

# Comparative study of the ingredients for gluten-free bread baking

## Introduction

Nowadays the number of celiac people is increasing. They have to maintain a gluten-free diet during their whole life. Gluten-free products are poor in fiber and micronutrients, and tend to have different texture than their gluten containing homologous

## Objectives

To do a comparative study of different formulations of gluten-free *baguette* and sliced bread from various sources (scientific, commercial and users)



- Collect and classify ingredients and additives used in gluten-free bread formulations
- Compare their nutritional composition in general terms
- Evaluate if the three compared sources tend to be in the same direction, in terms of formulation, or they differ

## Methodology

- The bibliographical research is based on publications of the lasts 5 years
- Spanish blogs were consulted. Six currently active blogs with a minimum number of visits have been included
- Commercialized products were searched in supermarkets, department stores and specialized shops: 7 sliced breads; 4 *baguette*; 7 *bread mixes*

## Results

			COMMERCIAL		BREAD MIX	USERS	
			SLICED BREAD	BAGUETTE		SLICED BREAD	BAGUETTE
			%	%	%	%	%
Starch	Cereals	Corn	85%	100%	100%	0%	0%
		Gluten-free wheat	14%	0%	0%	0%	0%
		Millet	14%	0%	0%	0%	0%
		Rice	28%	50%	0%	0%	0%
	Tubers	Cassava and/or potato	14%	25%	0%	0%	0%
Flour	Cereals	Buckwheat	0%	0%	14%	20%	33%
		Corn	14%	25%	0%	20%	0%
		Rice	57%	100%	57%	30%	0%
	Legumes	Alfalfa	14%	0%	0%	0%	0%
		Chickpea	0%	0%	0%	10%	33%
	Tubers	Potato	0%	0%	14%	0%	0%
	Seeds	Sunflower; Millet; Sesame; Teff	0%	0%	14%	30%	33%
Fat	Bran		0%	0%	14%	0%	0%
	Extra virgin olive oil		0%	0%	28%	50%	100%
	Sunflower		57%	50%	0%	10%	0%
	Margarine		28%	25%	0%	20%	0%
	Butter		0%	0%	0%	20%	0%
Yeast			100%	100%	28%	100%	100%
Sweetener		Sugar	85%	100%	42%	60%	33%
		Honey	0%	0%	0%	30%	66%
		Dextrose	0%	0%	42%	0%	0%
Salt			100%	100%	85%	100%	100%
Milk			14%	0%	0%	30%	33%
Antioxidant			28%	25%	0%	10%	0%
Leavening agent			14%	25%	42%	0%	0%
Thickening agent	Guar		28%	25%	42%	0%	0%
	Locust bean gum		0%	0%	14%	0%	0%
	Cellulose		71%	75%	71%	0%	0%
	Xanthan gum		71%	25%	42%	30%	0%
	Preservative			57%	25%	0%	30%
Emulsifier		Egg	42%	0%	0%	50%	0%
		E-471 and/or E-472	71%	25%	14%	0%	0%
Others	Apple fiber (or others)		57%	75%	28%	0%	0%
	Soy protein (or others)		28%	50%	14%	0%	0%
	Other ingredients		0%	0%	57%	20%	33%
	Bread mix		—	—	—	90%	100%

## Conclusions

- Food industry uses less ingredients than those tested in scientific studies. Users are restless. They have documented themselves and are testing formulations with new ingredients
- There is a low use of corn flour, but corn starch is present in almost all formulations
- Commercial breads are supplemented with fiber and soy protein in contrast to user breads. User breads contain milk or egg as protein and functional properties sources
- Sliced bread is made with emulsifier and thickening gums in contrast to *baguette*