

Your Partner in
Flour & Baking Technology



**Natural Dough
Relaxation**

Using Inactive Yeast

By Ernst Benier

Pressed Wheat Tortillas and the need for dough relaxation

- Process:
 - Developed dough
 - Short rest 5-10 min
 - Scaling & rounding
 - Dough rest 5-10 min
 - Dough ball is pressed in 1 second till 12-30cm diameter
 - Bake
- Consistent final product (incl diameter)
 - Controlled elasticity required

Pressing harder / longer cost money

Chemical Dough Relaxation

in Wheat Tortillas

- Common chemical reducing agents used
 - L-Cysteine
 - Sodium metabisulphite (SMBS)

Chemical Dough Relaxation in Wheat Tortillas - pros

- Benefits:
 - Easy to press / Low pressure
 - Round shape
 - Sharp edges
 - Economical

Chemical Dough Relaxation in Wheat Tortillas - cons

- Issues:
 - Declaration
 - L-Cysteine
 - requires labelling
 - E920
 - Bad press
 - Sodium metabisulphite SMBS
 - Requires labelling
 - E223
 - Intolerance / adverse reactions
 - breaks down Vitamin B2 (Thiamin)
 - suppresses browning
 - can impair taste
 - no processing aid exemption

I'm eating what?

I'M EATING WHAT!?

INGREDIENTS: WHEAT FLOUR, SUGAR, MILK PROTEIN, POTATE, HIGH OLIVE OIL, ...
"L-cysteine"
 ...

An amino acid used in baked goods, derived from duck feathers and human hair.



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EXCLUSIVES: | Flu shot hoax admitted | GMO front man exposed | Mercury still in flu shots | Vaccines sterilize women | CDC scientist conf



True fact: A common ingredient in commercial breads is derived from human hair harvested in China

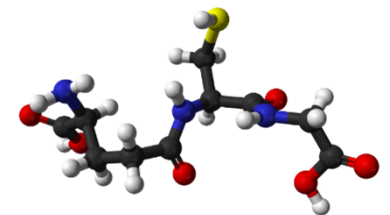
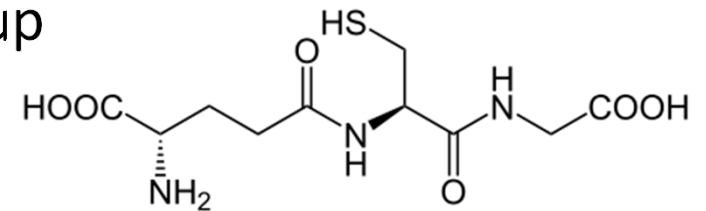


Thursday, June 16, 2011
 by Mike Adams, the Health Ranger
 Editor of NaturalNews.com (See all articles...)
 Tags: L-cysteine, commercial bread, health news

Natural alternatives

- Inactive Yeast

- Yeast contains glutathion
- Tri-peptide from cysteine, glycine and L-glutamic acid
- **GSH** – **G**lutathion met **S**H (thiol) group
- Thiol group works as reducing agent
 - result in elasticity control.



- Enzymes

- Protease cleaves in the gluten structure
 - providing elasticity control.

Why Using Inactive Yeast containing Glutathion

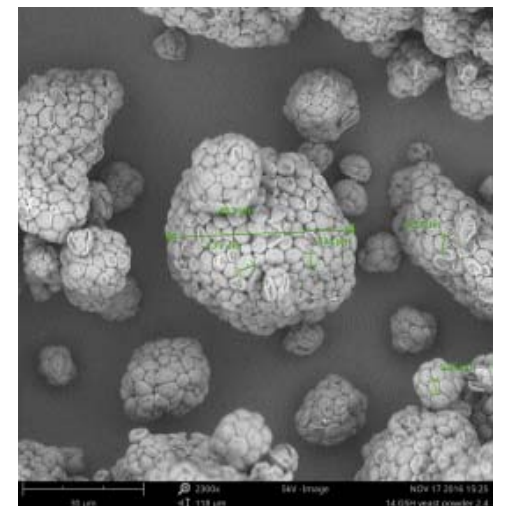
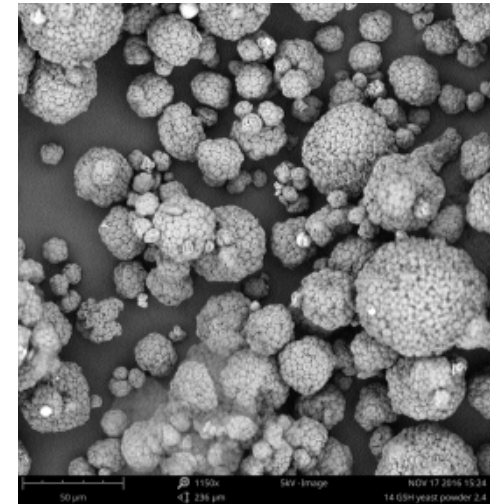
- Any living cell contains glutathion
 - Important for stress control
 - $\text{GSH} \leftrightarrow \text{GSSG}$
- France legislation for traditional French baguette only allows use of flour, water, salt, **yeast**, amylase.
- (French) Bakeries required dough relaxation
- Production of dried yeast gave lots of yeast dust
- Dried yeast dust was found to provide dough relaxation

