

The background of the slide is a close-up photograph of several round, slightly puffed wheat tortillas. They are light beige with some darker, charred spots. Sprigs of fresh green rosemary are scattered across the tortillas.

# **TIA conference**

Munich, October 25th

## **Technical challenges in the production of wheat tortillas, linked to consumers trends**

**Aline Gaget**  
Senior R&D Manager Bakery



# Puratos at a glance

Global producer of innovative ingredients and solutions for bakers, patissiers & chocolatiers

## BAKERY

Improvers and mixes  
Sourdoughs  
Specialty grains  
Specialty fats

## PÂTISSERIE

Cream fillings & decors  
Fruit fillings  
Cake mixes  
Glazes

## CHOCOLATE

Real chocolate  
Compound chocolate

Founded  
in **1919**



Puratos  
products  
available in  
**135 countries**

**115**  
innovation  
centers  
worldwide

**> 10,000**  
employees  
in 2023

# Flatbreads from all around the world

Taco, Mexico



Piadina, Italy



Bazlama, Turkey



Lebanese Pita, Lebanon



Tortillas, Mexico



Patyr, Uzbekistan



Sangak, Iran



Naan, India



Matnakash, Armenia





## Vertical Integration

Formulation  
expertise



Application  
expertise



## Vertical Integration

Puratos has over 50 years of production experience in emulsifiers and over 30 years experience in enzyme production, acquired via our long heritage of bakery improvement.

Vertical integration allow us to customize and deliver the right functionality to your product.



1968  
Emulsifiers



1994  
Enzymes



1994  
Sourdoughs



Vertical  
Integration

Formulation  
expertise



Application  
expertise



## Formulation expertise



Puratos has decades of expertise in bakery goods formulation, including in-depth knowledge of ingredients, enzymes, emulsifiers and proteins. By combining this knowledge with application expertise, we offer you the right ingredient synergies to tackle your challenges.



Vertical  
Integration

Formulation  
expertise



Application  
expertise



## Application expertise



Panel trained to evaluate sensorially tortillas' texture





Vertical  
Integration

Formulation  
expertise



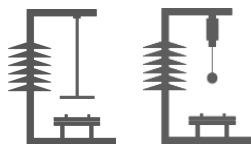
Application  
expertise



## Application expertise

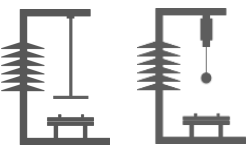


Panel trained to evaluate sensorially tortillas' texture

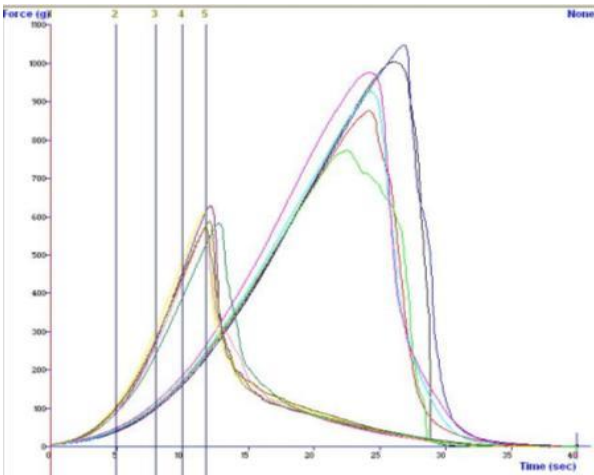
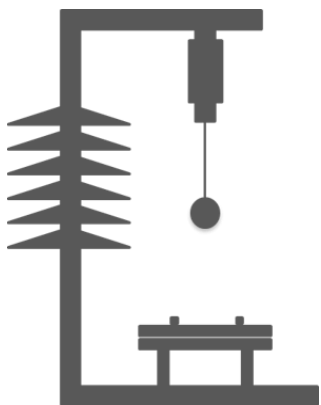


Instrumental methods to follow critical quality parameters: pliability & stickiness (via texture analyzer)

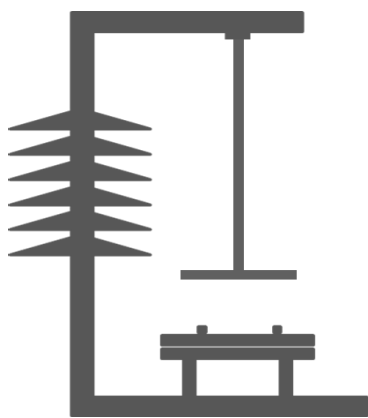




# Instrumental methods to follow critical quality parameters



Distance at maximum force measurements



Adhesiveness measurements





Vertical  
Integration

Formulation  
expertise



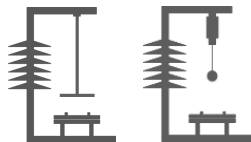
Application  
expertise



## Application expertise



Panel trained to evaluate sensorially tortillas' texture



Instrumental methods to follow critical quality parameters: pliability & stickiness (via texture analyzer)



R&D line & collaboration with expertise centers





Vertical  
Integration

Formulation  
expertise



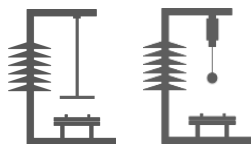
Application  
expertise



## Application expertise



Panel trained to evaluate sensorially tortillas' texture



Instrumental methods to follow critical quality parameters: pliability & stickiness (via texture analyzer)



R&D line & collaboration with expertise centers



Consumer preference (Sensobus)



## **TASTE** texture

Main criteria in consumers food choice

## **HEALTH**

Healthier consumer food choices  
Fiber, gut health, fat, salt, sugar

## **FRESHNESS**

Extended freshness/texture  
Less waste

6

## **FOODSTEPS**

## **TRANSPARENCY**

Consumers wants to be informed on where their food comes from and how it is made

## **CRAFT**

Consumers become more knowledgeable & experienced. Home baking with own sourdough...

