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► STATUS UPDATE

Corn masa fortification

THREE YEARS LATER



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Center for Science in the Public Interest

The Center for Science in the Public Interest (CSPI) is your food and health watchdog. We are a rigorous driver of food system change to support healthy eating, safe food, and the public's health. We transform the food environment through leading-edge policy innovations grounded in meticulous research and powerful advocacy at the national, state, and local level. We galvanize allies to drive system-wide changes and healthier norms, leveraging the greatest benefits for people facing the greatest risk. CSPI is fiercely independent; we accept no funding from industry. Our work is supported by the hundreds of thousands of subscribers to our award-winning Nutrition Action and from foundations and individual donors.

Terminology

CSPI is an inclusive organization and seeks to foster an environment where all staff, collaborators, and populations that we work with feel a sense of belonging and are affirmed. In this report, we use the gender-inclusive terminology "Latine." However, throughout the report, we may also use the terms "Hispanic" and "Mexican American" when describing data from previous studies in order to accurately describe the population as it was referenced by the author(s) of each study.

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In February 2023, the Center for Science in the Public Interest published “*Failure to Fortify: How companies are neglecting to take a simple step that could save Latine lives.*”¹ The report described the science linking folic acid intake and reduced risk of neural tube birth defects (NTDs) and the history of folic acid fortification policy in the United States. It examined the reasons why Latine people in the United States face higher rates of NTDs and the policy change in 2016 allowing folic acid fortification of corn masa to help address racial/ethnic differences in rates of NTDs. The report also assessed the availability of fortified corn masa flour and corn tortillas in U.S. grocery stores. CSPI researchers looked at a sample of 59 corn masa flour products from 17 different companies and 476 corn tortilla products from 134 different companies, all sold across the United States between 2018-2022. The data showed that only 1 in 7 of the corn masa flour products and *none* of the corn tortillas contained folic acid. The report concluded with recommendations for increasing folic acid intake among Latine people in the United States, including through increased uptake of voluntary fortification by companies selling corn masa products.

Since the publication of CSPI’s *Failure to Fortify* report, there have been several additions to the scientific literature and new policy developments to encourage folic acid fortification of corn masa products. The purpose of this status update is to summarize those new research and policy developments, to assess progress in the availability of folic acid-fortified corn masa products in 2025, and to share key takeaways to inform future corn masa fortification efforts and other corporate engagement advocacy campaigns.

In summary, analyses published to date by other researchers have not yet detected an improvement in folic acid intake or a reduction in rates of NTDs in the Hispanic population relative to the non-Hispanic White population since the U.S. Food and Drug Administration (FDA) began allowing voluntary corn masa fortification. However, our assessment of the corn tortilla marketplace in 2025 found a substantial improvement in the availability of fortified corn tortillas since 2022. Unfortunately, an uptick in misinformation about the safety and benefits of folic acid could undermine consumer confidence and recent progress.

| Updates from the Scientific Literature (2023-2025)

The predicted impact of FDA’s voluntary corn masa fortification rule has not yet been realized.

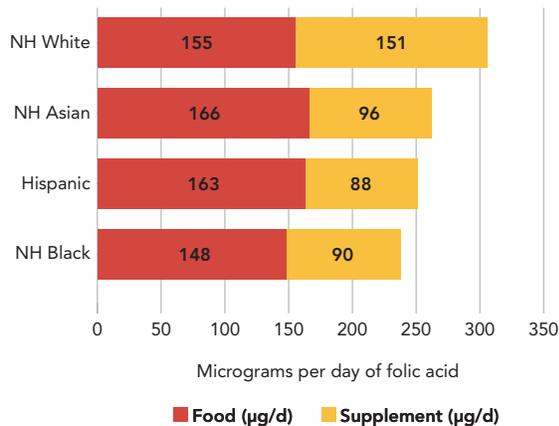
A 2025 systematic review of studies examining consumption of folic acid-fortified foods among Hispanic women of reproductive age in the United States through September 2024 noted that a 21% increase in daily folic acid intake among Mexican American women of reproductive age was predicted to result from the fortification of corn masa flour, but no substantial increase in actual folic acid intake has been reported in the literature thus far.²

Differences in folic acid intake and NTD rates between Hispanic and non-Hispanic White people persist.