Uncontrolled Dried Yeast Dust

- Not a standard product
 - GSH levels
 - Low - 0,8% GSH
 - Yeast fermentation power
 - YES, but how much

Controlled Inactive Dried Yeast

- Yeast strain optimisation
- Higher GSH levels (upto 3%)
 - Stress during fermentation (GSH \leftrightarrow GSSG)
 - Influences fermentation time / yield / cost
 - Taste
- No more yeast fermentation power
- Product property optimisation
 - Preventing GSSG formation during drying
 - Powder characteristics



GlumoD F

Key parameters

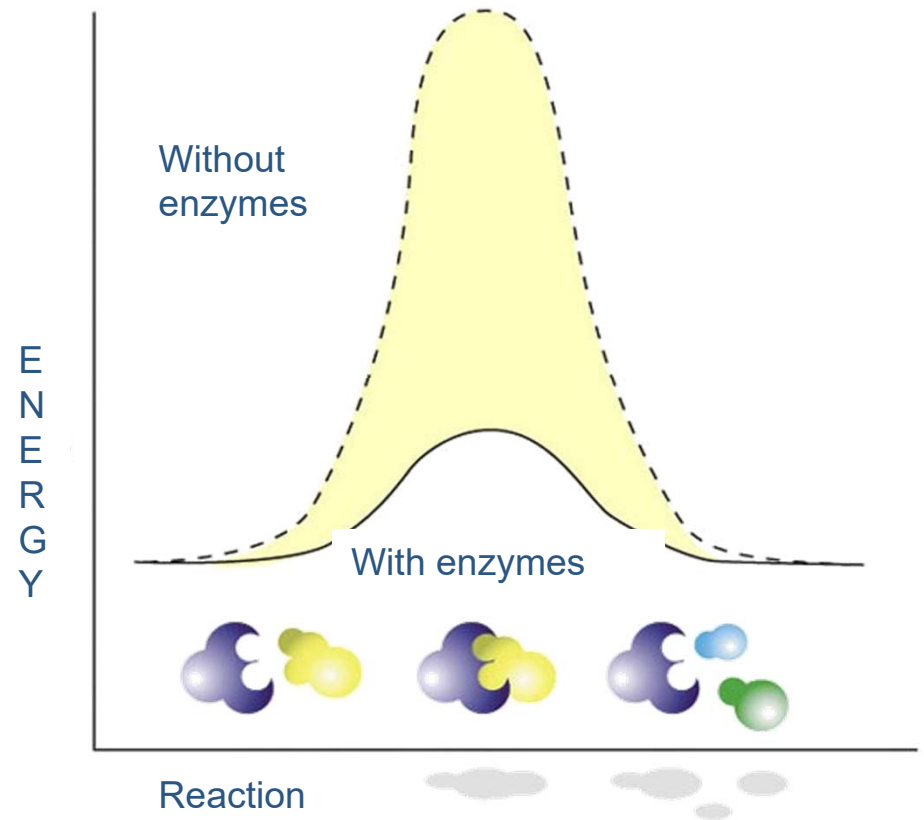
- Inactive dry yeast (*Saccharomyces cerevisiae*)
 - produced by baking yeast strains
 - inactivated by pasteurisation
 - spray dried
- Standardised GSH level 2,1% by addition of wheat flour
- Reduced dusting powder
- Kosher
- Halal

GlumoD F in wheat tortilla production

- Benefits:
 - Clean label (inactive yeast / yeast)
 - Easy to press
 - Round shape
 - Sharp edges
 - No change in eating quality, rollability, stickyness of tortilla
 - Economical although more costly as chemical

Natural alternative - Enzymes

- Biocatalysts with an enormous catalytic power
- Are very specific
- Are proteins
- Act under mild conditions with respect to temperature and pH