## **CONSCIOUS CONSUMPTION**

About Planet & health  
Increased plant based trend

**Technical  
challenges**

**HEALTH**

**TASTE** texture

**FRESHNESS / WASTE**





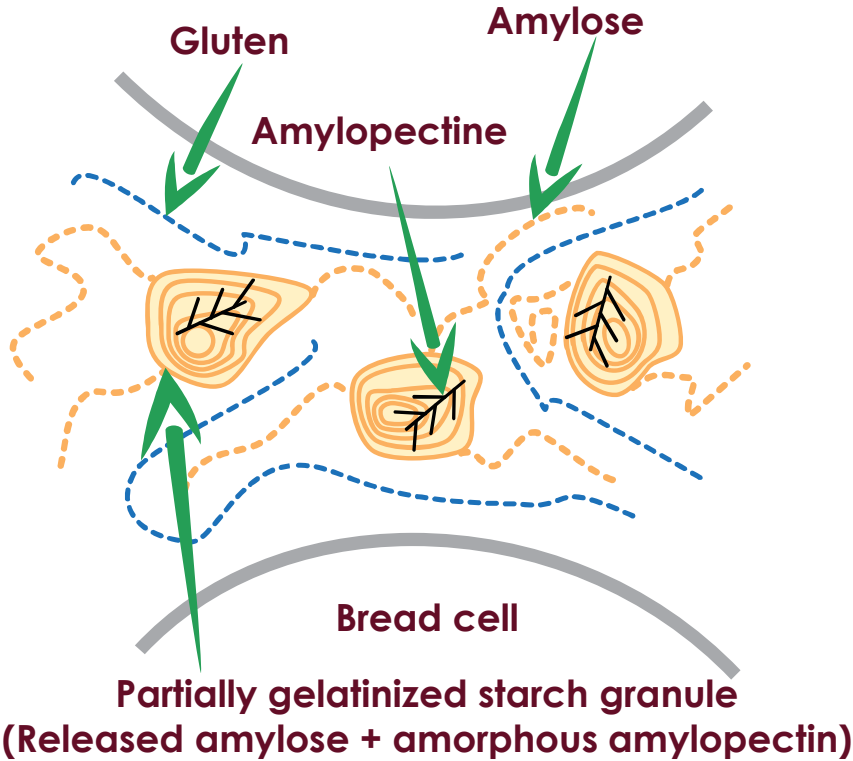
**Technical  
challenges**



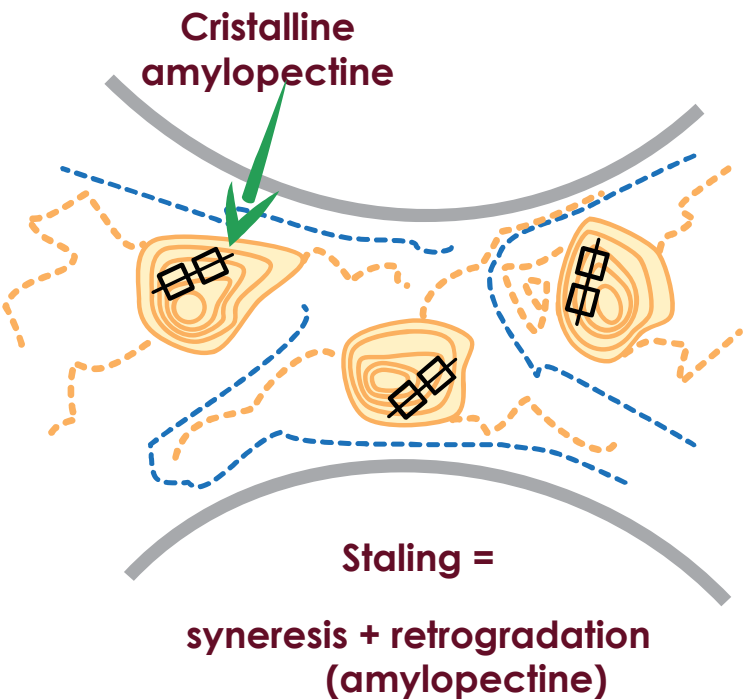
**FRESHNESS / WASTE**

# Staling – starch reorganization

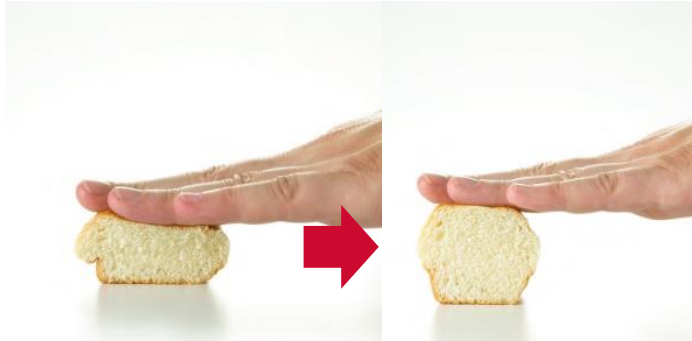
During baking



After 5 days



# Consequences of starch retrogradation



**INCREASED HARDNESS**

**INCREASED DRYNESS**



**DECREASED PLIABILITY**





**ENZYMES ARE PROTEINS PRODUCED BY FERMENTATION  
AND THEY ARE ALL IN & AROUND US**

**In bakery they can be found in wheat flour and yeast**



# What are enzymes?

**Molecule  
(protein)**

**Splits or builds**

**Catalyst -  
Can start  
over and  
over**

**It performs a  
specific  
action but  
does not  
interact in the  
reaction**

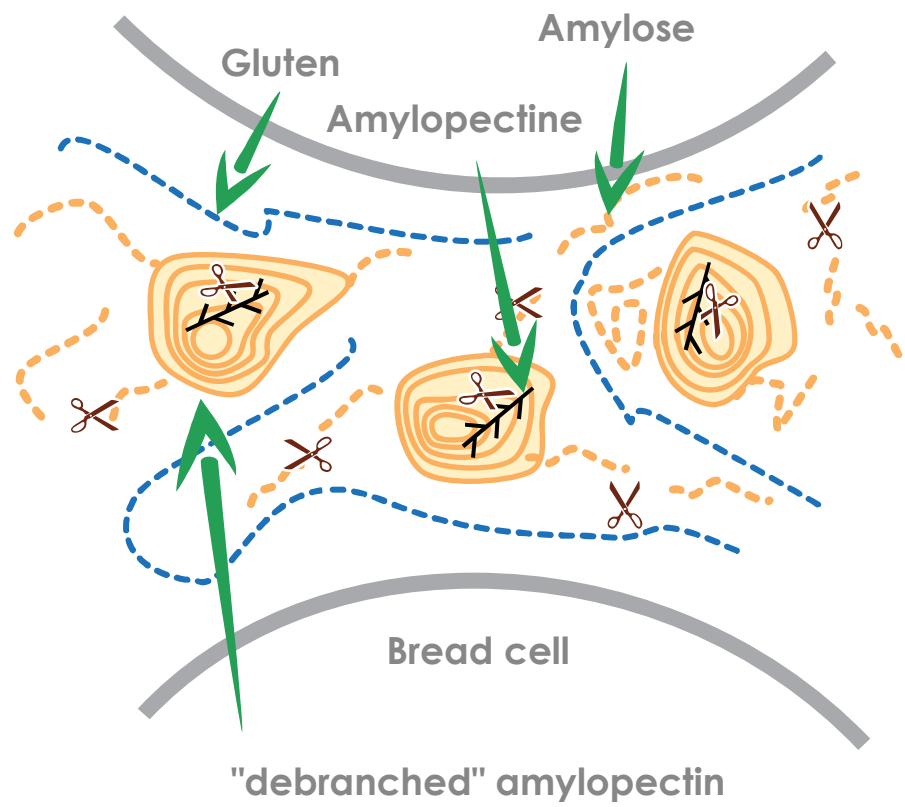
**3D structure**

**Produced in  
a cell from  
DNA**

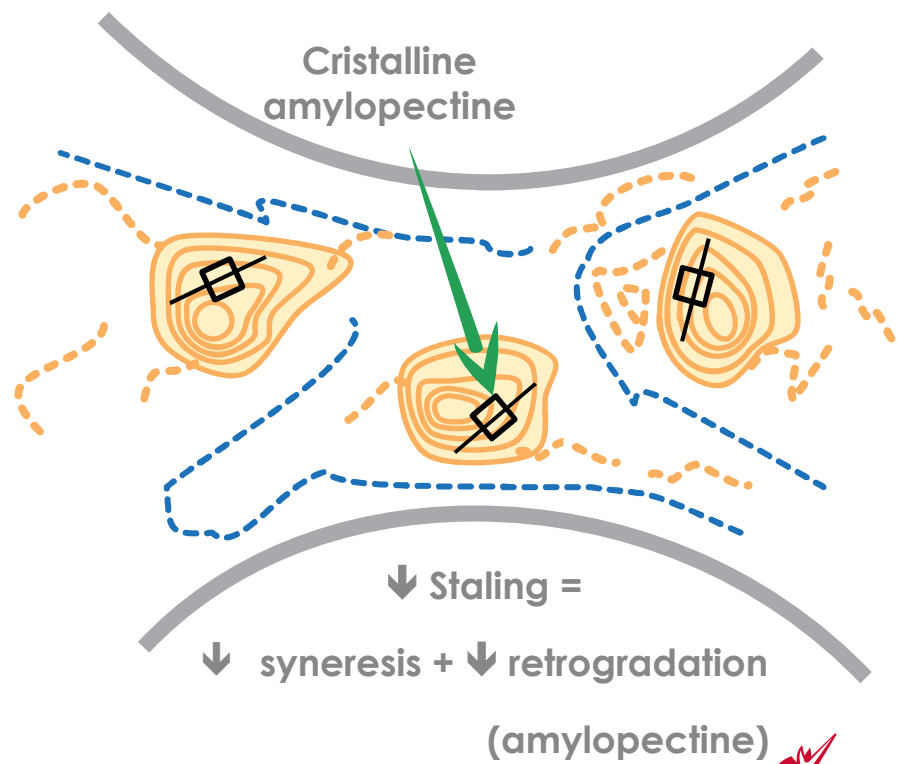
**Activity  
depends on  
temperature /  
Time / pH**

