



Trust your Taste Buds

By

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Photography

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Want to know if your favorite fruits and veggies are packing more nutritional bang for your buck?

You already have a way to tell: your palate.

When beginning to tweak their diet for performance, many athletes focus on the macronutrients: protein, carbohydrate and fat. Rotate the sources of these macronutrients, and you get more micronutrients: vitamins, minerals, enzymes, antioxidants, and trace minerals essential for optimal health and proper functioning of all the body's systems.

Eat from a wider variety of foods and you can consume substantial amounts of micronutrients. But consume "superfoods" rich in micronutrients—such as kale, watercress, blueberries and strawberries—and you're doing even better.

There are many **nutrition rating systems** that attempt to help the consumer make informed choices about whole foods by

ranking fruits and vegetables according to their macronutrient and micronutrient content. Some retailers have adopted food-ranking systems such as **NuVAL**, which assesses "30-plus nutrients and nutrition factors" and assigns a product a score between one and 100.

To steer their customers toward nutrient-dense choices, Whole Foods Market Inc. adopted the **Aggregate Nutrient Density Index (ANDI)**. The ANDI system ranks whole foods based on the quantity of 23 micronutrients per calorie and assigns the food a number on a scale of one to 1,000. According to the system's internal metrics, the higher the ANDI score, the more nutrient dense the food.

A low ANDI score may be somewhat misleading, however, as it focuses on the

number of micronutrients per calorie of food energy: a very low-calorie food such as bean sprouts will score relatively high in terms of nutrients per calorie. Kale, mustard greens, collard greens and watercress share an ANDI score of 1,000, while a cucumber rates only 87.

Likewise, the majority of nuts, seeds, fish and meats are well below an ANDI score of 100 due to their relatively high fat and calorie content. Rating systems are helpful in identifying foods of higher nutritional value but tend to exclude certain variables in favor of others. Rating systems, while a good start, don't account for variability among crops and produce.

Numerous other factors affect the nutritional quality of whole foods, and this value **is in decline** in many commercially available fruits



and vegetables, whether through breeding, soil degradation or intensive farming practices. Transportation and storage can also result in a **30-to-50-percent nutrient loss** in produce during the journey from farm to table.

Vegetables or fruits of the same variety grown under different practices and conditions of soil, water content and climate can exhibit a broad variation in sugar, mineral and protein content, as well as specific density. As a food's nutrient content varies, so does its nutritional benefit.

Refractometers have long been used by vintners and citrus growers to measure the sugar content of their produce in degrees Brix. Brix values show the total dissolved solids in a fruit or vegetable, providing a quantitative reading for nutrient density.

Despite a lack of hard scientific evidence to support Brix measurement, a great deal of anecdotal evidence exists from over a century of use—enough to strongly suggest a relationship between high Brix values and nutrient density.

Natural sugar molecules are much bigger than other dissolved molecules and have a bigger contribution to the Brix score. It's assumed, however, that if you've got a lot of natural sugars in a fruit or vegetable, you've got a lot of micronutrients, too.

The score is never just sugar alone; it will contain a corresponding amount of other nutrients. That's what the growers who use this tool count on. The second-greatest contribution to a Brix value is made by

minerals such as calcium, magnesium, phosphorus, copper and so on.

A Brix score or value is a single measure of a group of different factors, but it's a means of evaluation that may get lost in a sea of rating systems.

More than 10,000 taste buds in your mouth are each equipped with 100 to 150 taste cells that send messages to your brain about the chemicals in food as they dissolve in your saliva. The relative density of taste buds diminishes with age, but they are powerful things. Taste buds have the capacity of bring to mind long-forgotten memories.

Studies on flavor and taste buds tend to focus on the capacity to distinguish between sweet and bitter and our ability to avoid substances that harm us. We consume tiny amounts of things—such as horseradish, for example—that are good for us in small doses but lethal in large ones. The human tendency toward a preference for sweet things has been noticed **before birth**.

But can you tell if a food is more nutrient dense by tasting it? We can obviously discern which things are really awful for us, such as sour milk, but can we distinguish nutrient quality between two things of the same type?

Oranges, for example, are considered a “superfood” for their nutrient density, but not all oranges come from the same grove. In the absence of a handy ANDI chart or



some other tool, can a person discern a food with superior nutrient value?

We thought we might test this idea.

As a whole food that ranks in the top 10 ANDI scores for fruit, oranges are the highest-value produce crop internationally, and they happened to be in season. Using 10 different navel oranges, from organic and non-organic growers and a variety of grocery stores and farmers' markets, we took samples to measure the degrees Brix in the juice of each fruit with a

hand-held refractometer, commonly available for about US\$25.

According to the [Refractive Index of Crop Juices](#), oranges score roughly within the following Brix values: poor (6), average (10), good (16) and excellent (20).

Offering 19 CrossFit Inc. employees four different orange samples, we asked them to assign a measure of quality for each sample—poor, average, good or excellent—by focusing on “superior taste.”

All orange samples scored between average and good with reference to the Refractive Index, covering a range of values between 10.5 and 15.5. Our testers were able to distinguish the higher-Brix oranges despite the limited range of values because the values corresponded with better taste. Significantly, our testers were able to accurately rate the oranges from poor to excellent, even within that narrowed range. To put it simply, the more nutrient-dense oranges had superior taste. ■

Video: [Trust Your Taste Buds](#) by E.M. Burton, Adam Cline, Steve Gillanders and Dave Leys.

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