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Tijana Lopičić Vasić

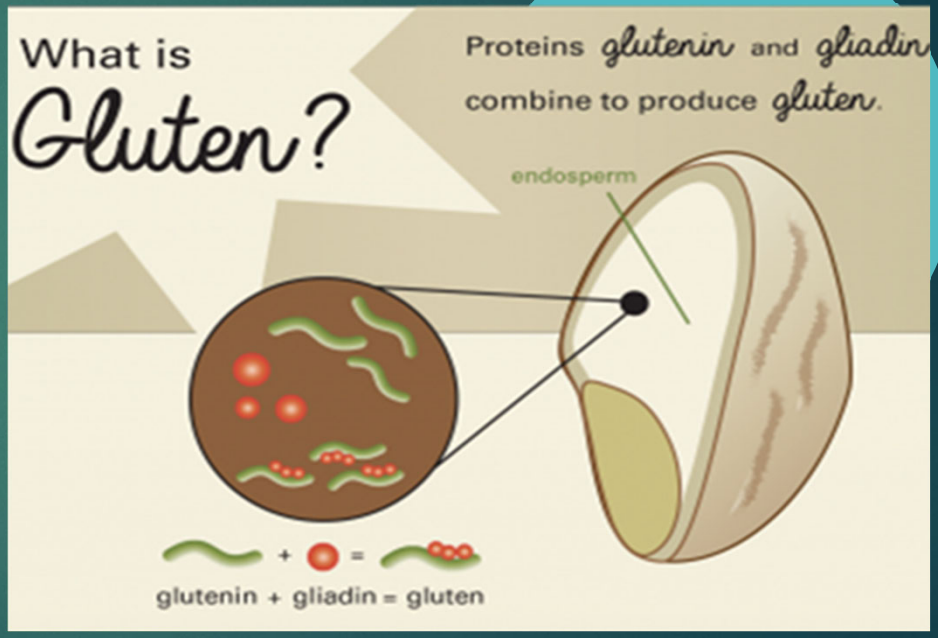
Gluten free tortilla- solution and formulation

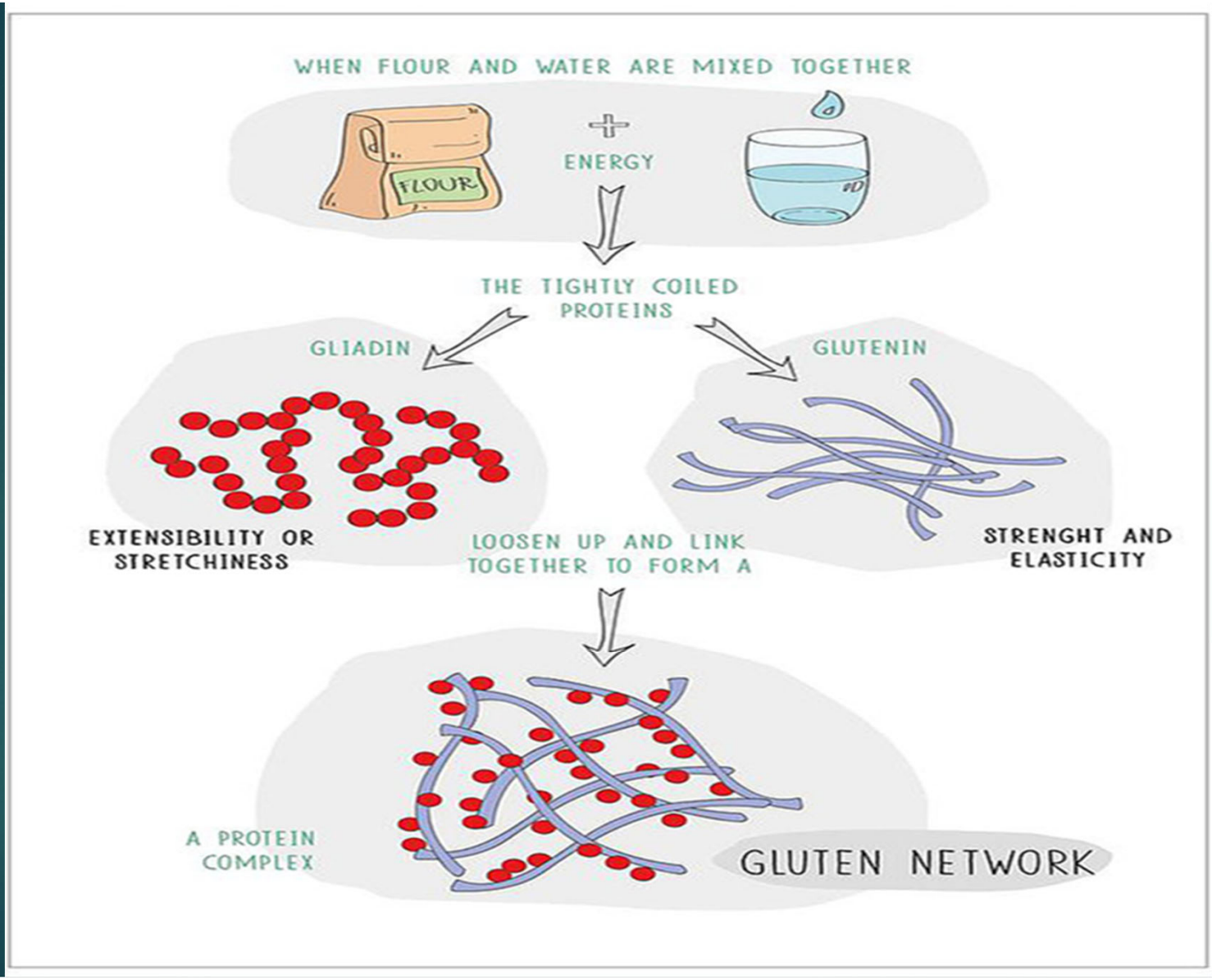
October 2019.