# Staling – effect of amylases

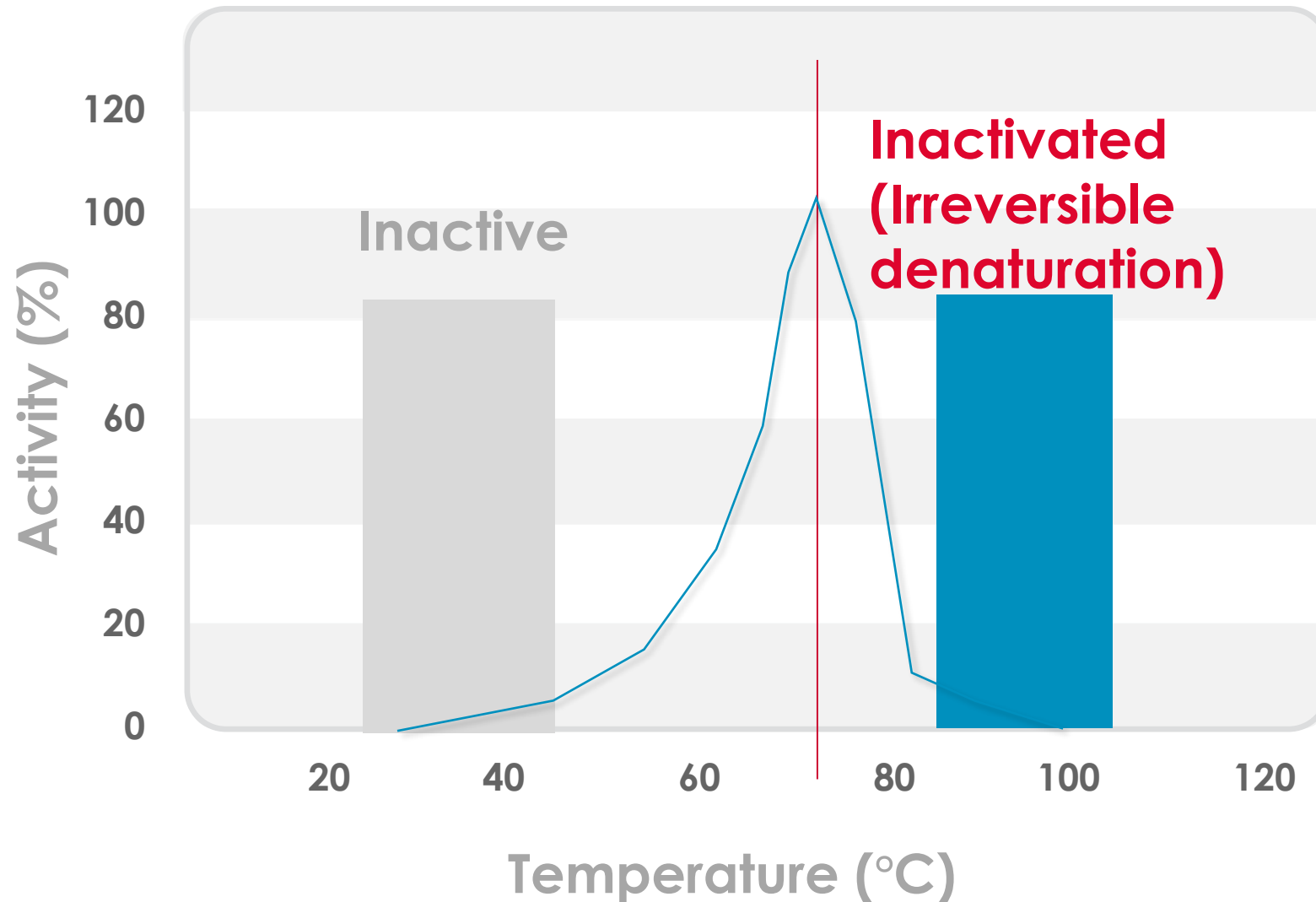
During baking



After 5 days



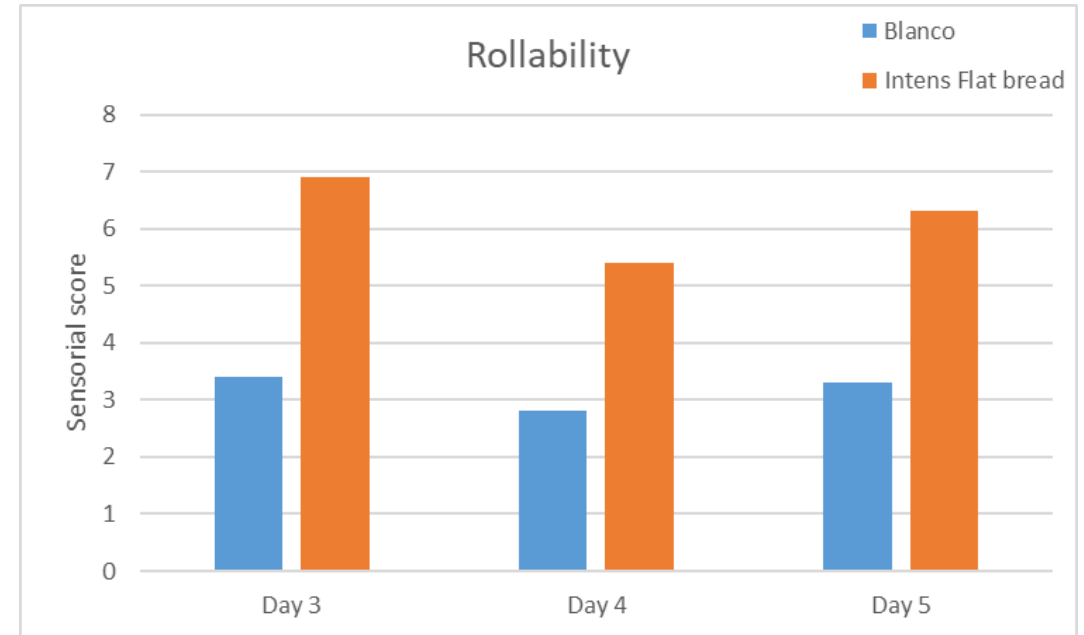
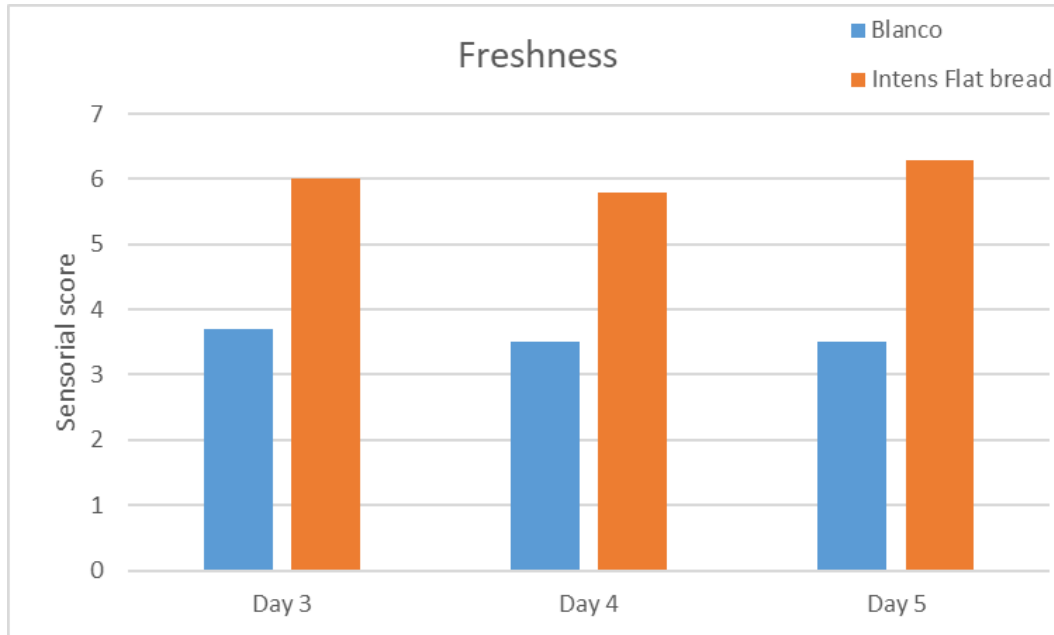
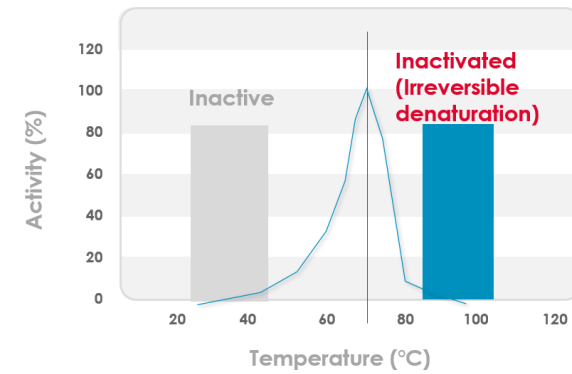
# Activity vs. temperature