Enzym Activity Effects with Bakery Process & Final Product Quality Attributes

Bread Bakery

- Mixing
 - Dough development
 - Gluten development
 - Water binding
- Proofing
 - Gas Production
 - Gas Retention
 - Stability
- Baking
 - Oven spring
 - Crust formation
 - Shape

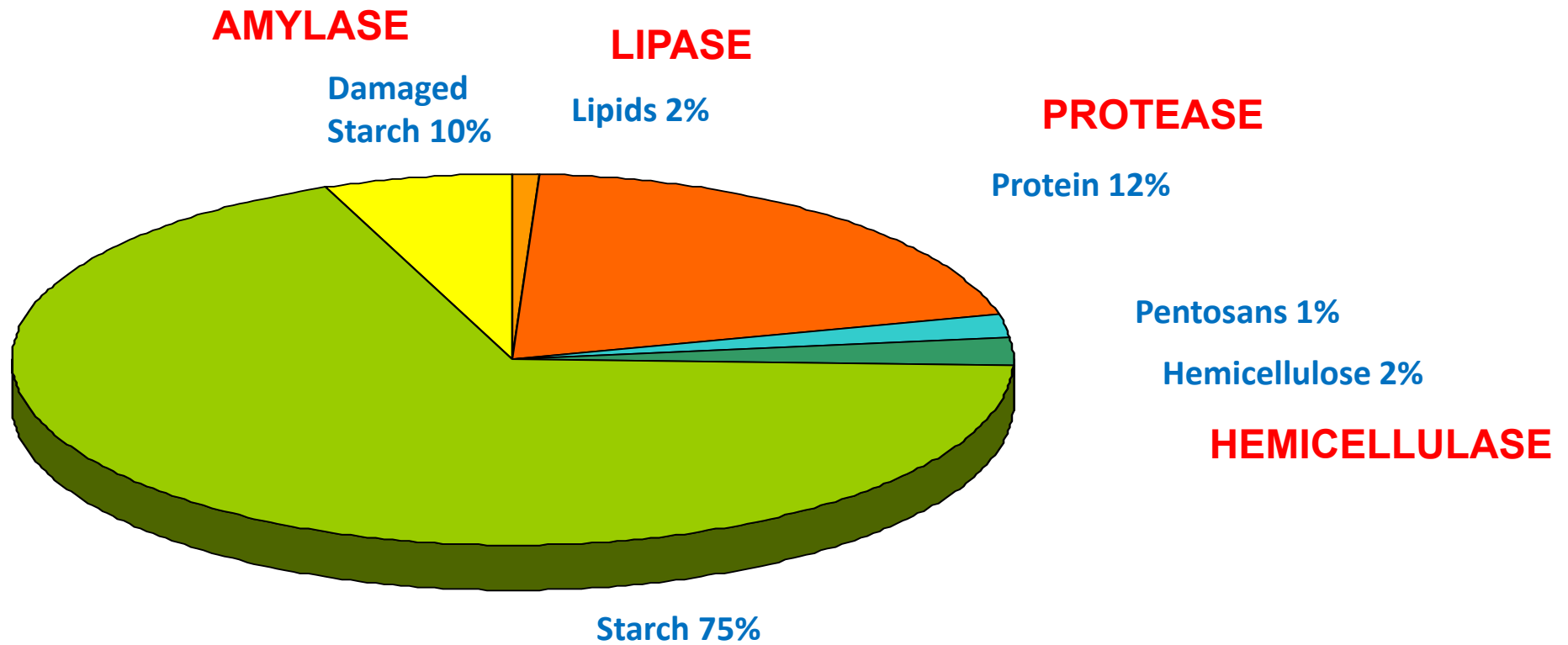
Fine Bakery

- Mixing
 - Dough Consistency
 - Water decrease
 - Elasticity control
- Processing
 - Baking time reduction
- Baking
 - Colour & Shape

