

# Use and functionality of hydrocolloids in gluten-free products in the food industry

## 1. INTRODUCTION

Gluten is a protein present in several cereals such as wheat and which is used to elaborate baked products. However, this protein is avoided in the diet of celiac disease patients because it causes adverse reactions when ingested [1]. Various studies have applied **hydrocolloids** in **gluten-free (GF)** formulations to mimic the viscoelastic properties of gluten [2,3].

## 2. OBJECTIVES

- To provide scientific information about the characteristics and functionality of hydrocolloids in the formulation of GF products.
- To evaluate GF products present in the market that may contain hydrocolloids.

## 3. METHODOLOGY

- Bibliographic research
  - Key words: gluten-free, hydrocolloids.
- Visit to supermarkets and analysis of hydrocolloids in different GF baked products.

## 4. HYDROCOLLOIDS IN GF PRODUCTS

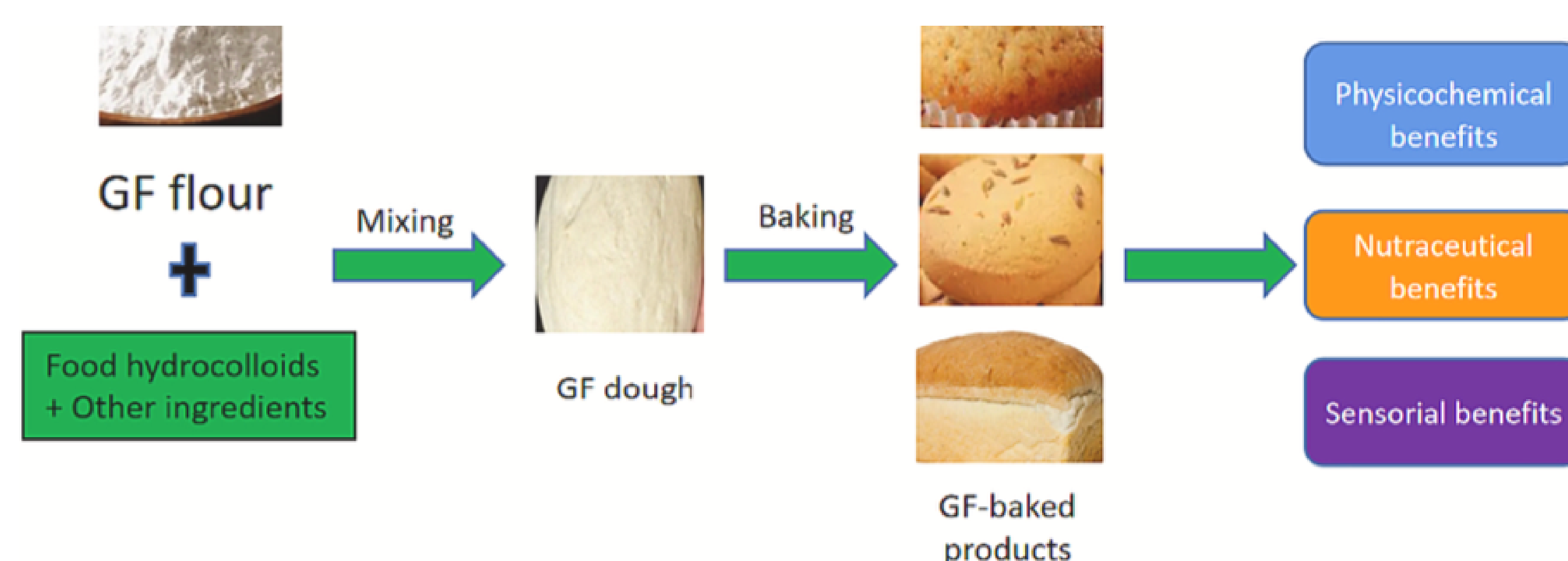


Figure 1: GF baked products formulation and general functional benefits [4].

Table 1: Most used hydrocolloids, their origin and functionality in GF baked products.

Hydrocolloid	Origin	Functionality in GF baked products
Hydroxypropyl Methylcellulose (HPMC)	Synthetic, cellulose derivative	Anti-aging in GF bread [5] Reduce internal structure bread hardness [5] Volume increase [5]
Xanthan gum (XG)	Natural, microbial	Increase water retention and viscosity [6] Acceptability: texture, aromas release [7]
Guar gum (GG)	Natural, plant seeds	Thickening, stabilizing, emulsifying and gelling agent [4] Avoid syneresis and keep the crust crispy [8]
Konjac gum (KG)	Natural, plant exudates	Thickening, gelling and stabilizing agent [4]
Methylcellulose (MC)	Synthetic, cellulose derivative	Synergy with XG in GF bread [4]