**Very short baking time  
=  
Very fast denaturation**

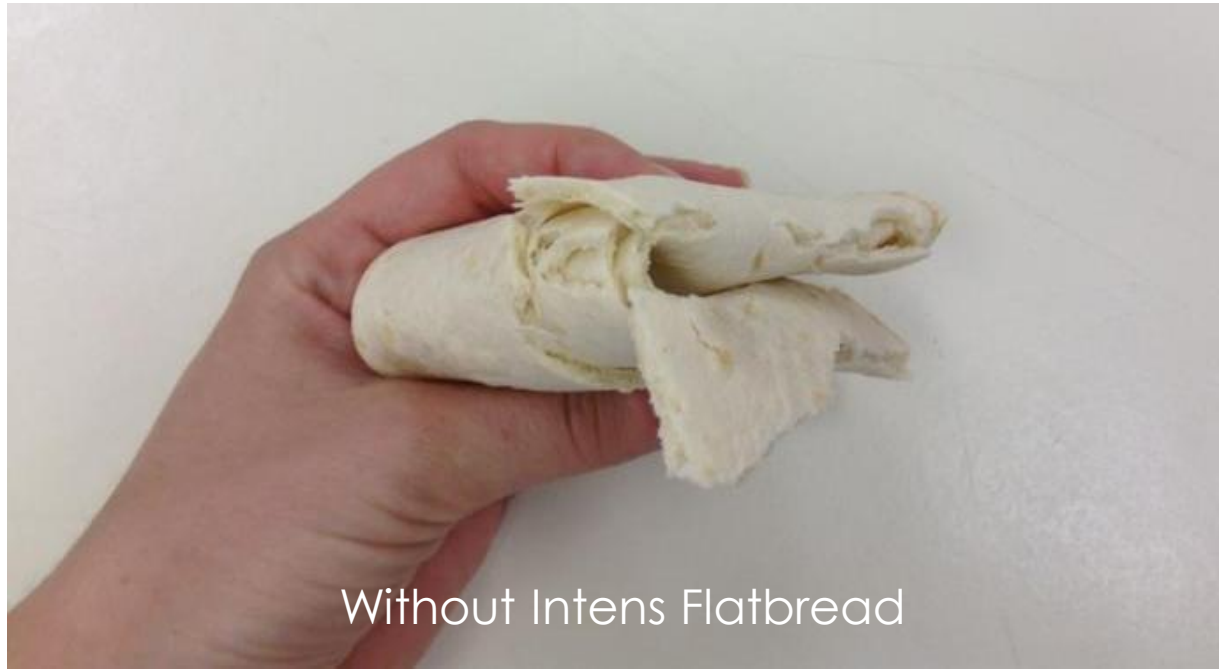
# Designed solution for flatbreads

## Intens flatbread



**Specifically designed for high temperature  
and short baking time**





# Stickiness & tearing of products

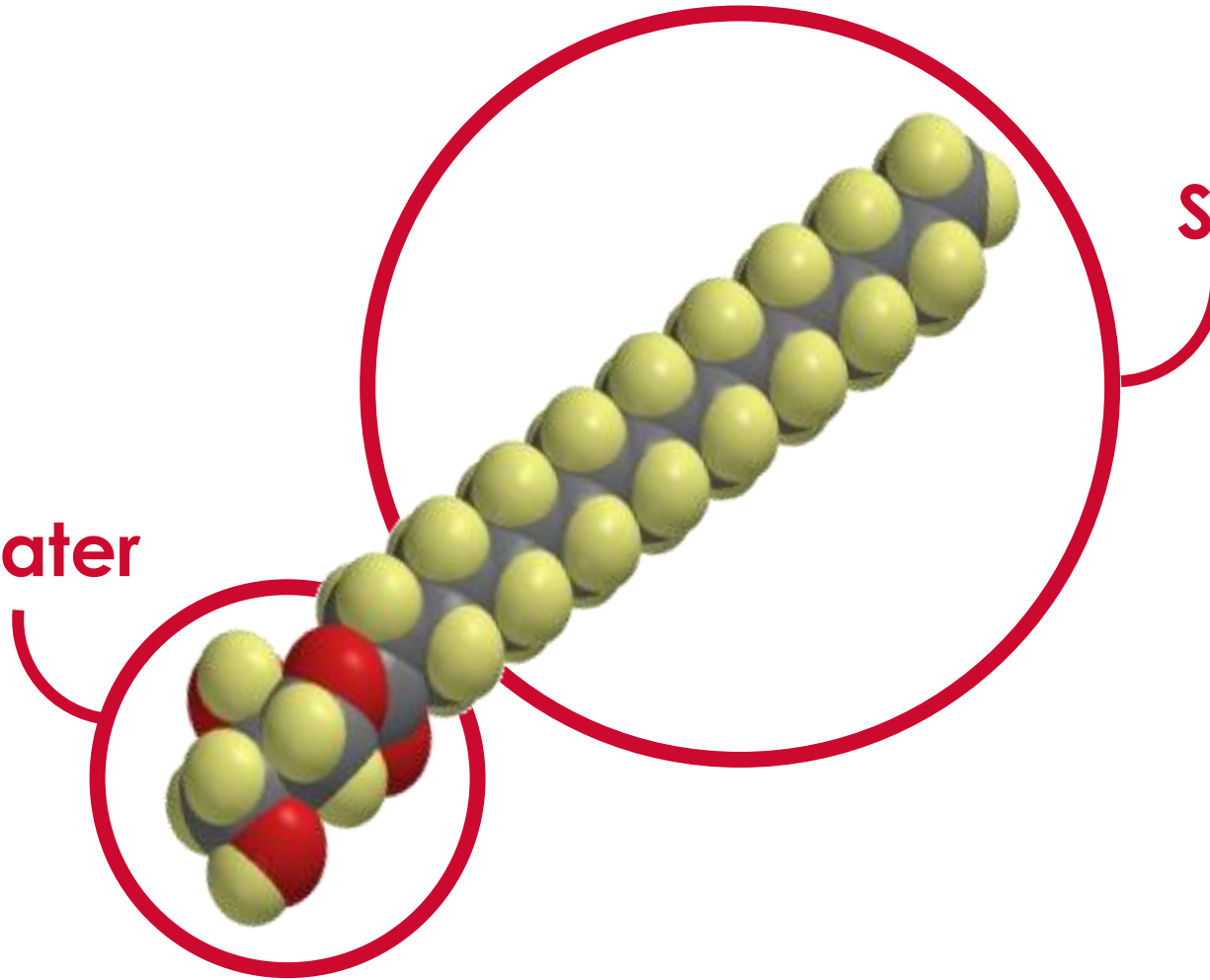
Sticking of tortillas between each other due to their stacking in the packaging

- Difficult to separate them
- High risk of breakage

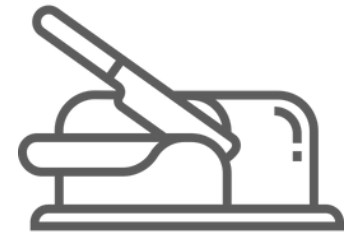


- Moisture content
- Water activity
- Baking conditions
- Packaging conditions

**Soluble in water**



**Soluble in fat**

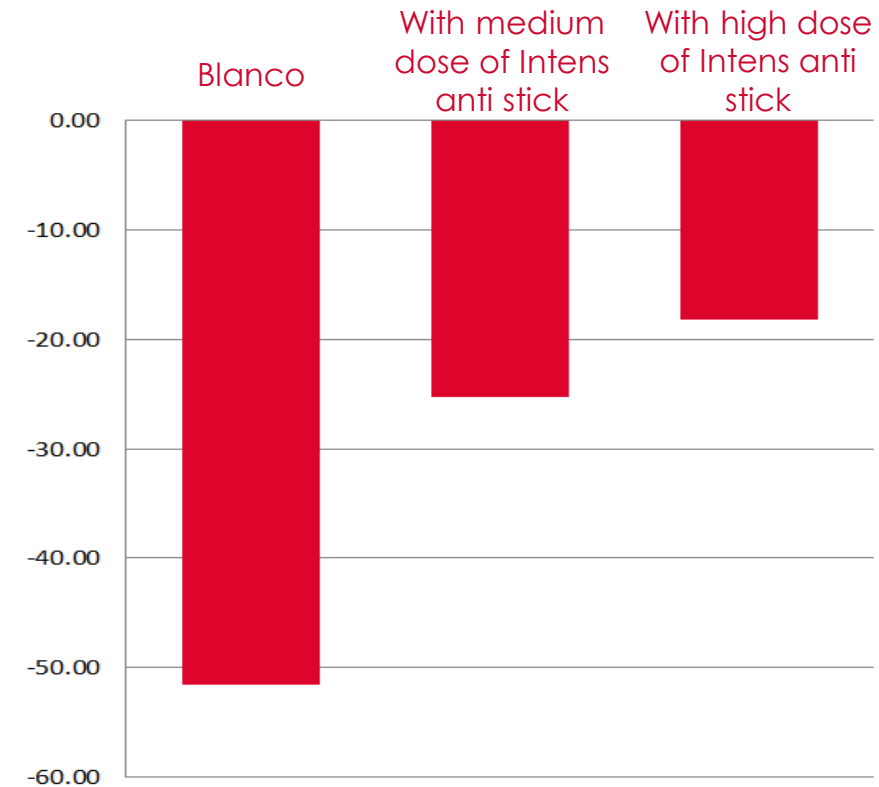


