiological spoilage:

(1) Good manufacturing practices: cleanliness, sanitation, hygiene

(2) Ultraviolet light and microwave heating

(3) Use of preservatives e.g sorbic acid and Calcium propionate

(4) Freezing

(5) Modified atmosphere packaging (MAP) involving gas packaging with mixtures of Carbon dioxide, nitrogen, oxygen absorbents and ethanol vapor generators

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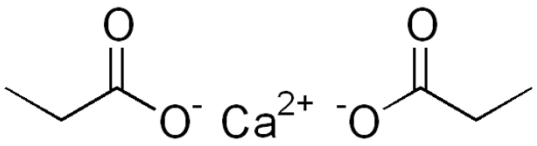
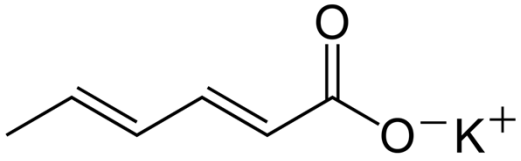
Traditional Preservatives

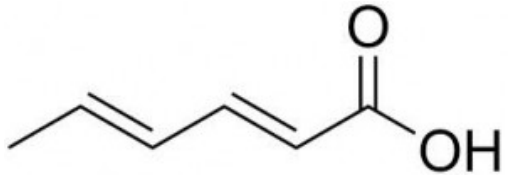
- Fatty Acid Preservatives



Calcium propionate



Potassium sorbate



Sorbic acid

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pH Control

	% undissociated (active) at pH:								
	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0
Propionic acid	99	96	88	71	43	19	7	2.3	0.8
Sorbic acid	98	95	85	65	37	15	5.5	1.8	0.6

Effectiveness
Taste

Weak acids vs Strong acids

Sauer (1977), Sofos and Busta (1981)

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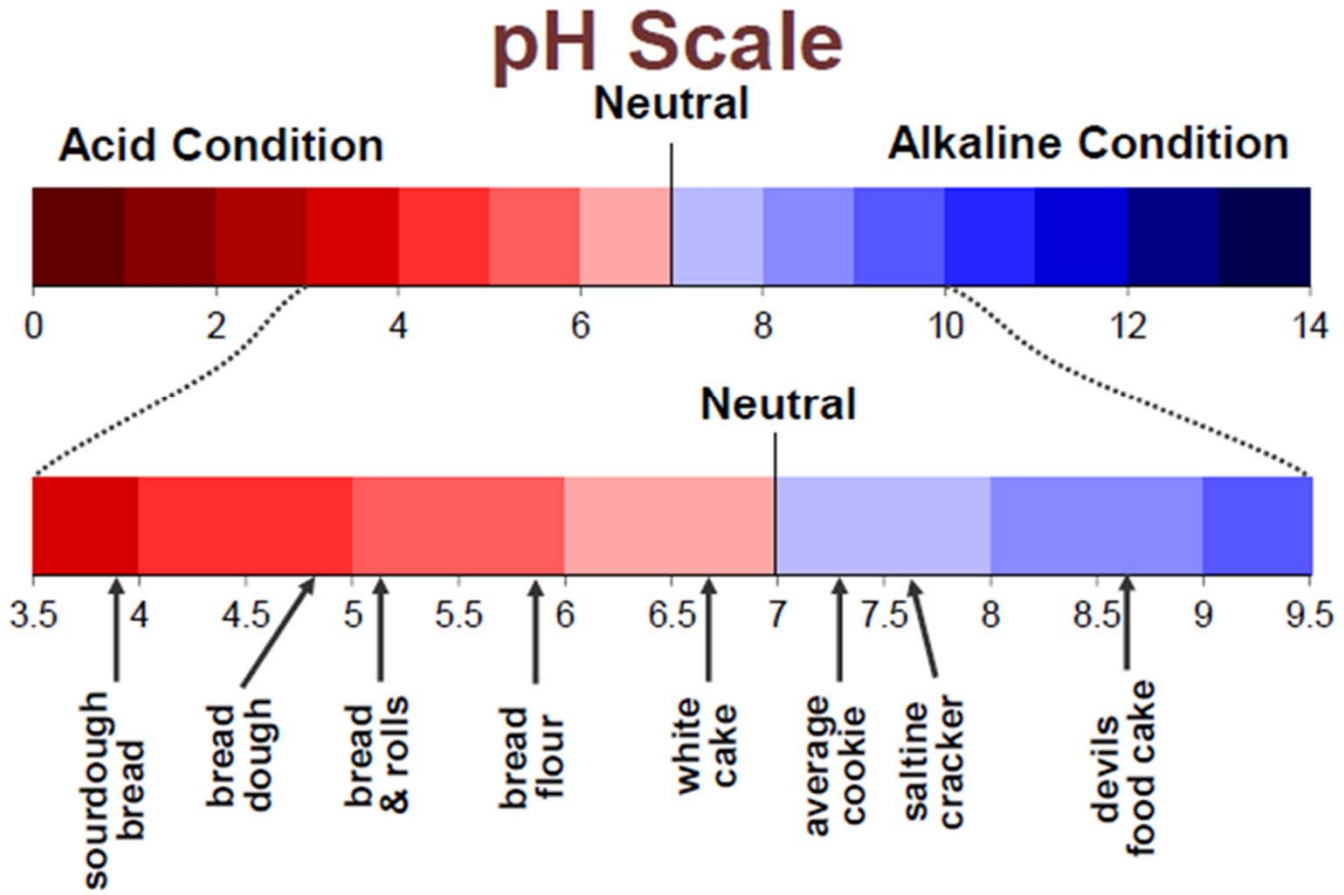
Acidifying Tortillas