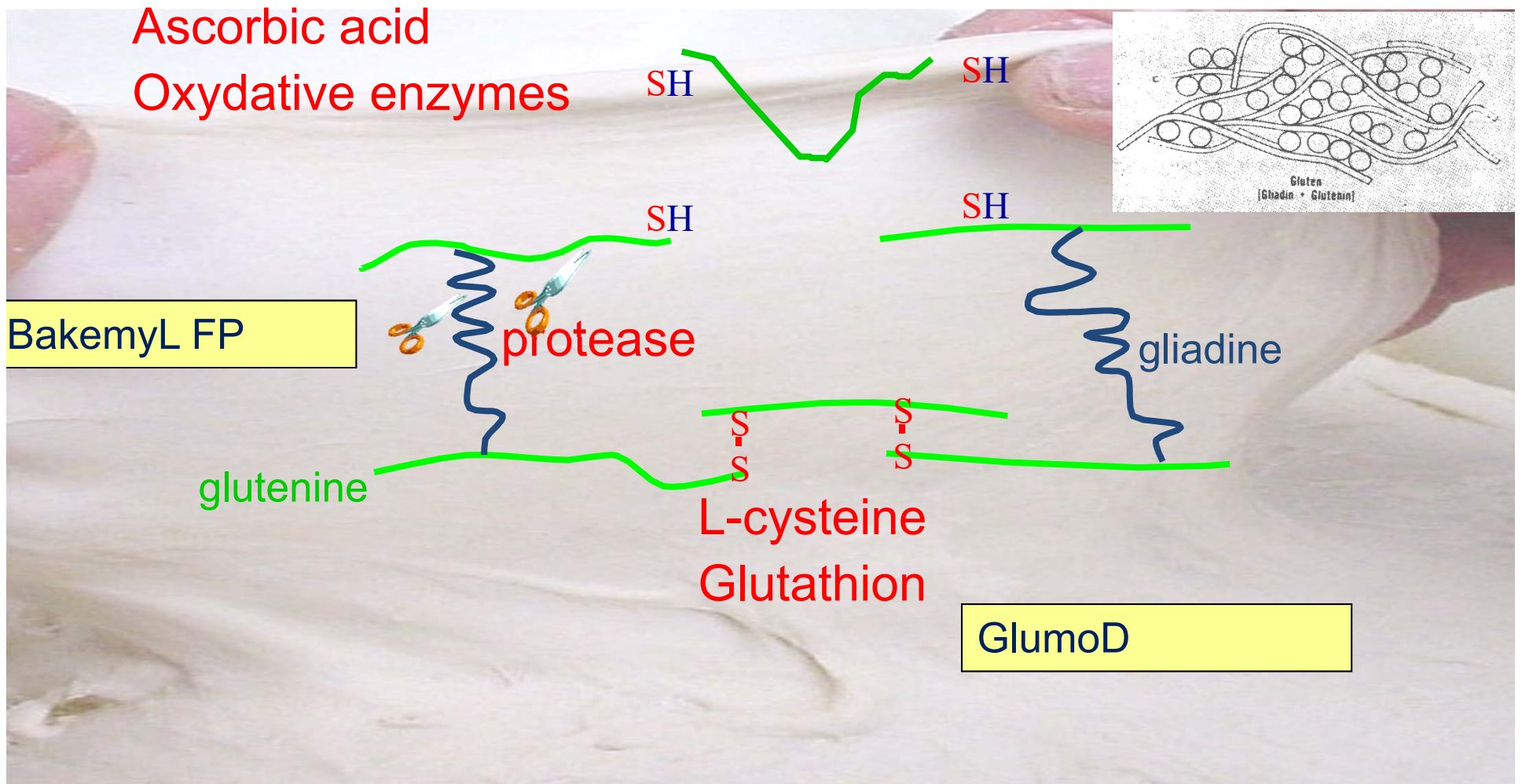
Final Product Quality

- Crumb structure
- Crumb colour
- Crust colour
- Shape
- Volume
- Texture
- Taste & Flavour
- Fresh Keeping Properties

Wheat Flour Composition



Overview of gluten interaction



Application of BakemyL FP

Key Performance Features

BakemyL FP is a non GMO based fungal endo-protease.

- Key benefits:
 - Improves dough development
 - Provides elasticity control in dough
 - Label friendly – no declaration on final packaging
 - Ideal tool to use in combination with other enzymes
- Recommended dosage in tortilla:
 - BakemyL FP 10 - 50 ppm

Glutathion vs endo-Protease

- Different mechanism
- Similar functionality
- Optimize your needs by combining them
- Dosage indication (on flour weight):
 - GlumoD F 0,1 – 0,2%
 - BakemyL FP 10 – 50 ppm (mg/kg)

Breatec B.V.

- Dutch based ingredient manufacturer founded in 2006
- Specialized in functional Ingredients for the milling and baking industry.
- Main product groups:
 - Enzymes
 - Emulsifiers
 - Inactive yeast
- Global customer base:
 - Millers
 - Bakery Ingredient Formulators
 - Specialized bakery industry
 - Tortilla, Pasta & Noodle Manufacturers