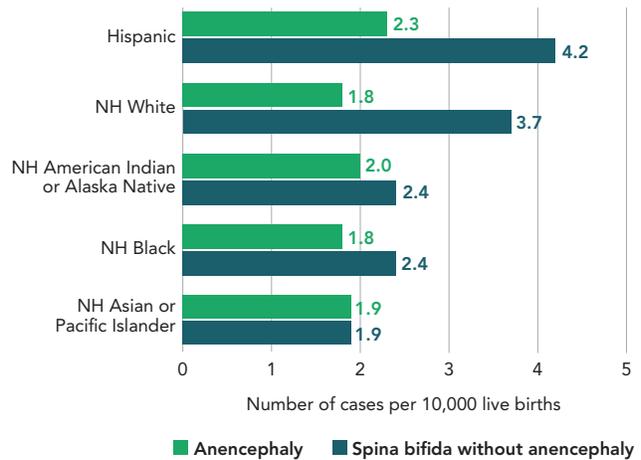
The latest available data on dietary intakes and birth defect rates run through 2020 and show persistent trends of lower folic acid intake and higher rates of NTDs in the Hispanic population compared to the non-Hispanic white population. Data from the National Health and Nutrition Examination Survey (NHANES) from 2017 through March 2020 show that Hispanic adults in the United States consume, on average, 251 µg per day of total folic acid (from both food and supplements), compared with an average intake of 306 µg per day among non-Hispanic White adults.³ This difference is driven by lower use of supplements among Hispanic adults (15% report getting folic acid from supplements) compared to non-Hispanic White adults (28%). Estimates of

the prevalence of major birth defects in the United States population from 2016 through 2020 found higher rates of both spina bifida and anencephaly among Hispanics (4.2 and 2.3 per 10,000 live births, respectively) compared to other racial/ethnic groups (1.9-3.7 and 1.8-2.0 per 10,000 live births, respectively).⁴

Average intake of folic acid from food and supplements by U.S. adults, by race/ethnicity (What We Eat In America, NHANES 2017-March 2020 Prepandemic)



Cases of anencephaly and spina bifida per 10,000 live births in the U.S., by race/ethnicity, 2016-2020



NH=Non-Hispanic

Sources: Figures developed by CSPI based on data from What We Eat in America (NHANES 2017-March 2020 Prepandemic) (left) and Stallings et al (2024) (right)

Factors other than folic acid intake may play a role in the elevated rate of NTDs among Hispanics, but this does not negate the need for access to folic acid fortified foods.

A qualitative study from 2024 found that religiosity plays a role in many Hispanic women’s decision-making during pregnancy⁵ (*i.e.*, religious beliefs may decrease their likelihood of terminating NTD-affected pregnancies), which could contribute to the elevated rate of NTDs among Hispanics. The authors call for “early and targeted educational interventions sensitive to the cultural needs of this population,” in addition to folic acid supplementation and fortification initiatives, to inform NTD prevention efforts in the U.S. Hispanic population.

Access to fortified corn masa flour appears to have improved, but fortified corn tortillas were still largely unavailable in early 2024.

A 2024 report by the Food Fortification Initiative (FFI) described data collected from stores in Texas and California between December 2023 and March 2024. Of the 76 stores researchers visited that sold corn masa flour, at least one product with folic acid-fortified corn masa flour was available at 72 (95%) of stores.⁶ However, folic acid was only present in 21 of the 45 unique corn masa flour products found in these stores (47%). Also, 63 of the stores they visited sold corn tortillas, but folic acid was only present in 1 of the 167 unique corn tortilla products they found (1%).

Certain manufacturing processes may be a barrier to corn tortilla fortification.