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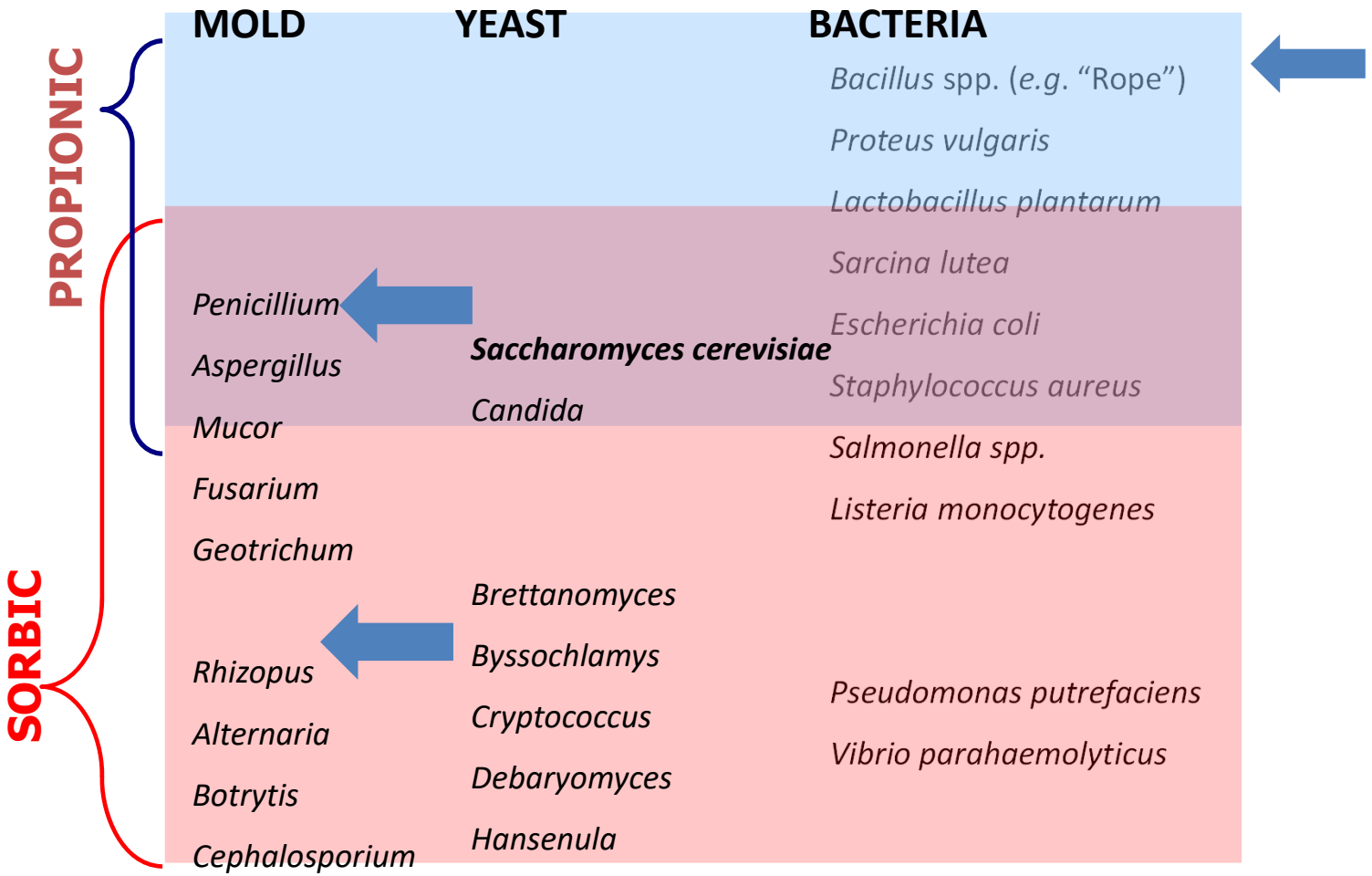
Synergy Broadens the Spectrum



