

Gluten Free Sweet Baked Goods

SOLVING FORMULATION CHALLENGES



According to the 2018 Food & Health Survey (IFIC 2018), one third of consumers follow a specific eating pattern. Within those specific patterns, gluten free was ranked as the third most prevalent and higher than low carb, high protein and weight-loss diets. Consumer demand for gluten free products continues to rise year over year with a projected global market value of \$6.47 billion by 2023 (Research on Global Markets). The demand is driven by people with celiac disease or gluten sensitivity and by the trend of consumers looking for foods that are free of potential triggers for gastrointestinal (GI) discomfort such as lactose, dairy, gluten and FODMAPs (Fermentable Oligo-, Di-, Mono-saccharides And Polyols). Most people who follow a gluten free lifestyle do not consume enough dietary fiber due to the replacement of wheat, barley and rye based ingredients with lower fiber, high starch flours like white rice, potato and tapioca (Getz 2013). Adding non-fermentable insoluble fibers to gluten free foods is an

excellent way to increase dietary fiber levels without causing GI discomfort. Clinical trials, with doses up to 20g per day of insoluble gluten free fibers such as cellulose, wheat and oat, have demonstrated that these fibers do not cause changes in GI complaints (gas, cramps and bloating) compared to control, low fiber diets (Stephen 1997 and de Wit 2019). The addition of J. Rettenmaier USA's fibers can also help alleviate some of the finished product deficiencies such as a dry, crumbly texture, poor volume or shortened shelf life that are often seen in gluten free sweet baked goods.



Most Common JRS USA Gluten Free Fibers

Challenge	Ingredient Recommendation	Benefit	Use Level
Low total dietary fiber	Cellulose Oat Fiber Rice Fiber Sugarcane Fiber	Good (2.8g/serving) and Excellent (5.6g/serving) source of fiber levels easily achieved	3 - 8%
Poor volume	Modified Cellulose	Supports gas retention and increased volume Improves suspension of inclusions	1 - 2%
Shelf life	Psyllium	High water holding capacity and gel formation retains moistness over time	0.1 - 0.3%
Dry, crumbly texture	Cellulose Oat Fiber Rice Fiber Sugarcane Fiber	Promotes moisture retention Long, flexible fibers improve cell structure and add resiliency	1 - 3%

2018 Food and Health Survey, International Food Information Council (IFIC). 2018.
Global Gluten-Free Food Market (2018–2023) published by Research on Global Markets.
Lindsey Getz. 2013. Fiber Boost. Today's Dietitian.
de Wit N, Esser D, Siebelink E, Fischer A, Sieg, J, Mes J. 2019. Extrinsic wheat fibre consumption enhances faecal bulk and stool frequency; a randomized controlled trial. Food and Function.
Stephen A.M., Dahl.W.J, Johns.D.M., Englyst.H.N. 1997. Effect of Oat Hull Fiber on Colonic Function and Serum Lipids. Cereal Chemistry.

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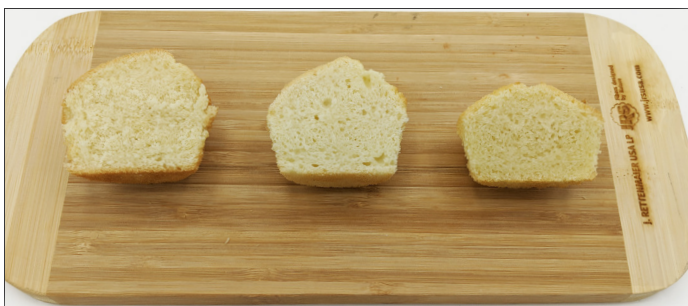


Gluten Free Product Challenges

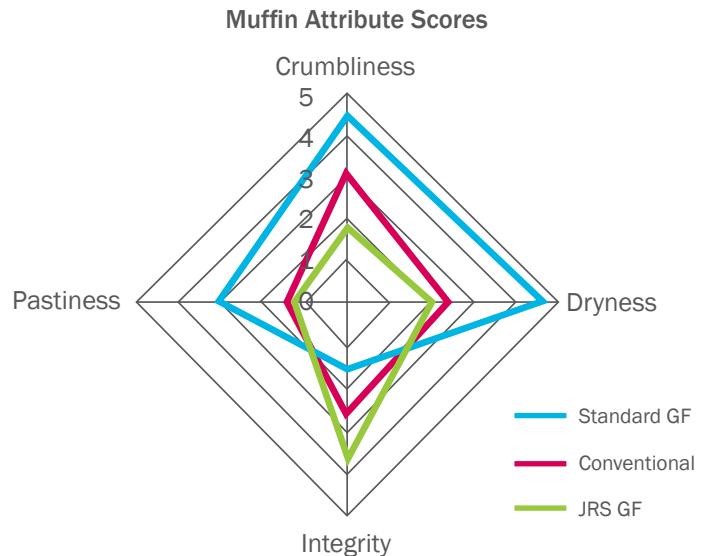
Dry, crumbly texture, lack of structure, pasty eating quality, rapid staling and poor freeze thaw stability are the typical challenges seen when formulating gluten free, sweet bakery products. JRS ingredients can help you meet these challenges and formulate a product with improved nutrition, better eating quality and improved shelf life.

JRS Fiber Benefits

To demonstrate the textural improvements from the addition of JRS fibers, a series of three muffins were prepared and subjected to a sensory evaluation. The muffins evaluated included a conventional version made with all-purpose flour, a standard gluten free version and a gluten free version including JRS powdered cellulose FL611-100, modified cellulose HPMC E4M and psyllium P95. Because most gluten free products on the market are frozen, this series was subjected to a freeze-thaw cycle. After sitting at room temperature for 24 hours, an expert sensory panel rated the muffins for pastiness, crumbliness, dryness and integrity.



From left to right: Conventional muffin, gluten free muffin with JRS USA fiber, gluten free muffin without JRS USA fiber.



The results in the spider chart above demonstrate the benefit of formulating with JRS ingredients:

- Crumbliness and dryness is significantly reduced compared to the standard GF product
- Pasty eating quality (due to high starch levels required for gluten free) is reduced and is comparable to the conventional muffin
- Integrity and cohesiveness is improved leading to improvement in mouthfeel and eating quality



From left to right: Conventional muffin, gluten free muffin with JRS USA fiber, gluten free muffin without JRS USA fiber.

J. RETTENMAIER USA LP



Fibers designed
by Nature®
A Member of the JRS Group

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Contact your J Rettenmaier USA Sales Manager for samples, Technical Data Sheets or to be put in contact with an Application Scientist for customized fiber recommendations based on your specific challenges and goals.

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