Hibiscus
An ancient flower blossoms into a valued ingredient.

By Terry R. Lack, Teawolf

For centuries, hibiscus grew along the shores of the Nile River in nutrient-rich sediments. The lush and beautiful yellow and red flowers would drop from the 7-8 ft-tall bush, leaving behind small, swollen, bean-like, cup-like structures known as calyces. These calyces were gathered and then sun-dried, producing hard, woody, crimson-colored leaves. It was common practice to prepare a water-based hibiscus infusion and apply it topically to reduce inflammation and pain for those suffering from sore muscles and swollen joints. While history suggests that the ancient Egyptians who lived along the Nile River were best known for building monuments and complex stone structures, hibiscus may have been a far more reaching and indelible contribution to our world.

The Sabdariffa Variety
There are over 300 species of hibiscus, with the sabdariffa variety by far the most important for food and beverage application. Hibiscus sabdariffa is known throughout many cultures by many other names, such as Florida Cranberry, Roselle, Sour Tea (English), Jamaica or Indian Sorrel, Flor de Jamaica (Spanish), Vinuela (Panamanian Spanish), Oselle de Guinée (French), Soboro and (Nigerian), and Khatkale (Arabic). Hibiscus has become an accepted and expected part of local diets in many parts of the world. Today it continues to be a popular ingredient because of its distinctly tart flavor and nutritional value.

When sun-dried hibiscus calyces are milled into a “tea cut” size, they are used as herbal tea or as part of an herbal blend. A trip down the tea aisle at any local market will demonstrate the extensive use of hibiscus in many of the popular tea blends, adding color and tart flavor to otherwise common teas.

The rise in popularity of hibiscus has been an interesting phenomenon. While hibiscus is commonplace in Mexico, the Middle East, and Asia, it has taken many years for this botanical to gain attention in North America, where home gardeners now proudly exhibit their large hibiscus floral displays, and Hawaiian Island travelers are drenched in the colorful hibiscus lei grown on the islands. But these varieties, while related to Hibiscus sabdariffa, do not produce the large calyces and are inedible.

Raw Material Sourcing
Hibiscus as an ingredient has been slow to develop in North America, due to availability. Finding a reliable and quality-consistent supply of clean, dried calyces can be difficult because hibiscus is predominantly grown and harvested in countries with political unrest and challenging export practices and restrictions. Sudan, Nigeria, Thailand, India, Senegal and smaller, tropical African nations have had some success in exporting hibiscus, but their government restrictions hamper free trade. Inconsistencies in quality, cleanliness, and food safety also plague the industry. Flavor houses and importers have not invested in opportunities to use more readily available and similar flavors to hibiscus.

Chinese exporters have had some success, and Mexico has had ongoing supply relationships with both Africa and China. Mexico has been exporting Jamaica blends, in particular, to the United States for many years for use in tea and herbal blends.

Hibiscus has played a major role in hibiscus development, too, and was an early player in manufacturing hibiscus extracts for food application. Germany, like many other countries, has used Sudanese calyces as the select crop of choice. An intense burgundy color in conjunction with cranberry-like flavor and a clean-tasting acid profile makes this hibiscus the preferred choice for commodity buyers throughout the world.

Superfruits
Cranberries are commonplace throughout North America. Their bright red color and distinctive acidic flavor is wildly popular in many food products. Recently, the link between consumption of cranberry juices and the reduction of urinary tract infections (UTIs) has become popular belief. Cranberry growers have supported this notion with convincing scientific studies, including some evidence that the consumption of cranberries may also have a positive effect on hypertension. Other highly colored fruits such as pomegranate, cherries, blueberries, acai, and red grape are all considered “superfruits” based on polyphenol content and high ORAC values. Similarly, hibiscus is a botanical herb with very high ORAC values and a polyphenol content that would be equal to and, in many cases, exceed reported values from superfruits. Research will continue to explore and isolate the bioactive compounds found in hibiscus so that manufacturers can take full advantage of its many nutritional properties.

Potential Health Benefits
Several scientific studies demonstrate the health benefits of consuming beverages
containing hibiscus. Naturex (Avignon, France) conducted an investigation in women suffering from UTIs. In the double-blinded, placebo-controlled study, the company was able to show a 77% decrease in infection rates using its UTI Rose product containing *Hibiscus sabdariffa* extract. Naturex concluded that the flavonoids and proanthocyanidins in hibiscus exerted antimicrobial activity against bacteria, thus preventing bacteria from adhering to the bladder wall.

A 2009 study in the *Journal of Human Hypertension* compared the effects of black tea and hibiscus tea on blood pressure in type II diabetics. A significant positive effect of hibiscus tea was observed, and it provided further clues to the antihypertensive effects of hibiscus. Diane McKay, a scientist at Tufts University, is known for her clinical studies showing a link between consuming water extracts of hibiscus (hibiscus tea) and lowering blood pressure. Her findings show that volunteers who drank three cups of hibiscus tea/daily had a 7.2-point drop in systolic blood pressure compared to a 1.3-point drop for volunteers who drank a placebo beverage. Drinking hibiscus tea in this quantity had no unwanted side effects.

**Natural Color**

Natural colors, by their very nature, tend to have limited stability towards heat and light oxidation, depending on the chemical environment and processing conditions. But the high concentration of anthocyanins in hibiscus extracts, coupled with a low pH food environment (<3.0), can provide good to excellent color stability and long shelf life. With an increase in pH in the 4–6 range, the intense burgundy color becomes considerably lighter with fading to nearly colorless values at a pH of 6 or above. Other factors such as concentration of ascorbic acid, presence of metal ions, heat and turbidity can, however, impact the rate of color loss. Based on actual field experiments with hibiscus extracts in beverage systems, the higher concentration of citric acid does induce more color stability, which has shown to reduce overall color degradation. The anthocyanins responsible for the intense burgundy color are delphinidin-3-sambubioside (hibiscin) and cyanidin-3-sambubioside.

FDA does not consider any color additive (not colorants) as being “natural” as defined in 21 CFR Part 74. If hibiscus is used for coloring in anything other than hibiscus, then it must be labeled as such—i.e. *hibiscus extract (for color).* Manufacturers can claim that their product is free of artificial (synthetic) color additive when using hibiscus.

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