# Designed solution for flatbreads

Intens anti-stick

## Physical modification of the tortilla surface

The emulsifier smoothen out the rough surface and hereby reduces the number of contact points



**Emulsifier specifically designed to prevent stickiness/adhesion between products**



**Technical  
challenges**

**HEALTH**

# Healthy & Healthier

## Smaller portions for a healthier diet

60%

prefers to consume  
smaller portions



France, 2022



Hungary, 2022



# Gut Health



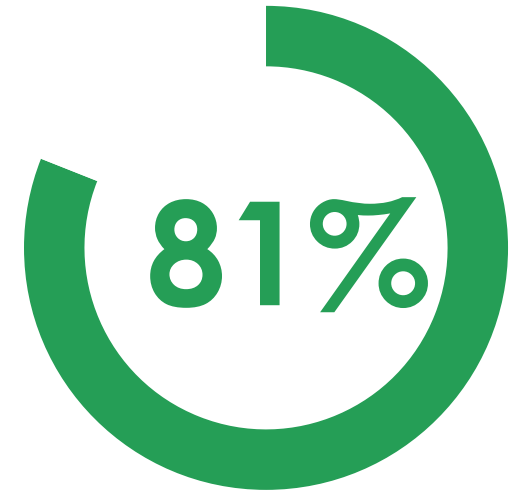
Growing interest for products that improve gut health, strongly linked to power ingredient fiber



