

Karla Meneses.
Dietitian-nutritionist specializing in diabetes.
PhD in Anthropology. Member of the Lifestyle and Women and Diabetes Working Groups of the SED.



Rocío Maraver.
Dietitian-nutritionist specializing in diabetes.
Master's degree in Foundations of Care and Education for People With Diabetes. Member of the Lifestyle and Women and Diabetes Working Groups of the SED.



Corn: what should be considered when managing it while living with diabetes?

Corn (Zea mays), together with wheat and rice, is one of the most widely consumed cereals. It has enriched the human diet for more than 10,000 years and is now consumed in almost every region of the world (1, 2). It is used in numerous dishes across different cultures and culinary traditions. In Spain, it is commonly eaten on the cob, as canned sweet corn, or as an ingredient in salads, whereas in Latin America it forms the basis of such popular foods as tortillas, arepas, tamales, and polenta.

Despite its widespread consumption, people with diabetes often wonder whether corn may negatively affect glycemic management. The answer is that corn can be part of a healthy diet for people with diabetes, provided that its carbohydrate content is taken into consideration and it is consumed in appropriate amounts as part of a balanced dietary pattern.

A LITTLE BIT OF HISTORY

Corn cultivation originated in Central America, particularly in Mexico. The oldest archaeological remains, dating back approximately 7,000 years, were found in the Tehuacán Valley (Mexico), although other secondary centers of origin may have existed elsewhere in the Americas. Corn was an essential food in the Maya and Aztec civilizations and played a central role in their religious beliefs, festivities, and nutrition; both peoples even claimed that flesh and blood were made of corn. The survival and spread of corn depended on those who collected seeds for replanting. At the end of the 15th century, the grain reached Europe through Spain and from there spread throughout the Mediterranean and, later, across Europe. Today, it grows in environments ranging from sea level to areas more than 4,000 meters above sea level (1).

IS CORN A CEREAL, VEGETABLE, OR FRUIT?

The answer is that it can be all three, depending on how and when it is consumed (2, 3). Corn is an herbaceous plant belonging to the grass family. The kernel itself is the seed of a cereal crop and is therefore considered a cereal. Whole corn, whether on the cob or as kernels, when consumed as a side dish or in salads, is mainly classified as a vegetable. Because it is an edible substance that develops from the seed of a plant, it also meets the botanical definition of a fruit. For dietary planning purposes, corn on the cob or canned corn behaves as a starchy vegetable, together with foods such as peas, sweet potatoes, and squash. The American Diabetes Association (ADA) includes corn among healthy carbohydrate foods that should occupy approximately one-quarter of the plate at each meal (4). For people with diabetes, the key is not to eliminate corn, but to choose the appropriate form and portion. A small ear of corn contains approximately 14 g of carbohydrates (5), making it a manageable option within the day's total carbohydrate intake. In addition, the fiber in the corn pericarp acts as a barrier that slows glucose absorption, meaning that whole kernels have a more fa-

» FOR PEOPLE WITH DIABETES, WHOLE OR CANNED CORN IS A WAY OF CONSUMING CARBOHYDRATES WITHIN A HEALTHY DIETARY PATTERN. WHAT SHOULD BE LIMITED IS NOT CORN ITSELF, BUT ITS ULTRA-PROCESSED DERIVATIVES

PARAMETER (PER 100 G)	CANNED CORN (DRAINED)	CORN ON THE COB (RAW/FROZEN)
Energy (kcal)	73	104
Carbohydrates (g)	10.7	19.5
Protein (g)	2.9	3.3
Total fat (g)	1.2	0.78
Fiber (g)	3.9	2.8
Magnesium (mg)	23	32
Potassium (mg)	220	294
Folate (µg)	8	40
Vitamin A (retinol equivalents, µg)	18.3	12

TABLE 1. Source: Fundación Española de la Nutrición, 2013. (3).

CORN CULTIVATION ORIGINATED IN CENTRAL AMERICA, PARTICULARLY IN MEXICO. THE OLDEST ARCHAEOLOGICAL REMAINS, DATING BACK APPROXIMATELY 7,000 YEARS, WERE FOUND IN THE TEHUACÁN VALLEY

» vorable effect on glycemia than refined corn products.