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BakeShure® Clean Label Preservative

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Bakery Testing in Flour Tortillas

Ingredient	Composition
Control	No preservatives
Calcium propionate	Calcium propionate
Calcium propionate w/ citric acid	Calpro, citric acid
CCSS 1	Cultured Corn Syrup solids
CCSS 2	Encapsulated CCSS (malic acid version)
CCSS 3	Encapsulated CCSS (citric acid version)

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Dosages

Ingredient	Dosage on flour
Control	No preservatives
Calcium propionate	0,30%
Calcium propionate w/citric	1,05%
CCSS 1	0,80%
CCSS 2	1,85%
CCSS 3	1,85%

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pH Data

- New BakeShure system is as effective in reducing pH in tortillas during baking

Ingredient	pH dough	pH tortilla
Control	7,33	7,40
CCSS 1	6,98	7,58
CCSS 2	6,93	5,40
CCSS 3	6,69	5,53

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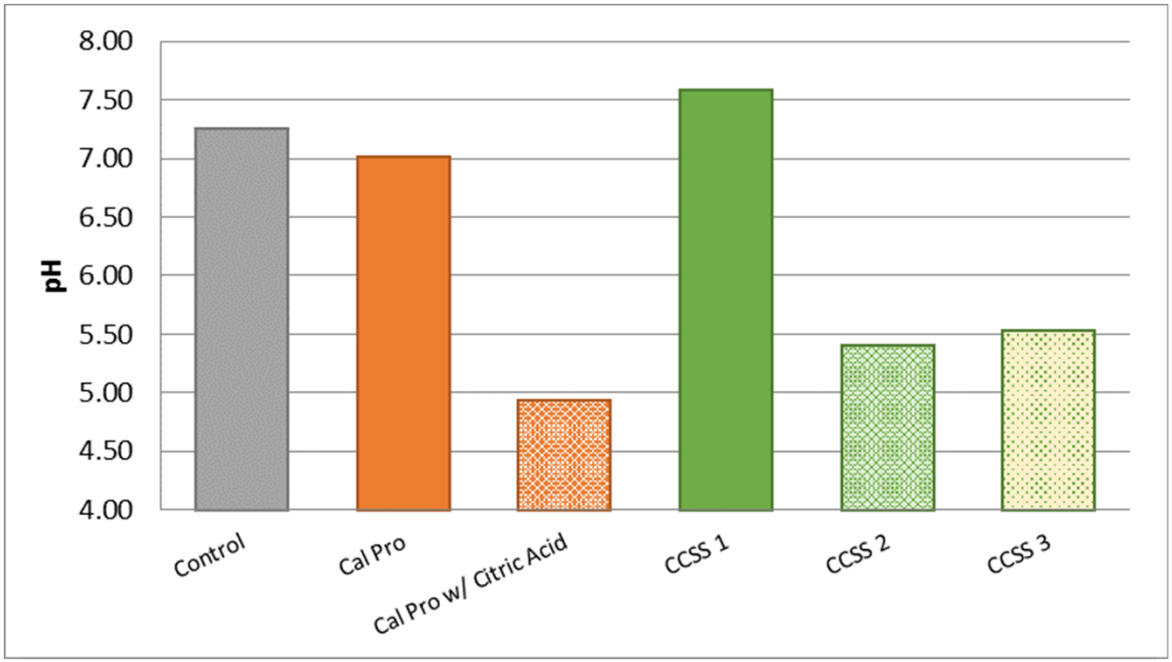
pH Data