USA, 2022



USA, 2022



Fibers have a positive effect on my digestion

# Healthy & Healthier

## Consumers are well-informed about the healthiness of ingredients



Grains & Seeds,  
Fiber, Wholegrain,  
Fruits & Nuts



Sugar, Fat  
& Salt



Poland, 2022



USA, 2022



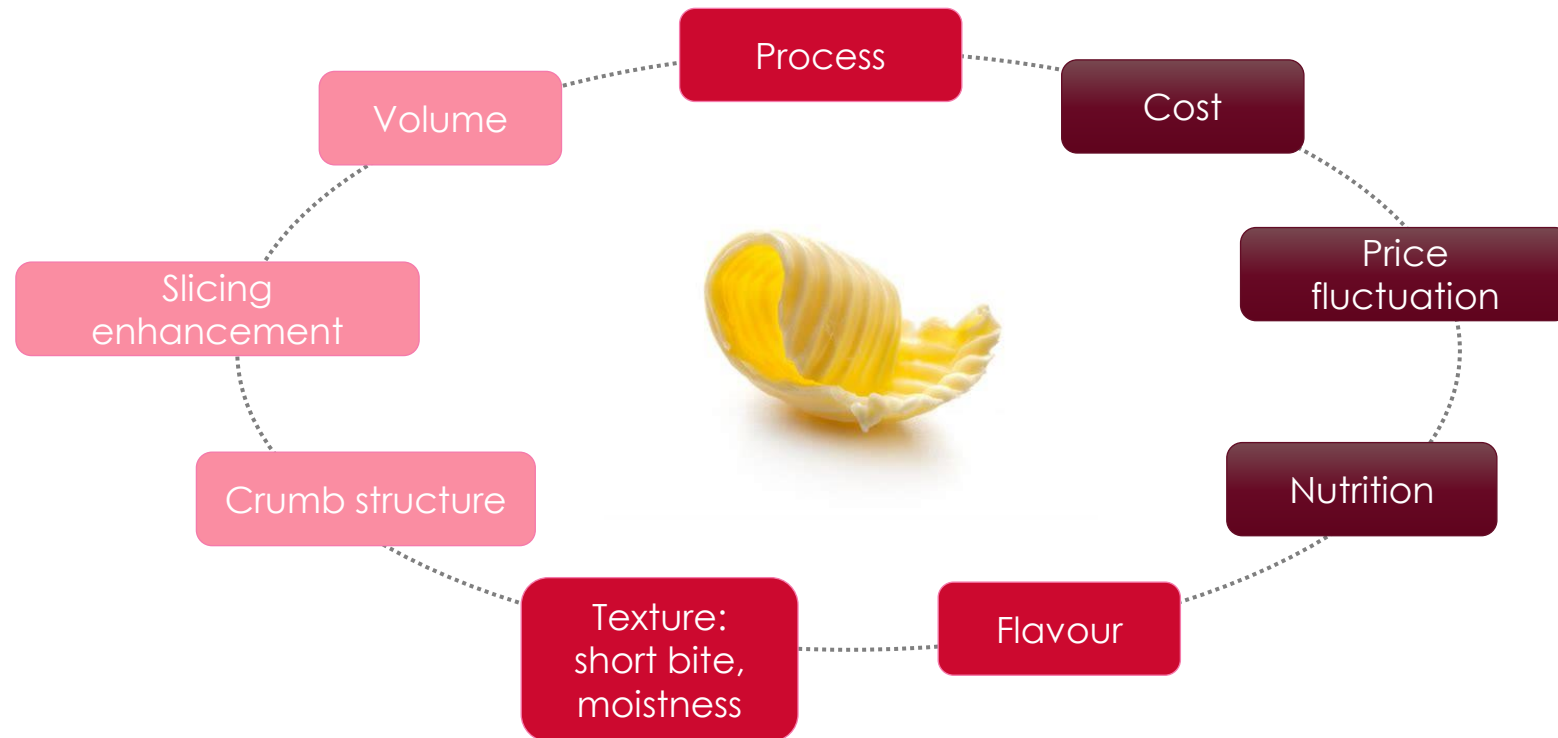
Croatia, 2022

Source: Taste Tomorrow 2021



# Fat in bakery products

Most traditional improvement ingredient!