Regulations governing the addition of folic acid in corn masa products may differ depending on the process used. FFI also published a 2024 supply chain analysis of the U.S. corn masa market that revealed that in 2017-2018, only about half of the corn masa products in the United States were made from “dry” corn masa flour while the other half were made from the “wet” masa manufacturing process.⁷ In both cases, corn is first soaked in water and lime and then ground to produce corn

masa. In some cases, it is then dried, milled, and sifted to produce “dry” corn masa flour which is then reconstituted into dough to make tortillas and other products. In other cases, the wet masa is immediately extruded and cut into the shape of tortillas which are then baked or fried. Some producers use a mixture of both corn masa flour and wet masa. The process used determines how the ingredient is then named on the label. Products produced through the dry process typically include “corn masa flour” in their ingredients list, whereas products produced from wet masa typically include “corn,” “whole corn,” or “ground corn” and not “corn masa flour” in their ingredients. Corn tortillas may be produced through either the “wet” or “dry” process, but manufacturers using the wet process may be less inclined to add folic acid since current federal guidance only expressly allows for the addition of folic acid to “corn masa flour,” not other corn ingredients.⁸

| Policy Updates

The federal government has taken action to encourage voluntary corn masa fortification.

Federal government actions taken since CSPI published *Failure to Fortify* include:

- **March 2024:** The Department of Health and Human Services (HHS) hosted an industry roundtable to discuss strategies for increasing the availability of fortified corn masa products.⁹
- **April 2024:** The U.S. Department of Agriculture published final updates to the list of foods that can be purchased through the Supplemental Nutrition Program for Women, Infants and Children (WIC) which now includes “tortillas made with folic acid-fortified corn masa flour (once available in the marketplace).”^{10,11}
- **May 2024:** The FDA launched an initiative to support manufacturers who have questions about FDA regulations related to fortifying corn masa flour and other corn masa products with folic acid, with the goal of addressing any barriers to fortification.¹²

Companies are feeling the pressure.

CSPI’s *Failure to Fortify* report called out two companies—Gruma and Walmart—for helping to push for the 2016 FDA policy to allow folic acid fortification of corn masa products but failing to follow through by actually fortifying their products once the rule was in place. Gruma is a multinational corn masa flour and tortilla company with popular brands such as Maseca, Mission, and Guerrero; it is the largest corn masa flour producer in the United States, and its tortilla brands collectively capture about 41% of the U.S. tortilla market share.^{13,14} Walmart is the largest U.S. grocery retailer in the United States, capturing 21% of U.S. grocery market share,¹⁵ and sells corn masa flour and tortillas under the Great Value private-label brand. After engaging with CSPI, Gruma committed to fortifying its remaining corn masa flour products and to begin fortifying its core corn tortilla brands by 2024.¹⁶ Walmart did not respond to email inquiries from CSPI regarding corn masa fortification but participated in the 2024 HHS roundtable.

States are stepping in to make corn masa fortification mandatory.

Two states—California and Alabama—passed laws mandating folic acid fortification of certain corn masa products sold within their borders.^{17,18} California’s law took effect on January 1, 2026, and Alabama’s law takes effect on June 1, 2026.

Federal government officials under the new administration are spreading misinformation about the safety of folic acid that could undermine consumer confidence in fortification.

Unfortunately, misconceptions about folic acid have been circulating on the internet and have recently been amplified by officials at HHS and FDA. Some prominent claims include:¹⁹