- **NEW** Bakeshure system with either citric or malic acid has a similar impact on pH drop as traditional preservation systems with Calpro and citric acid



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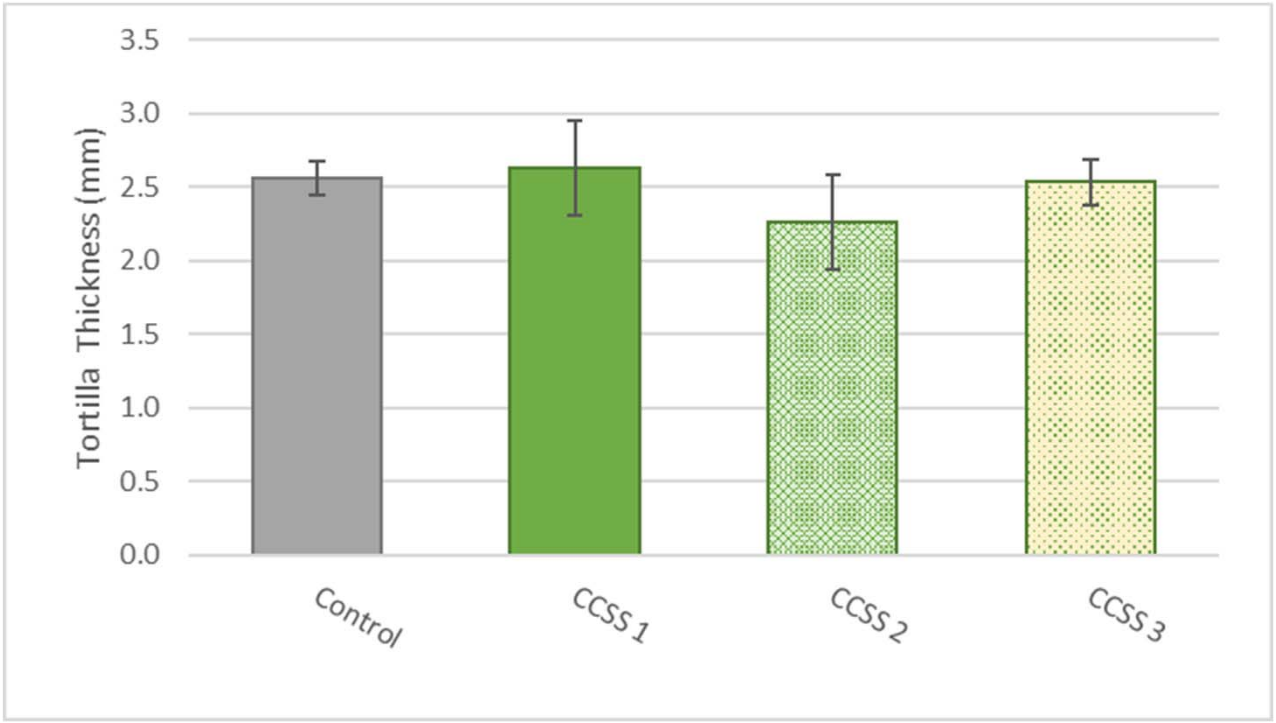
Tortilla Thickness