Tortilla Mexicana

EUROPE TECHNICAL CONFERENCE

What is gluten?

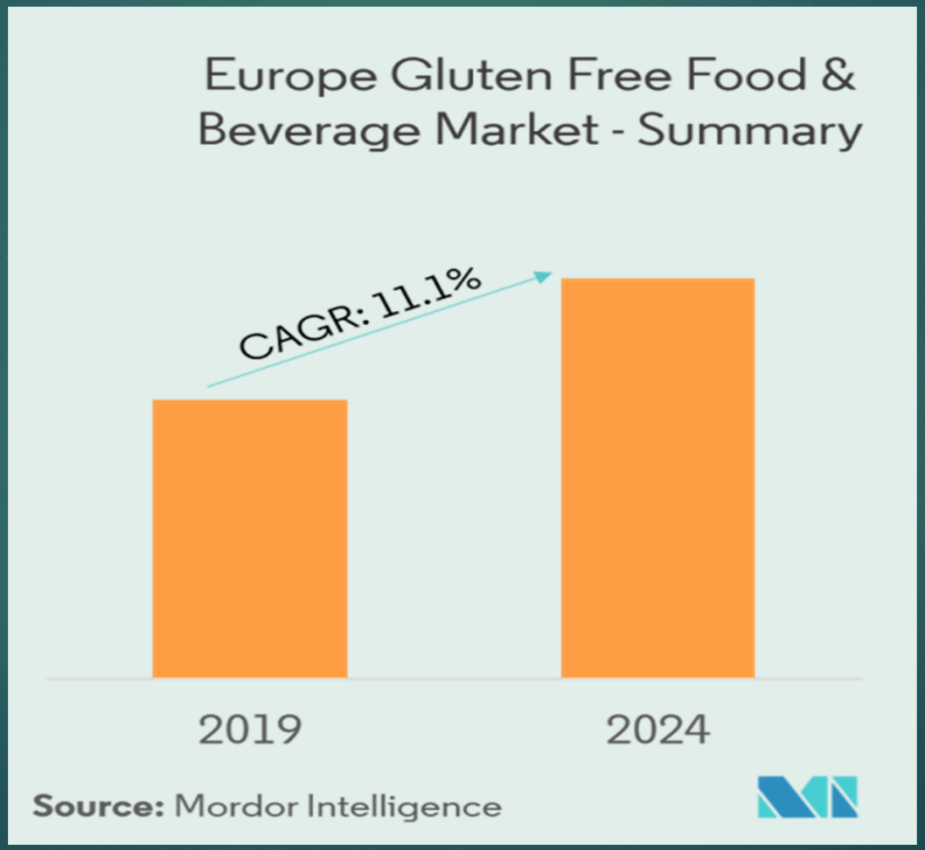



WHEN FLOUR AND WATER ARE MIXED TOGETHER
FLOUR
ENERGY
THE TIGHTLY COILED PROTEINS
GLIADIN
GLUTENIN
EXTENSIBILITY OR STRETCHINESS
LOOSEN UP AND LINK TOGETHER TO FORM A
STRENGHT AND ELASTICITY
A PROTEIN COMPLEX
GLUTEN NETWORK