- **People with MTHFR genetic mutations cannot process folic acid.** This is false. While people with certain *MTHFR* variants have a modestly reduced capacity to process folate, a systematic review and meta-analysis of studies examining the association of *MTHFR* mutations and blood folate concentrations found that, when getting the same amount of folic acid, people with *MTHFR* gene variants had a blood folate concentration only 8% to 16% lower than people with the typical *MTHFR* genotype.²⁰ According to the U.S. Centers for Disease Control and Prevention: “Common *MTHFR* variants, such as *MTHFR* C677T, are not a reason to avoid folic acid.”²¹
- **When folic acid is consumed by people who can’t process it as easily, it remains unmetabolized in their bloodstream and becomes toxic.** This is unsubstantiated. While unmetabolized folic acid (UMFA) is a real, well-studied phenomenon, and the vast majority (96%) of people consuming folic acid from fortified foods or supplements have UMFA in their blood, adverse health effects of UMFA have not been established.²²
- **Unmetabolized folic acid can lead to adverse effects ranging from reduced immune function to autism.** Claims about folic acid causing autism are extremely misleading. In general, maternal folic acid intake is associated with a *reduced* risk of autism spectrum disorders (ASD) in offspring.²³ Two studies have examined the association between higher concentrations of UMFA in cord blood or pregnant women’s plasma and the risk of ASD in their children.^{24,25} The studies had contradictory findings, where one found a positive association, and the other found no association. However, the authors of the former study acknowledged the limitations of their sample size and that this association could be spurious due to unknown confounders. Others have noted that no biological mechanism for an adverse effect of UMFA has been persuasively demonstrated, and the overall body of evidence does not suggest a serious harmful effect.²⁶

In December 2025, Robert F. Kennedy, Jr.—who became the Secretary of HHS earlier that year—publicly denounced California’s corn masa fortification law and elevated the false claim that folic acid poses a risk to people with *MTHFR* mutations.²⁷ Kennedy has not spoken publicly about federal efforts to encourage voluntary corn masa fortification and the FDA website encouraging corn masa fortification remains active, but the Secretary’s remarks suggest this may no longer be a priority at HHS and FDA.

Relatedly, in September 2025, FDA announced the forthcoming approval of a drug to treat a very rare genetic disease called cerebral folate deficiency (CFD), misleadingly characterizing the approval as an “Action to Make a Treatment Available for Autism Symptoms”²⁸ and claiming at a press briefing that the drug approval could benefit “hundreds of thousands of kids” with autism.²⁹ The drug (leucovorin) has now been approved to treat CFD, but not autism³⁰ (despite a lack of clinical trial evidence demonstrating efficacy for either).³¹ Leucovorin contains a form of folate called folinic acid that people with CFD can process (folic acid supplementation is contraindicated for people with CFD because it can exacerbate cerebrospinal fluid folate deficiency).³² Children with CFD present with developmental delays and behavioral abnormalities similar to some presentations of ASD. But there is no substantive evidence that the two are related.³³ By confusing and conflating CFD and ASD, FDA gave false hope to parents of children with severe ASD who later learned the drug was approved for CFD but not autism,³⁴ and contributed to the misinformation environment surrounding folate and autism.

The U.S. dietary supplement and laboratory developed test (LDT) industries remain poorly regulated, allowing companies to profit from the spread of misinformation about folic acid.

FDA lacks the will, resources, or authority to adequately regulate the dietary supplement and commercial LDT markets, so companies are free to profit by stoking consumer’s health fears and anxieties.^{35,36,37} Genetic testing services and dietary supplement companies are capitalizing on people’s fear surrounding the alleged risks associated with folic acid to sell unnecessary, expensive, and potentially harmful products.³⁸ Some companies are selling prenatal vitamins containing a form of folate called L-methylfolate, or 5-MTHF, instead of folic acid. Their marketing targets people with *MTHFR* genetic variants and claims they can only safely take 5-MTHF supplements, not ones with folic acid. But folic acid is the only form of folate shown to be effective at preventing NTDs in randomized clinical trials and is the safe and effective choice recommended regardless of a person’s genotype.³⁹

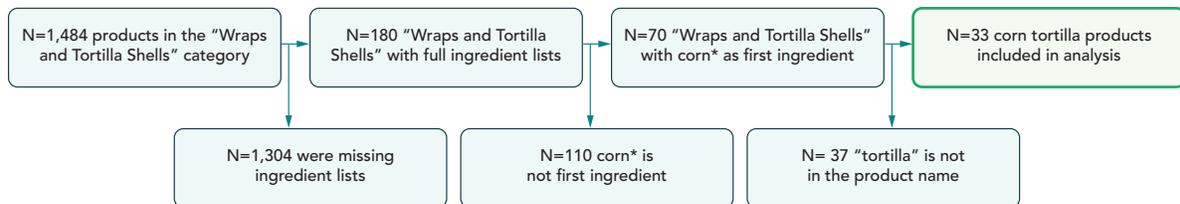
Progress in the Fortification of Corn Tortillas (CSPI Analysis)