- Thickness is related to the dough pH, and amount of acid released – minimal differences



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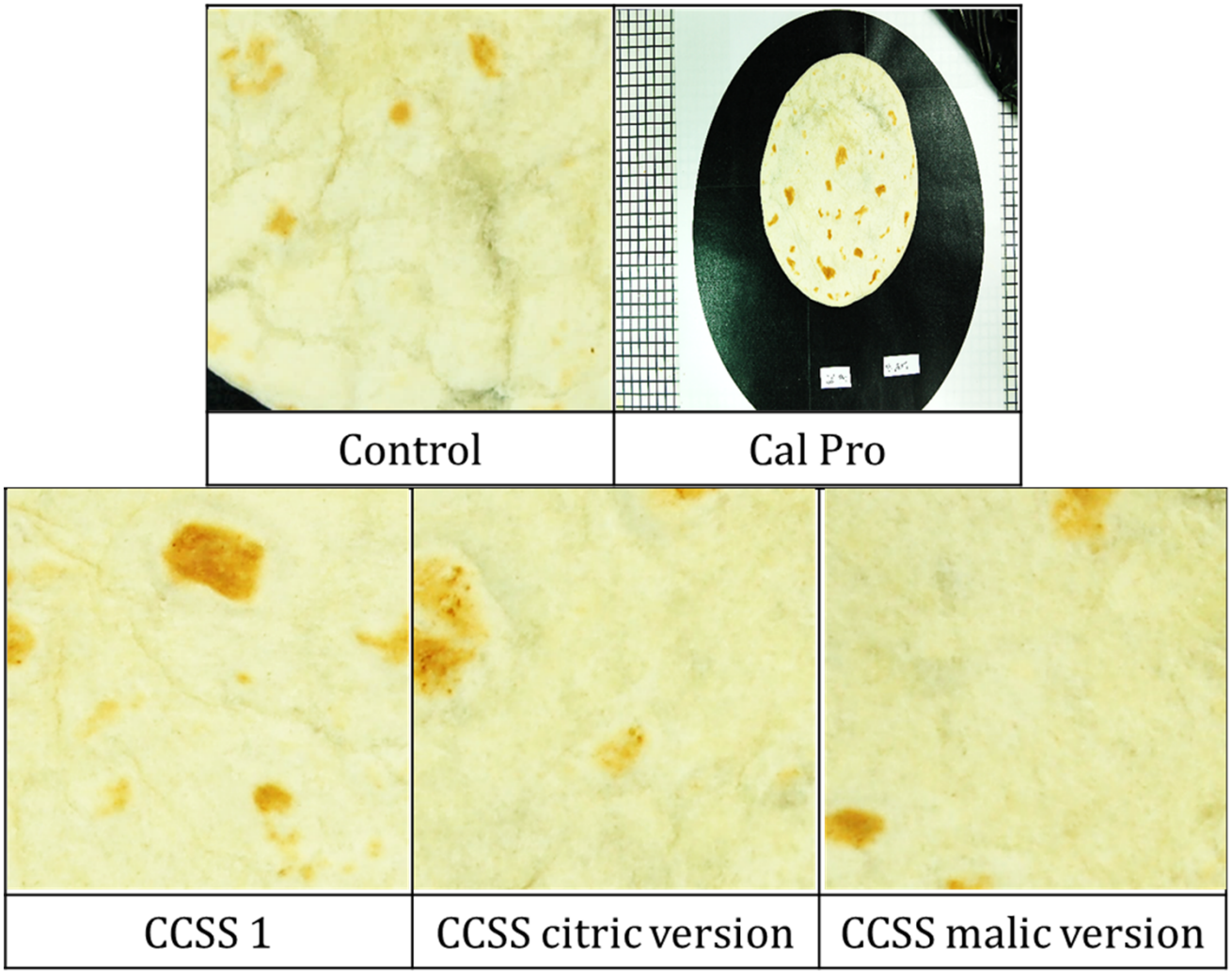
Translucency (5 cm² Area)