NUTRITIONAL COMPOSITION

The nutritional composition of corn varies depending on how it is consumed, as shown in ***Table 1***.

HOW DOES CORN AFFECT BLOOD GLUCOSE?

Corn mainly contains complex carbohydrates in the form of starch. As with other carbohydrate-rich foods, these carbohydrates are converted into glucose during digestion and enter the bloodstream. Therefore, corn should be included in the total carbohydrate content of the meal, particularly in people who count carbohydrates or adjust their insulin doses according to intake. However, beyond carbohydrate counting, whole corn also provides fiber, vitamins, and minerals that improve its nutritional profile. Its fiber content helps slow glucose absorption, promoting a more gradual glycemic response than that observed with many refined or ultra-processed products.

IS CORN RECOMMENDED FOR PEOPLE WITH DIABETES?

Leading scientific societies recommend prioritizing carbohydrate sources rich in fiber, vitamins, and minerals, such as starchy vegetables, legumes, fruits, and whole grains.[6] In this context, corn can be part of a healthy diet. As with any carbohydrate-containing food, the key lies in the amount consumed and the composition of the overall meal. Combining corn with vegetables, protein, and healthy fats generally promotes a more stable glycemic response.

NOT ALL FORMS OF CORN ARE THE SAME

From a nutritional standpoint, it is important to distinguish between whole or minimally processed corn and ultra-processed products made from this cereal. The more advisable options include:

- Corn on the cob, boiled, cooked, or grilled.
- Canned corn.
- Frozen corn.
- Whole-grain corn flour.
- Corn tortillas made with few ingredients.

By contrast, regular consumption of the following should be limited:

- Fried corn snacks.
- Sugar-sweetened cereals.
- Industrial pastries.
- Products made with high-fructose corn syrup.
- Ultra-processed snacks made from refined corn flour.

In these cases, the problem is not corn itself, but rather the high content of free sugars, nutritionally poor-quality fats, and sodium.

BEYOND CARBOHYDRATES

Corn provides several nutrients of interest within a balanced diet:

- Dietary fiber.
- Magnesium.
- Potassium.
- Folate.
- Thiamine (vitamin B1).
- Lutein and zeaxanthin in yellow varieties.

The latter are carotenoids involved in protecting the retina and have been associated with a lower risk of age-related macular degeneration.[3] In addition, corn is naturally gluten-free and can therefore be included in the diet of people with celiac disease. However, for processed products, labeling should be checked to ensure the absence of cross-contamination with gluten-containing cereals.

CORN-BASED PRODUCTS: HOW MANY CARBOHYDRATES DO THEY PROVIDE?

One of the most common questions in clinical practice is how to count the car- »

» bohydrates in dishes made from corn. Although the amounts may vary depending on the recipe and portion size, the following table can serve as a practical guide. Of note, these figures are approximate. In homemade preparations, portion size and added ingredients can significantly modify the final carbohydrate content. Many traditional corn-based dishes are commonly consumed in Latin America and among Latin American populations living in Spain.

FOOD	APPROXIMATE PORTION	APPROXIMATE CARBOHYDRATES
Corn tortilla	1 piece (30 g)	13-15 g
Baked corn tostadas	2 pieces	15 g
Plain popcorn	3 cups	15 g
Precooked corn flour for arepas	30 g dry	15 g
Small arepa	1 piece (50-60 g)	22-30 g
Medium tamal	1 medium piece (100-120 g)	25-35 g

Source: Sistema Mexicano de Alimentos Equivalentes (SMAE).

KEY POINTS

- Corn is not contraindicated in people with diabetes.
- It should be counted as a source of carbohydrates.
- Its fiber content contributes to more gradual glucose absorption.
- Whole corn, corn on the cob, and canned sweet corn are nutritionally valuable options.
- Ultra-processed corn-based products should be consumed only occasionally.
- The glycemic impact will depend both on the amount consumed and on the other foods included in the meal. **D**

CONCLUSIONS

Corn can be part of a healthy diet for people with diabetes. Rather than eliminating it, it is useful to understand its carbohydrate content and learn how to incorporate it into balanced meals. Whether eaten as corn on the cob, tortillas, arepas, or tamales, the key remains the same: adjust portion sizes, prioritize less processed forms, and combine corn with vegetables, protein, and healthy fats to support better glycemic management.

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