

Experts propose evidence-based scoring system to assess the overall healthfulness of carb-containing foods

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The dietary value of carbohydrate foods (CF) has come under increased scrutiny in recent years. While so-called good-carb/bad-carb

designations are hotly contested, standardized methods for assessing CF health quality currently do not exist. In a paper recently published in *Nutrients*, the Quality Carbohydrate Coalition-Scientific Advisory Council (QCC-SAC) proposes a novel, innovative approach to quantifying CF quality: the Carbohydrate Food Quality Score (CFQS). Representing a significant step forward in the evolution of CF analysis, the new CFQS incorporates a food's fiber-to-carbohydrate and free sugar-to-carbohydrate ratios, as previous metrics have done, in addition to evaluating its sodium, potassium and (as applicable) whole grain content, making the index better reflect the nutritional contribution of the entire CF.

"While long-standing evidence clearly establishes that carbohydrate-containing foods are essential to building healthy dietary patterns, people need better tools to identify higher quality choices that can be balanced in a healthy dietary pattern," said Joanne Slavin, Ph.D., RD, University of Minnesota. "While fiber and [sugar content](#) have been the focus in previously proposed systems, and they're important pieces of the puzzle, there needs to be more nuance in our recommendations given the breadth of foods and food groups that fall into the carb category." Slavin is a member of the QCC-SAC, which was formed by Potatoes USA and other commodity group stakeholders that comprise the Coalition.

To provide a more complete appraisal of CF quality—and to reflect the most up-to-date dietary guidance—the new carbohydrate quality scoring system is the first of its kind to include an assessment of sodium, potassium and whole grain content in addition to sugar and fiber. These three components were added because CFs are predominant dietary sources of these nutrients. Sodium, like sugar, is consumed at levels above those recommended in current dietary guidance, and potassium and whole grains, like dietary fiber, are consumed at levels well below those recommended. By including all these components, this approach not only aligns with the recommendations of the 2020-2025 Dietary

Guidelines for Americans (DGA), but also the World Health Organization, and roughly half of the food-based [dietary guidelines](#) from around the world.

"Other systems to define carb quality exist, and many rely heavily on the glycemic index; however, research increasingly shows GI has far too much inter-individual variability to offer meaningful real-world utility," noted QCC-SAC member Siddhartha Angadi, Ph.D., University of Virginia. "A truly effective measure of carbohydrate food quality is one that is both accurate and practical. By capturing a broader set of dietary parameters with relevance to public health, the CFQS aims to offer relevant, real-world recommendations to potentially improve nutrient intake and public health."

The new system builds upon previously validated measures of CF quality, namely ratios of carbohydrate to fiber (i.e., at least one gram of fiber for every 10 grams of carbohydrate) and carbohydrate to free sugar (i.e., less than one gram of free sugar for every 10 grams of carbohydrate). The addition of potassium, sodium and whole grains to the algorithm was further validated by demonstrating a high correlation with two other scientifically substantiated nutrient profiling systems: the Nutrient Rich Food (NRF9.3) index, an algorithm for assessing a food's nutrient density, and Nutri-Score, a European model used to assess foods' nutritional value.

"The high degree of agreement between the CFQS models and these other established metrics further support the efficacy of our approach," explained Adam Drewnowski, Ph.D., University of Washington, a QCC-SAC member and creator of the NRF9.3 index. "We can say with great confidence that the CFQS is assessing the quality of carbohydrate foods in an accurate and meaningful way."

The Carbohydrate Food Quality Score: How it works

So far, two models have been developed using the new scoring system. One model, known as the CFQS-4, assigns a score of zero to four points to all carbohydrate-containing foods, which in this study were defined as solid foods with $\geq 40\%$ energy from carbohydrate (as measured by 100g dry weight). The more advanced model, known as the CFQS-5, assigns a score of zero to five points, in which grain foods can score an extra point if their whole-grain content is $\geq 25\%$, which was selected as the cutoff value based on previous studies and current U.S. front-of-pack regulations.

In the CFQS-4 model:

- 1 point is awarded if fiber is $\geq 10\text{g}/100\text{g}$ carb portion
- 1 point if free sugar is $300\text{mg}/100\text{g}$ dry weight

In the CFQS-5 model for grain-based foods, one additional point is awarded for whole grain content:

- 1 additional point if whole grains $\geq 25\text{g}/100\text{g}$ dry weight

"This system is already much more comprehensive than previously published metrics, but it's also designed to continue evolving with the science," said Drewnowski. "As new data become available, the CFQS models can expand to reflect other measures of [carbohydrate](#) quality, such as the [food](#)'s prebiotic or polyphenol composition, degree of processing or aspects of fortification or enrichment."

This report builds on an earlier QCC-SAC publication from July 2021, which reviewed the current state of CF quality metrics and established initial guiding principles for developing a new scoring metric for determining CF quality. The latest report advances this work by introducing a more broadly applicable Carbohydrate Food Quality Score and comparing it to other measures of nutrient density.

As a next step, the researchers are preparing a paper demonstrating how the new scoring system can be applied to a variety of eating patterns.

"We need tools that help people apply nutrition science to an array of cultural dietary traditions, socioeconomic contexts and personal needs and preferences," added QCC-SAC member Judith Rodriguez, Ph.D., RD, University of North Florida. "That's the ultimate aim of this work: to develop a metric that can be applied to build healthy dietary patterns for everyone."

More information: Adam Drewnowski et al, A New Carbohydrate Food Quality Scoring System to Reflect Dietary Guidelines: An Expert Panel Report, *Nutrients* (2022). [DOI: 10.3390/nu14071485](https://doi.org/10.3390/nu14071485)

Kevin B. Comerford et al, Toward an Evidence-Based Definition and Classification of Carbohydrate Food Quality: An Expert Panel Report, *Nutrients* (2021). [DOI: 10.3390/nu13082667](https://doi.org/10.3390/nu13082667)

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