Tea is my new drink of choice—and as a habitual coffee drinker, that is saying a lot. Many people have inquired as to what inspired the change, and like many others who are now making tea their preferred beverage, I was intrigued by the health benefit claims that tea boasts. From weight loss and heart health to improvements in immunity, more and more research reveals that these powerful leaves contain the secrets to increased health and vitality.

Tea can offer the same energy boosting power as a cup of coffee but with the added benefit of antioxidant power.
Image Source: Flickr user Gary Stevens

Surprisingly, the color of tea can tell us a lot about the potential found within this choice beverage. Tea color benefits are raising awareness in today's health food industry and many people are flocking to the stores to stock up in hopes of improving their overall health. Hidden within the broad spectrum of tea colors are clues that unlock its nutritional value, and top tea producers are using this evidence to increase the value and marketability of their products. The more we learn about how color impacts quality and nutritional value, the more emphasis is placed instrumental analysis of these color qualities.

Understanding the Color Benefits of Tea

Tea color varies from cup to cup, but when classifying tea varieties there are three basic color varieties: black, green, or red. These distinct color variations help determine flavor, origin, price and specific health benefits, so understanding and classifying these choices accurately plays an important role in tea production.

The color of tea is relative to many factors such as flavor, origin, and related health benefits.
Image Source: Flickr user Akuppa John Wigham

Black tea varieties are developed when green tea leaves are exposed to highly oxygenated moist air as they undergo the drying process. When leaves turn dark-brown to black in color, caffeine levels rise making this variety a popular alternative for coffee drinkers who are looking for an added boost from their beverage.[1] Color technology has also revealed changes in polyphenols levels, the antioxidant powerhouse in black tea, which can then be quantified during processing. As leaves undergo the color-changing process, spectrophotometric analysis can accurately measure the increase in this desirable compound. This is significant, since the added benefit of polyphenols have been linked to the decreased risk in heart disease and cancer. The ability to quantify antioxidant levels contributes to yet another selling point in this variety.

Green teas also boast strong antioxidant power in the form of catechin[2], which has been known to support similar immune boosting qualities without the added caffeine. Many studies have also link catechin with an increase in fat-burning ability, making green tea a popular choice as part of weight

loss regimens for many individuals. **UV-spectrophotometry** offers the ability to measure catechin and quantify this **powerful antioxidant for dietary supplement use** as well.

Red tea is also very high in antioxidants, but is completely caffeine free. Similar to the polyphenol in black teas and catechin in green, red tea boasts quercetin, which is the powerhouse of the group.[3] Chock full of antioxidant power, quercetin is known to benefit the heart and circulatory system, reduce the risk for certain types of cancers, and increase the body's anti-inflammatory defense systems. With a beautiful red hue, pleasing aroma, and pleasant taste, red teas are quickly becoming the preferred blend among tea connoisseurs.

The Importance of Spectral Technology in Tea Color Analysis

Although variations in tea color may appear similar to the naked eye, a closer look can determine a lot about flavor, quality and nutritional value. That is where spectrophotometry steps in to unlock the secrets. Spectral technology can measure changes in absorption and optical density in order to quantify antioxidant levels of various chemical compounds found in tea. This technology has not only opened the door to new health benefit claims in tea beverage varieties, but the extraction of these powerful antioxidants has led to the development of **new concentrated dietary supplement use**. The ability to measure these compounds has forged a new path in tea production and manufacturing.

Tealeaves contain powerful antioxidants that can be measured and extracted to unlock powerful health benefits.
Image Source: Flickr user Partha Sarathi Sahana

Spectrophotometric technology does more than just stretch the boundaries of nutritional science. Many tea industry leaders rely on **color analysis for consistency** in their commercial brand products as well. Color uniformity plays and important role in marketability and consumer choice. That is why spectral technology is commonly used throughout the many stages of tea production. From raw tea leaf and processing analysis to the color consistency of the final product, spectrophotometers use real-time measurement capabilities in improve color outcomes at every stage of tea development.

Versatility in Color Measurement Tools

When upgrading or introducing new color analysis instrumentation into your production process, one of the most important factors to consider is product versatility. Many of today's spectrophotometers offer features that are designed for specific industry use, but knowing what options are best for your application can be challenging. At HunterLab, we design our products to meet industry standards and work together with our clients to find the right tools for their needs. Selecting the right tool is only the first step to making the most of your color measurement tool, which is why we offer continual support to help our customers utilize their instrumentation to its full potential. To learn more about the color analysis options available in tea production and the versatility of these products for numerous beverage products, please **contact us** today.

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2. "Nutrition and Health Info Sheet for Health Professionals," October 2008, http://nutrition.ucdavis.edu/content/infosheets/fact-pro-catechin.pdf
3. "Red tea: Even better for you than green tea?", March 2012, http://www.foxnews.com/health/2012/03/27/red-tea-even-better-for-than-green-tea.html