Market overview

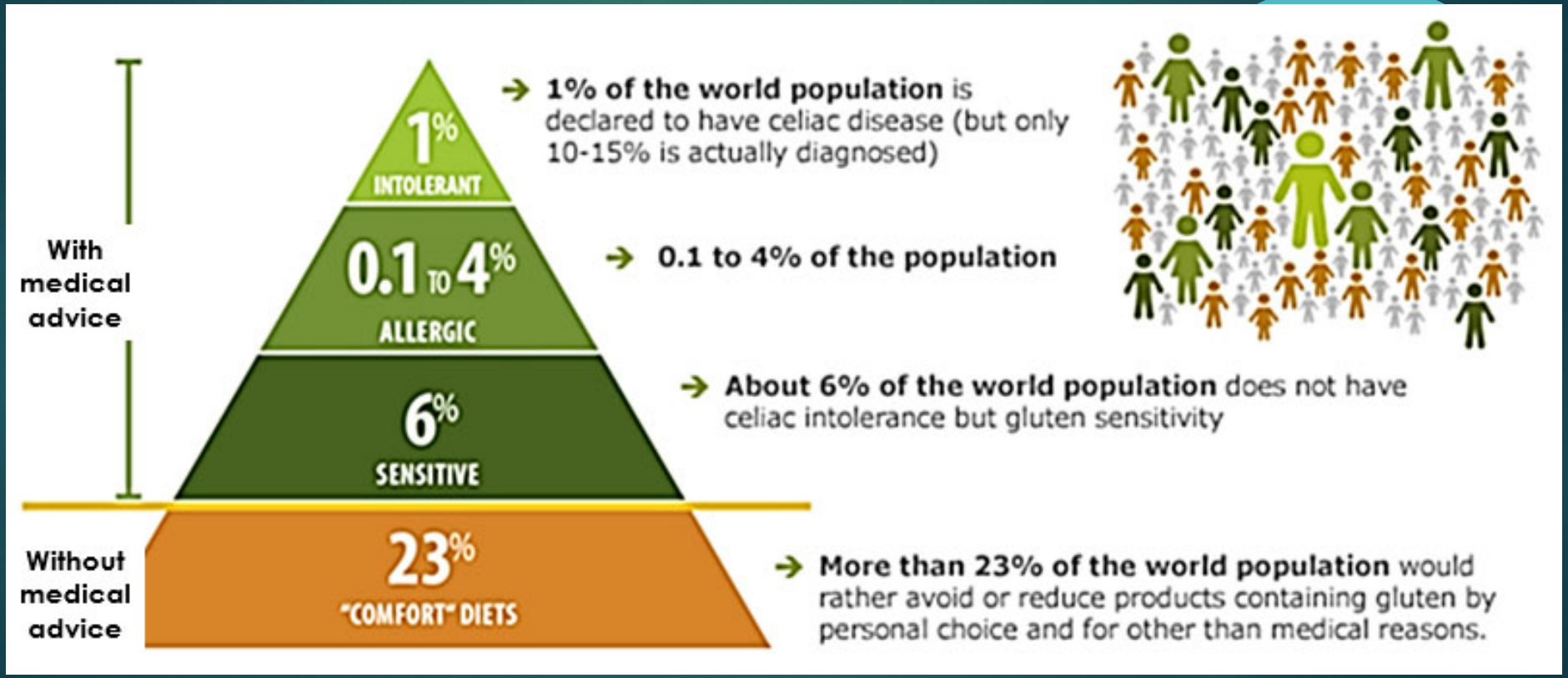
Global sales of gluten-free products jumped 12.6 percent in 2016 to $3.5 billion, compared with overall packaged foods growth of around 4 percent, according to Euromonitor. The forecast for this sector is that the market will continue to expand rapidly, reaching $4.7 billion by 2020.