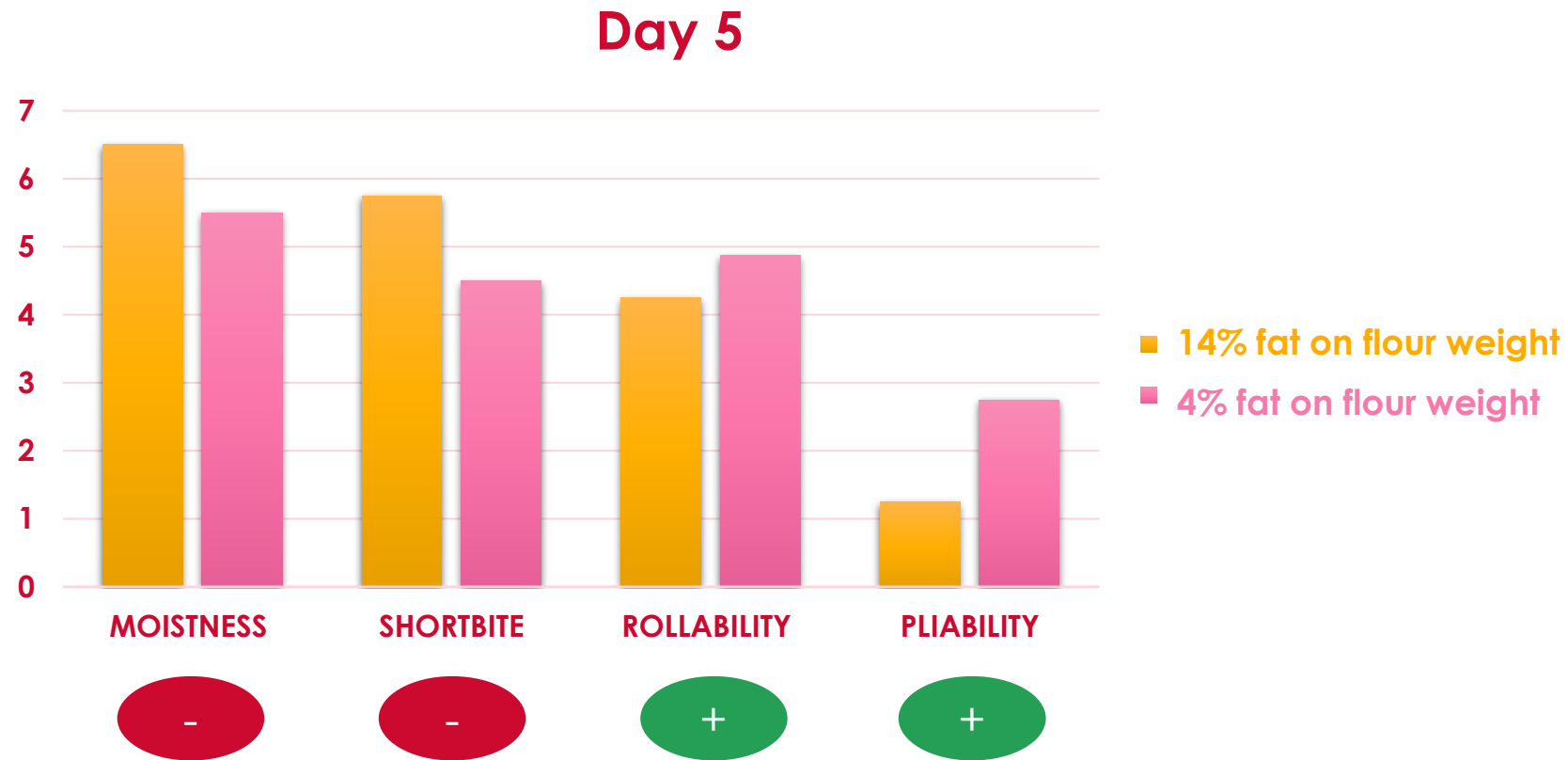
Each serving (150g) contains

Energy	Fat	Saturates	Sugars	Salt
1046kJ 250kcal	3.0g LOW	1.3g LOW	34g HIGH	0.9g MED
13%	4%	7%	38%	15%

of an adult's reference intake  
Typical values (as sold) per 100g: 697kJ/ 167kcal



# Impact of fat on tortilla attributes

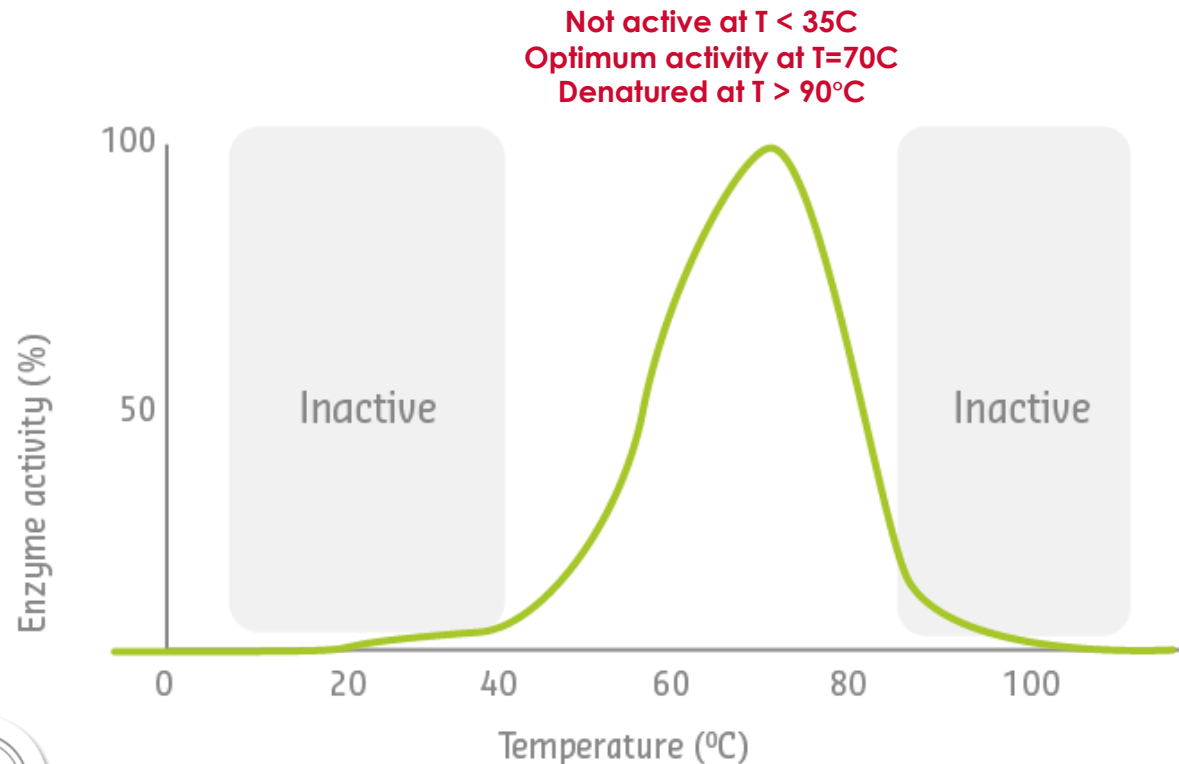


Negative impact on  
eating characteristics

Positive impact on  
specific attributes



# Intermediate thermostable protease

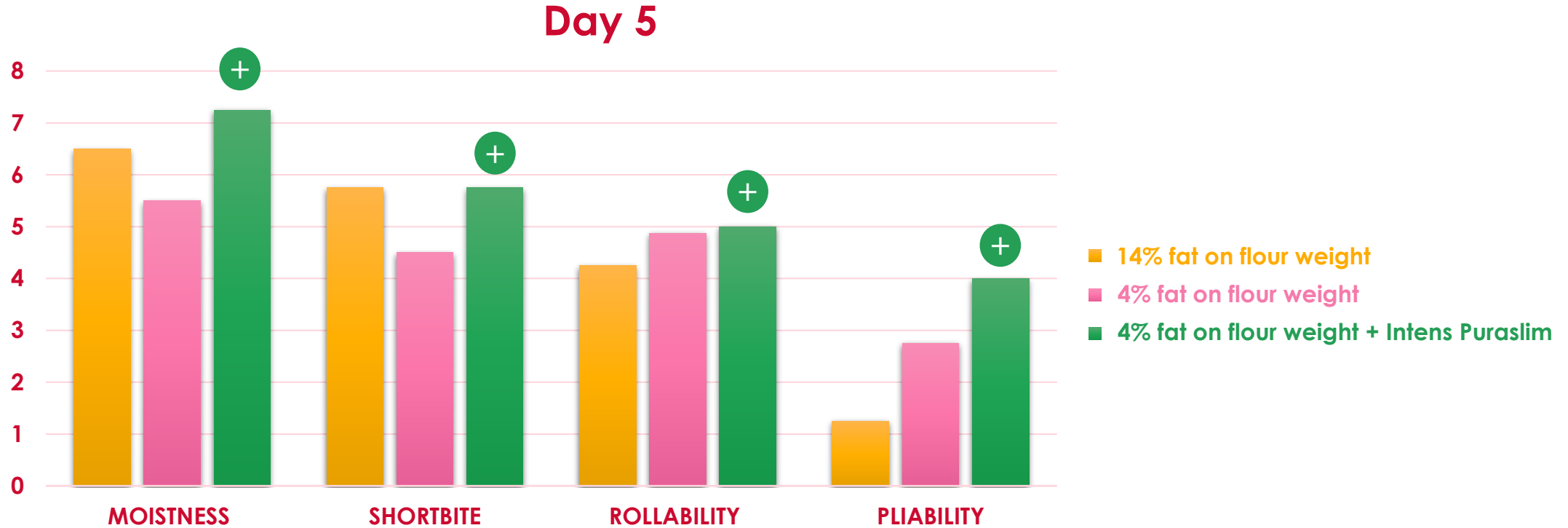


**A protease active at higher temperature that is increasing the short bite but that has no negative impact on dough extensibility or dough stickiness**