## 5. HYDROCOLLOIDS IN GF PRODUCTS PRESENT IN THE MARKET

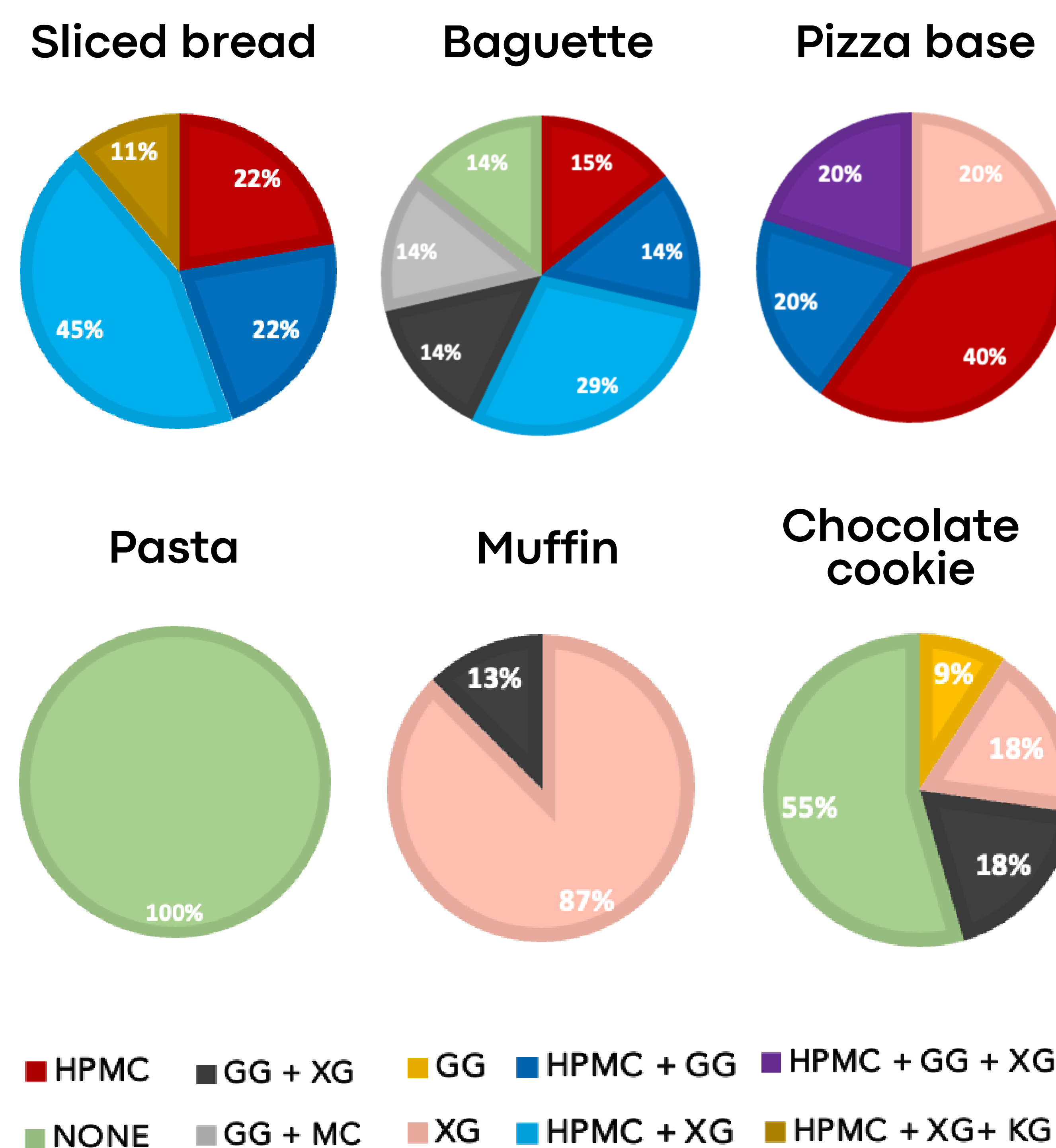


Figure 2: Hydrocolloids used in the GF baked products present in the market.

## 6. CONCLUSIONS

- The incorporation of hydrocolloids in the processing of GF products is fundamental as **thickening and gelling agents**.
- The most used hydrocolloids in the formulation of GF products are **HPMC** and **XG**.
- The interaction between hydrocolloids increases the effectiveness of obtaining a product with better sensory qualities.
- The synergy between HPMC and XG is the best for GF bread.
- In pasta and chocolate cookie the absence of hydrocolloids is due to the fact that the main ingredient is flour and there is a clear alternative, corn flour for pasta and rice and maize flour for chocolate cookies.