Europe Gluten Free Foods & Beverages Market is growing by registering a CAGR of 11.1% during the forecasted period (2019-2024)



Gluten free Food and Beverages market in USD, 2016-2024.

Going gluten free, just because?



Challengs and solution gluten free torrtila

- ✓ Rreplace gluten using the right combination of key functional ingredients
- ✓ Gluten is an essential component of taste and texture of tortillas

Challengs gluten free

- ✓ Flour gluten free and other raw material should be uncontaminated with gluten
- ✓ For gluten free tortilla make sure that raw material are certificated as being gluten free

Cross contamination

- ✓ Gluten free raw materials are into contact with food containing gluten
- ✓ Most commercial flours gluten free are cross contaminated with wheat barley or rye. May happen during harvesting, transportation, storage, milling , processing and packaging

Gluten free productions

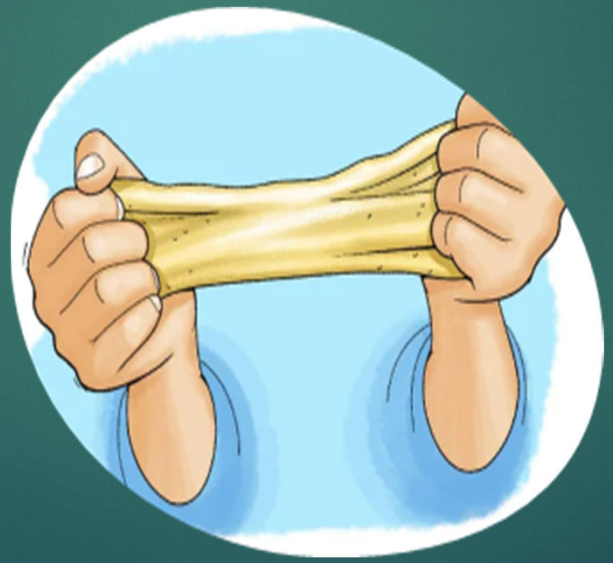
- ✓ Process and equipment for production gluten free tortilla should be separate than gluten production of tortilla
- ✓ According the EU regulation for food safety, the goal of manufacturing any food labeled gluten-free should be for the food to not contain any gluten or to contain the lowest amount possible that is less than 20 ppm gluten

Gluten-free tortilla formulation solutions

- ✓ Gluten-free flour
- ✓ Starch
- ✓ Pulse flours /other proteins
- ✓ Hydrocolloids
- ✓ Fibers

Processing gluten free tortilla

- ✓ Lack of viscosity, elasticity compare with gluten containing dough
- ✓ Leading to difficult in processability and machinability



Functionality of ingredient

Native flours gluten free:

- ✓ Corn
- ✓ Potato
- ✓ Rice
- ✓ Tapioca
- ✓ Sorghum
- ✓ Amaranth
- ✓ Buckwheat
- ✓ Quinoa
- ✓ Soy
- ✓ Millet

Main combination of flours used for gluten free tortilla

Sorghum, rice, corn, millet, quinoa, amaranth, potato

Sorghum, rice, corn, millet, quinoa, amaranth, potato

Corn starch, tapioca starch, rice flour, soy flour

Tapioca starch, potato starch, sweet rice flour

Sorghum, brown rice, corn, amaranth, quinoa, millet, cornstarch, tapioca, rice

Nutritional prefill gluten free tortilla

- ✓ Lack of protein
- ✓ Lack of fiber
- ✓ Content high level of sugar and fats to mask the texture and flavor challenges

Nutrition Facts

6 servings per container

Serving size 1 Tortilla (40g)