In November 2025, CSPI conducted a follow-up study to reassess the availability of fortified corn tortillas in the United States. Our goal was to assess progress in the availability of corn tortillas since the *Failure to Fortify* report was published. We only analyzed pre-made corn tortilla products, not corn masa flour, because our earlier analysis found that major corn masa flour brands were already fortifying and the NielsenIQ Label Insight database contained only a single corn masa flour product from 2025.

Methods

Analysts at CSPI searched the NielsenIQ Label Insight database (a large online database with detailed label information for hundreds of thousands of food products sold in U.S. grocery stores) for all products in the Category “Wraps and Tortilla Shells” added to the database between January and October 2025 (N=1,484). We only included products that had full ingredients lists available, that had “tortilla” in their product name, and that listed corn in their first ingredient. After these exclusions, 33 products were suitable for analysis.

Inclusion and exclusion of corn tortilla products from 2025



*Corn includes: corn, corn meal, corn flour, corn masa, corn masa flour, ground corn, masa flour, corn bran, corn husks

Results

There were 33 corn tortilla products from 22 unique companies added to the NielsenIQ Label Insight database in 2025. Seven of these 33 products (21%) contained folic acid. By comparison, not of single one of the 476 corn tortilla products from 2018-2022 in our *Failure to Fortify* report were fortified. The seven fortified products included all four products in the sample from Gruma's Mission and Guerrero brands, both of the products in the sample from Walmart's Great Value brand, and one of two products in the sample from La Fiesta. The remaining 19 companies had one to three products in our sample, none of which contained folic acid.

► **ONE in FIVE**
corn tortilla products
contained folic acid in 2025
(compared to **zero** from 2018-2022)

In Table 1, we noted if a corn tortilla product from the 2025 Label Insight dataset was also included in the 2018-2022 *Failure to Fortify* corn tortilla dataset, which was derived from a different database (called Everything Food). Eleven of the companies represented in the 2025 Label Insight data were also among the 134 companies in our 2018-2022 Everything Food data. Two of those 11 companies (Gruma and Walmart) previously offered no fortified corn tortilla products and have since introduced multiple corn tortilla products with folic acid into the market. The other nine companies (Whole Foods, Food for Life, Giant Eagle, Goya, Hannaford, La Rosa, Masienda, Northgate Gonzalez Markets, and Wegmans) still did not appear to offer any fortified corn tortilla products between January-October 2025, based on the data available to us.

Notably, 11 of the 33 corn tortilla products in our sample listed "corn masa flour" as an ingredient (suggesting they were produced using the "dry" masa manufacturing process), while the others listed corn, ground corn, corn flour, or corn masa (suggesting they may have been produced using the "wet" masa manufacturing process). All seven of the fortified products were among the 11 that listed "corn masa flour."

In March 2026, we visited the company websites for the 19 companies that did not have any fortified corn tortillas in our 2025 sample to check if any of these companies now appear to be offering fortified products. Ingredients lists were available for corn tortilla products from 11 of these 19 companies, and only one of those 11 companies (La Banderita) appears to now be selling corn tortillas fortified with folic acid, according to its website.⁴⁰

Key Takeaways

There has been substantial progress in the availability of fortified corn tortillas in U.S. grocery stores since we assessed the marketplace in 2018-2022.

This progress appears to be mainly driven by the major companies Gruma and Walmart. Twenty-one percent of the individual corn tortilla products in our 2025 sample contained folic acid, but since this included products from some of the largest brands in the United States, the proportion of total U.S. corn tortilla sales that were fortified was likely much higher than 21%. Prior research from 2024 also confirms that fortified corn masa flour is now widely available. This transformation of the corn masa marketplace will hopefully be reflected in forthcoming national dietary intake data.

