

# When fries are cooked with foods containing wheat, are they gluten-free and safe to eat?

A new, first of its kind pilot study found the answer

Tricia Thompson, MS, RD | Trisha B. Lyons, RDN, LD | Amy Keller, MS, RD, LD | Nancee Jaffe, MS, RDN | Luke Emerson-Mason, MS  
Ref: AOAC International Meeting & Expo, September 2020; Abstract/Poster #0462\_0668\_000098

## Purpose:

To assess gluten levels of otherwise gluten-free fries cooked in shared fryers with wheat

- Consumers with celiac disease discouraged from eating fries from shared fryers at restaurants
- Recommendation based on presumed gluten exposure vs. evidence-based research
- No published data on gluten levels of fries after cooking

**Shared fryers** are those used for both gluten-free and gluten-containing foods.



## Methods:

- ▶ 20 orders of fries were purchased from 10 restaurants in California & Ohio.
- ▶ Restaurants confirmed that both fries & oil were free of gluten ingredients before frying.
- ▶ All fryers were also used to cook wheat-containing foods such as breaded chicken & onion rings.
- ▶ Fries were sent to Bia Diagnostics and tested using both the competitive & sandwich R5 ELISAs (industry standard tests for gluten detection).
- ▶ A total of 80 extractions were tested (4 extractions from each sample).

## Results:

- ▶ 45% of fry orders found quantifiable gluten ranging from 7 to >84 ppm using the sandwich ELISA, including 5 (25%) which tested >20 ppm.
- ▶ 15% of fry orders ranged from 14 to >283 ppm of gluten using the competitive ELISA.
- ▶ Fries from 60% of restaurants contained quantifiable gluten.



**1 oz. of restaurant fries**  
@ 20 ppm  $\cong$  0.5 mg gluten  
@ 40 ppm  $\cong$  1.0 mg gluten  
@ 60 ppm  $\cong$  1.5 mg gluten  
@ 80 ppm  $\cong$  2.0 mg gluten



**5 1/2 oz. of restaurant fries**  
@ 20 ppm  $\cong$  3 mg gluten  
@ 40 ppm  $\cong$  6 mg gluten  
@ 60 ppm  $\cong$  9 mg gluten  
@ 80 ppm  $\cong$  12 mg gluten

10 mg of gluten per day is generally considered by experts to be a tolerable amount for most individuals with celiac disease.

## Discussion:

- The gluten level in a shared fryer at any given time likely varies depending upon several factors, including previously cooked foods, oil change frequency, & filtration system.
- Based on test results, 25% of fries measured above the FDA's definition for gluten-free.
- Gluten in fries may not have been fully detected. Heating at high temperatures may lead to false negative results & underestimates of gluten content.

## Bottom Line:

Consumers with celiac disease should avoid foods cooked in shared fryers due to the potential for cross contact. Shared holding trays, fryer baskets, scoops, and fryer oil are all potential sources of gluten.