Amount per serving

Calories 120

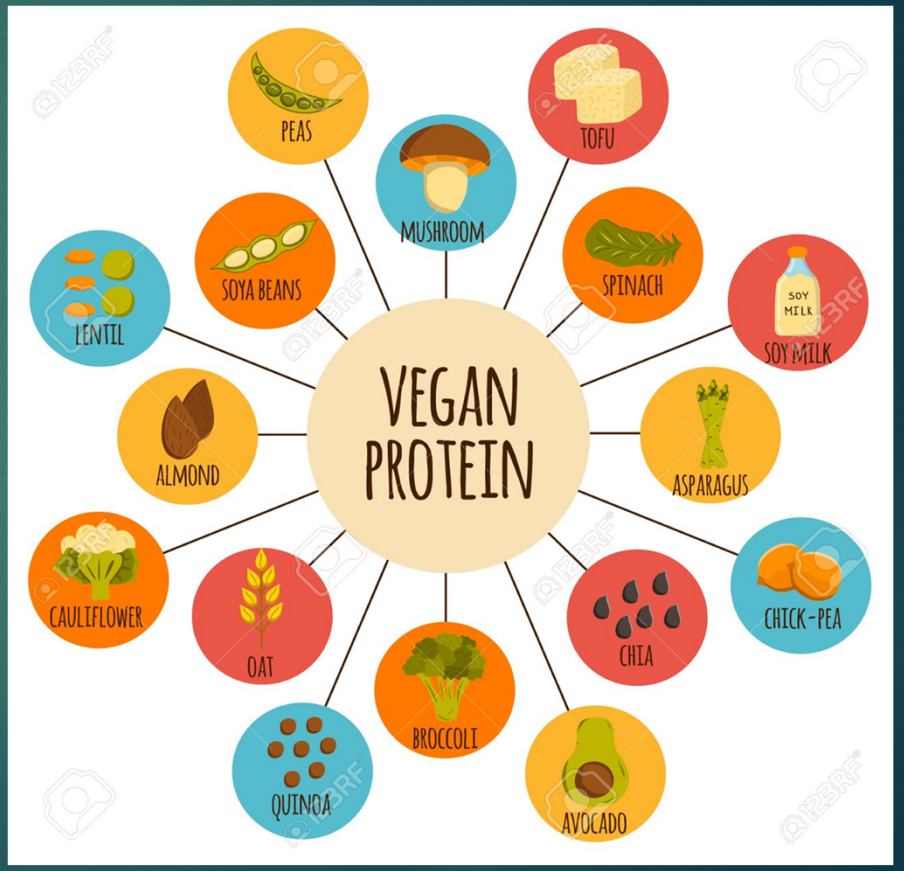
	% Daily Value*
Total Fat 4.5g	6%
Saturated Fat 1.5g	8%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 160mg	7%
Total Carbohydrate 20g	7%
Dietary Fiber 2g	7%
Total Sugars 1g	
Includes 1g Added Sugars	2%
Protein 0g	
Vitamin D 0mcg	0%
Calcium 72mg	6%
Iron 0mg	0%
Potassium 70mg	2%

*The % Daily Value tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

Protein build structure

- ✓ Pulses are the dried seeds of the legume plants (beans, broad beans, peas, chickpeas, cow peas, pigeon peas, lentils, lupins)
- ✓ Content protein, minerals, folic acid, B vitamins
- ✓ Soy
- ✓ Quinoa
- ✓ Egg
- ✓ Whey protein