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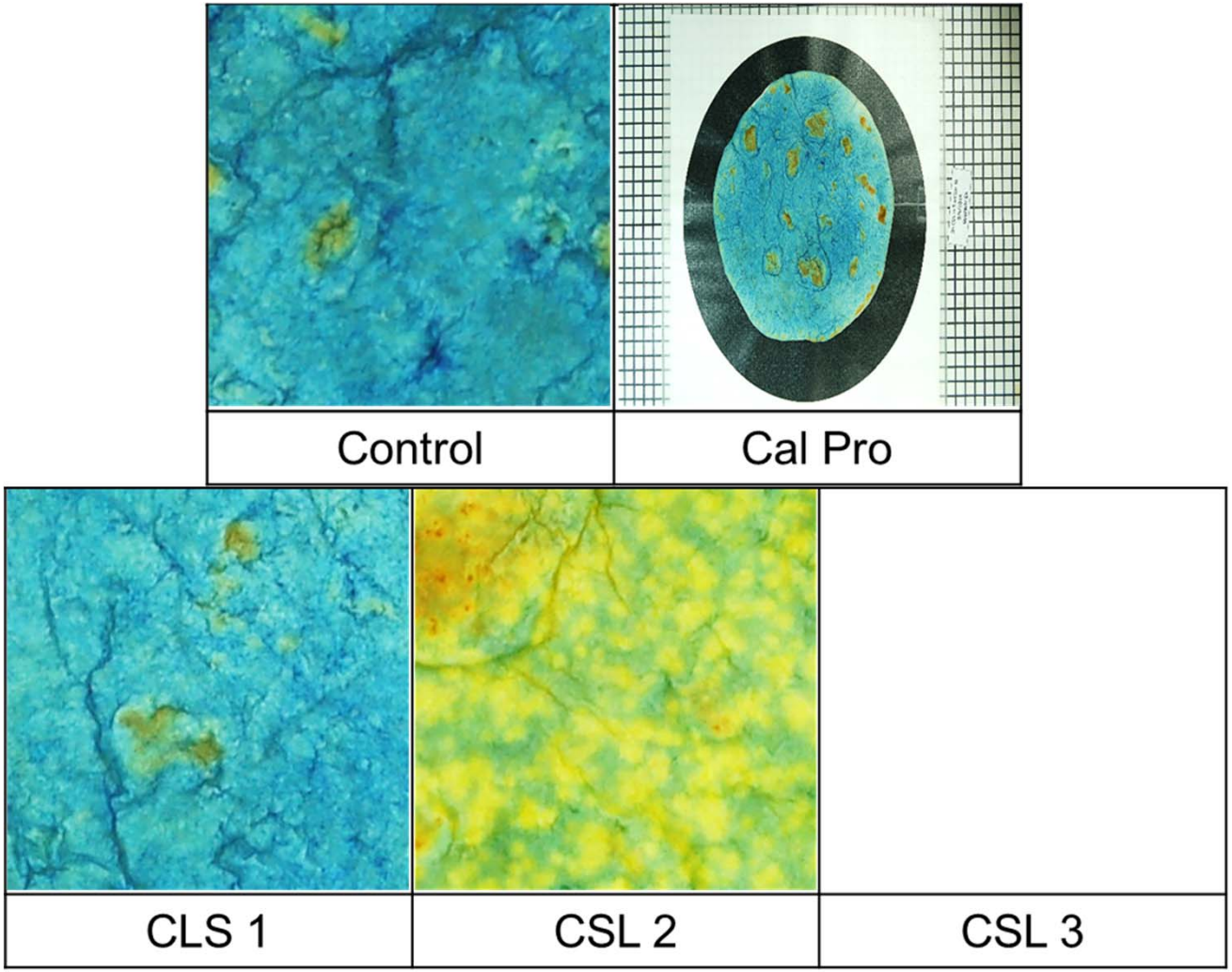
Acid Distribution (5 cm^2 Area)