# Designed solution to reduce fat in flatbreads

Intens Puraslim



**Synergy between different enzymes to mimic the fat functionality & compensate for all texture parameters while reducing the fat**

# Technical challenges

**TASTE** texture



## FAMILIARTY

is a catalyst  
towards adoption  
of new products

75%

Likes **traditional** tastes

60%

Wants to try **new** or a **combination of tastes**  
which are **unusual at first**

67%

Would still like to have a **familiar element**  
when trying **new types** of food

67%

Likes to try food with **different textures**



# New Mama Lupe's line explores unconventional tortilla flavors

USA, 2022





# Veggie tortillas are HOT



Plancha fish taco with our color full  
**beetroot tortilla**

@safari.Tulum, Mexico (2022)



You get Impossible ground meat, rice,  
daiyafoods shredded cheddar cheese,  
lettuce, tomatoes, black eyed peas, and a  
Cajun dressing made in-house, **all wrapped  
in a spinach tortilla wrap.**

@vegandisneyfood (2022)



**Carrot**

Germany, 2022



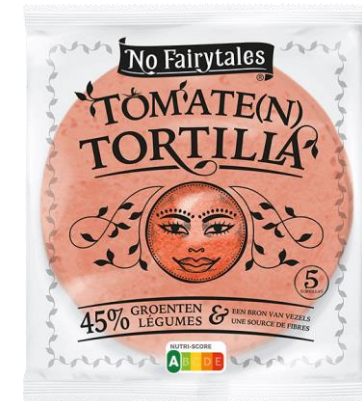
**Beetroot**

Germany, 2022



**Spinach**

Chile, 2022



**Tomato**

Netherlands, 2022



# Sourdough flatbreads are HOT



Australia, 2021



Greek salad, **sourdough** discard **flatbread**, extra garlicky hummus, & bonus pickled onions

@cookster, UK (2022)



**Sourdough naan** for a rainy fall Sunday.

@fareisle, USA (2022)

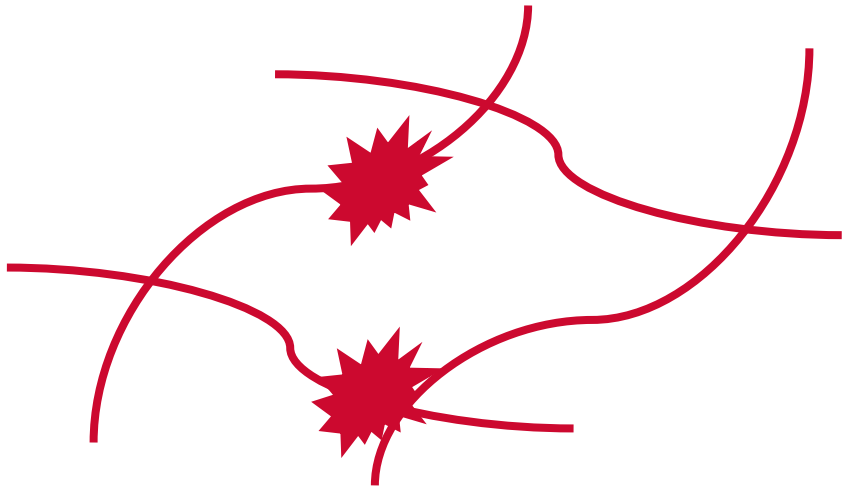


**Sourdough flatbread** (leftover pizza dough, baked "naked")

@bakergirlofficial, Japan (2022)



# When adding grains & sourdough...



GLUTEN DISRUPTION

THICKER TORTILLAS

EXTENSIBILITY

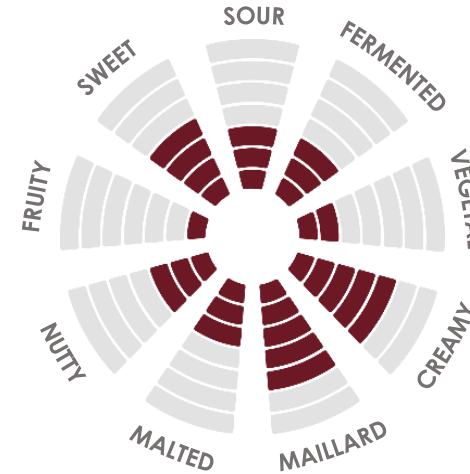
DRY GRAINS

PLIABILITY

...

# TASTE & DIFFERENTIATION

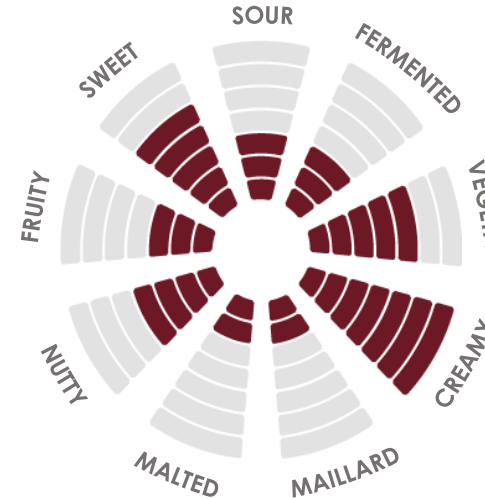
Wholegrains and seeds,  
**cooked and infused with  
sourdough**



Softgrain **Golden 6**

wheat - oat - sunflower  
millet - linseed - chia  
+ wheat sourdough

**Sprouted** and **fermented**  
wholegrains & seeds and  
**infused with sourdough**



Softgrain **Sprouted Oat**

sprouted oat + oat sourdough

Benefits of Sprouted grains:

- ✓ Improved digestibility
- ✓ Improved nutrition (B vitamins, vitamin C, folate, fibre, ...)
- ✓ Phytic acid (anti nutrient) reduction

# Texture has become a key component of taste

63%

Like to  
try food with  
different  
textures



GLOBAL  
66%



France  
61%



Germany  
55%



Italy  
69%



Spain  
70%



UK  
64%



**Soft**

Foccacia



**Fluffy**

Pita



**Crispy**

Balloon Flatbread

# TASTE & DIFFERENTIATION



## MASH

Sproutgrain oat mash



**Sprouted, fermented**  
and **mashed**  
wholegrains & seeds

**NO GRAINS & SEEDS**

**TASTE +++**

**NUTRITIONAL BENEFITS**



# Technical challenges

## HEALTH



Fat reduction in tortillas while maintaining overall texture & mouthfeel

## TASTE texture

Taste differentiation through superior softgrains and sprouted grains

## FRESHNESS / WASTE

Superior freshness, short bite & pliability for short baking time  
Prevents stickiness between products & limit tearing and waste



**Aline Gaget**

agaget@puratos.com

Thank  
you