FDA should clarify that tortillas made using the "wet" masa manufacturing process may be fortified.

Our findings suggest that corn tortillas made using the "wet" masa manufacturing process are not yet being fortified with folic acid. This is likely because FDA's 2016 rule only allows for the addition of

folic acid to “corn masa flour,” not other corn ingredients. FDA should issue guidance clarifying that it will exercise enforcement discretion with respect to the addition of folic acid to corn masa products that list the ingredients “corn” or “ground corn” rather than “corn masa” or “corn masa flour” because they are made using the “wet” masa manufacturing process.

Corn masa fortification alone may not be sufficient to close the neural tube defect gap.

Increased access to preconception counseling and early, targeted, culturally sensitive education regarding NTDs and prenatal folic acid supplementation are needed alongside food fortification efforts to address the elevated rates of NTDs in the U.S. Hispanic population.

There is an urgent need to combat misinformation regarding folic acid.

False claims about alleged risks associated with folic acid are spreading like wildfire online and have been elevated by the country’s top health officials. Public health practitioners should use social media, community events, and educational materials to spread awareness about the benefits and safety of folic acid to build and restore trust in fortified foods.⁴¹ Doctors should be sure their pregnant patients understand why folic acid is the safe and effective choice to prevent NTDs. FDA should take enforcement action against companies making unsubstantiated claims in the marketing of genetic tests for *MTHFR* variants and in the labeling of prenatal vitamins that do not contain folic acid.

CSPI’s Failure to Fortify campaign is an example of a successful corporate engagement campaign.

The Failure to Fortify campaign successfully elicited voluntary action from a major corporation to improve the healthfulness of the U.S. food supply. CSPI secured a commitment from Gruma to increase the availability of fortified corn masa products. Gruma not only followed through on its commitment, but also paved the way for additional companies to offer fortified corn masa products. The strategies of collecting and publishing data and publicly calling out companies for their lack of follow-through on past commitments and then reassessing which companies had complied, are part of what made this initiative so successful. These strategies can be replicated for future campaigns aimed at convincing companies to change their ingredients or production practices.

Table 1. Percentage of corn tortillas containing folic acid in 2025, by company, compared to 2018-2022 data in the 2023 Failure to Fortify report

RETAIL INDUSTRY TERM Company	2025*			2018-2022**		
	N with Folic Acid	Total N	% with Folic Acid	N with Folic Acid	Total N	% with Folic Acid
Gruma (includes Guerrero and Mission)	4	4	100%	0	125	0%
Great Value (Walmart)	2	2	100%	0	4	0%
La Fiesta	1	2	50%	NA	NA	NA
Whole Foods	0	1	0%	0	2	0%
Food for Life	0	1	0%	0	1	0%
Giant Eagle	0	1	0%	0	1	0%
Goya	0	1	0%	0	2	0%
Hannaford	0	2	0%	0	3	0%
La Rosa	0	2	0%	0	1	0%
Masienda	0	1	0%	0	1	0%
Northgate Gonzalez Markets	0	3	0%	0	6	0%
Wegmans	0	1	0%	0	2	0%
El Rio Grande Latin Market	0	1	0%	NA	NA	NA
Food Lion	0	1	0%	NA	NA	NA
La Banderita	0	2	0%	NA	NA	NA
Las Gemelas	0	1	0%	NA	NA	NA
Paloma	0	1	0%	NA	NA	NA
Perla	0	1	0%	NA	NA	NA
Tio Santi	0	2	0%	NA	NA	NA
Tortilla Factory	0	1	0%	NA	NA	NA
Tortilleria Chinantla	0	1	0%	NA	NA	NA
Tortilleria El Rey Inc.	0	1	0%	NA	NA	NA

NA=no corn tortilla products from that company were in our sample from 2018-2022

*Data Source: NielsenIQ Label Insight database

**Data Source: Everything Food database

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