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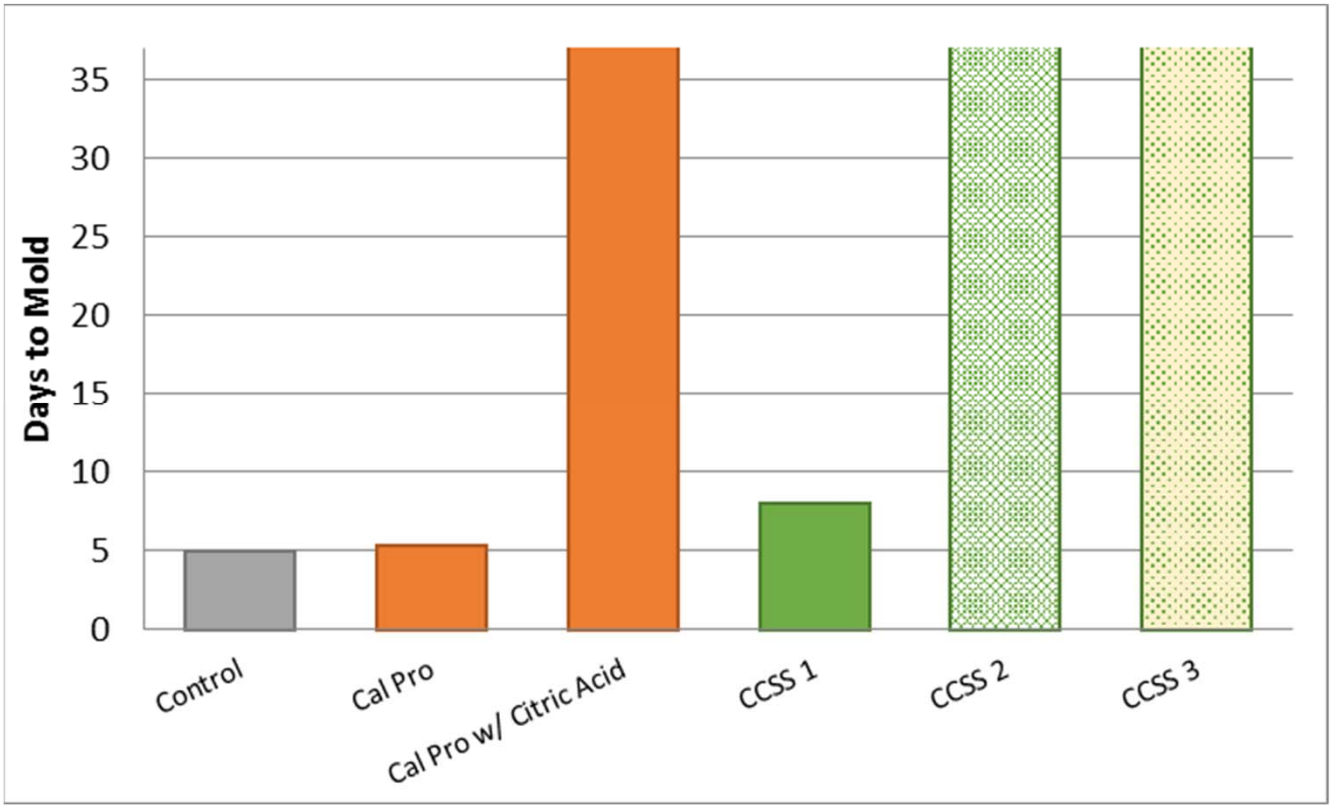
Shelf Life Extension

- New BakeShure® Preservation system achieves similar shelf life (=90days) as traditional methods



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Conclusions

- BakeShure Clean Label Preservation is an effective mold reducer with minimal impact on dough pH and translucency
- The reduced pH from the system yields a marked increase in shelf-life compared to non-acidulated product

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What questions do you have?

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THANK YOU!

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INGREDIENT SOLUTIONS