Hydrocolloids in gluten free tortilla

- ✓ Xanthan gum
- ✓ Guar gum
- ✓ CMC
- ✓ Agaar guma
- ✓ Soliuble fribe

Hydrocolloids functionality

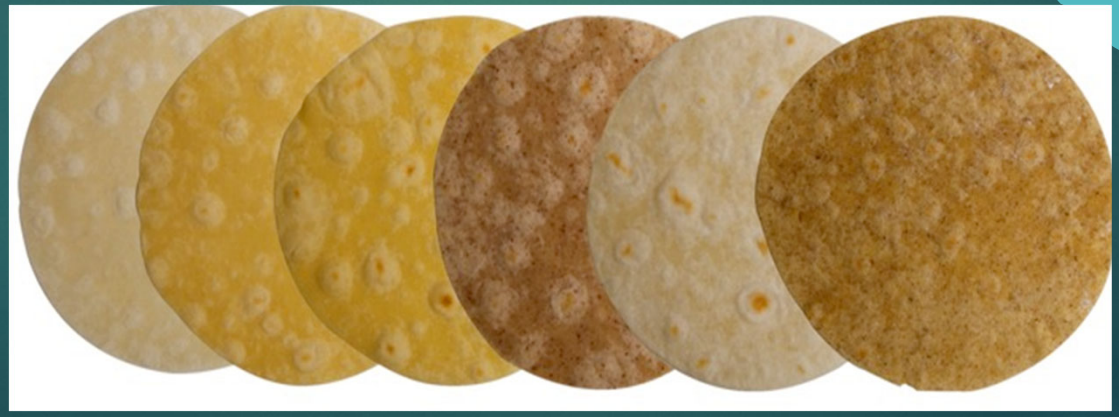
- ✓ Batter dough viscosity and cohesive structure
- ✓ Structure and moisture retention
- ✓ Prevent staling
- ✓ Freeze /thaw stability

Starch

- ✓ Source –corn, potato and tapioca
- ✓ It is polymer of amylose and amylopectin (25:75)
  Gelatinization temperature is 55-75 ^{0} C
- ✓ Dough viscosity control
- ✓ Texture modifier
- ✓ Prevent staling
- ✓ Freeze /thaw stability

Texture, taste, appearance

- ✓ Texture, taste and appearance of gluten-free tortilla depend on the amount and type of non-starch hydrocolloids used as gluten replacers, as this determines interactions between them and starch, which is the main component of dough



Gluten free tortilla appearance, taste

- ✓ Poor rollability
- ✓ Poor pliable
- ✓ Crumbly
- ✓ Dry
- ✓ Powdery
- ✓ Rubbery texture
- ✓ Poor surface color
- ✓ Off flavors

Gluten free tortilla solution

Formulation for gluten free tortilla formulation are combinations :

- ✓ Two or more kind of flours gluten free
- ✓ Starches native functional modified
- ✓ Pluses /source of protein
- ✓ One or more hydrocolloid
- ✓ Soluble fiber

Shelf life

- ✓ Shorter shelf life
- ✓ Higher moisture effects shelf life, it will require more preservatives
- ✓ Gluten free flours results in products that feel drier and less pliable which then increase with time due to starch retrogradation
- ✓ Most gluten free tortilla in US are storage frozen
- ✓ Usually gluten free tortillas at room temperature have shelf life stable 10-35 days
- ✓ Gluten free tortillas produced with Tortilla Mexicana gluten free mixture at room temperature have shelf life 6 month

Gluten free mixture for for gluten free tortilla

Company Tortilla Mexicana created successful mixture for gluten free tortilla.

Mixture for gluten free tortilla content :

- ✓ Hydrocolloids
- ✓ Proteins
- ✓ Emulsifier
- ✓ Preservatives
- ✓ Fiber

Function of ingredient for making gluten free tortilla

- ✓ Gluten free flours - products that feel drier and less pliable which then increase with time due to starch retrogradation
- ✓ Protein content –handling, tortilla resilience
- ✓ Hydrocolloids-dough viscosity, moisture retention. Interactions between hydrocolloids have synergistic effects, such as enhanced viscosity that can improve dough handling
- ✓ Starch- texture modifier, control dough viscosity
- ✓ Tortilla Mexicana mixture for gluten free tortilla - elasticity, viscosity, handling, moisture retention, control dough viscosity

Gluten free tortilla solution

Company Tortilla Mexicana created successful formulation of mixture for gluten free tortilla.

- ✓ This will run on your press line without modifications in equipment and procedure
- ✓ It is a complete mixture - contains functional ingredients
- ✓ Blend flours are part of the formula
- ✓ Mixture does not contain other major food allergens
- ✓ Current formula will give at least sixth month shelf life at room temperature
- ✓ Our mixture can be use for different blend of gluten free flours and starch depend of costumer request

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- ✓We have answered
- ✓Let cooperate . . .

Gluten free tortilla formulations

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Thank you for your attention

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