



Noni

Exploring Exotic Antioxidant Superfruits

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In a global quest for novel sources of nutrients, health-promoting phytochemicals, and exotic tastes or colorants, the functional food industry is searching for exceptional plants in geographical niches like the Asian or South American tropics and mainland China.

Among exotic species in development for new food or beverage products and nutritional additives are three berries—açai, sea buckthorn and wolfberry—and three tree fruits—noni, mangosteen and pomegranate.

As potential functional dietary agents, these fruits have at least four characteristics in common: 1) each is being developed primarily as a juice product; 2) each is already recognized as a significant source of antioxidant phytochemicals; 3) in ongoing laboratory research, each is revealing evidence for anti-disease properties; 4) no uses or products from any have conclusively demonstrated efficacy against human disease. Consequently, none has received scientific validation or regulatory approval for health claim statements.

Noni juice did receive approval status in late 2005 as a “novel food” in Europe. By contrast, the same year, France issued warnings that consumption of 30 ml/day of noni juice could increase the risk of contracting hepatitis,¹ a finding now disputed.²

This brief review will summarize available nutritional information for these fruits, including a look at peer-reviewed research, and provide a numerical measure of antioxidant strength—the oxygen radical absorbance capacity, ORAC. Data for ORAC are presented as micromoles (μmol) of Trolox equivalents (TE) per 100 grams.

Açai

A palm tree native to tropical Central and South America, açai (*Euterpe oleracea* Mart.) is a relatively new fruit (commercial since 2000) to the current global market for functional foods. Long used

among Brazilian Amazon peasants as a staple mixed with tapioca or sugar, açai gained popularity in the United States first as a juice “energy” drink and additive to smoothies. Now, its pulp powder is being applied in a variety of other consumer products and has great potential for expansion into numerous food and beverage products. Growing in panicles of several

hundred individual fruits per tree, the açai berry is dark blue and similar in size to a grape containing a large seed.

There is only limited nutrient information available. Freeze-dried pulp powder contains 9-percent protein, 33-percent carbohydrates, 12-percent dietary fiber, and 50-percent fats comprised of 38-percent mono- and polyunsaturated fats. Its antioxidant compounds include anthocyanins (cyanidin-3-glucoside, cyanidin-3-rutinoside), procyanidins, protocatechuic acid, epicatechin, gallic acid and vitamin C. At an ORAC of 34,000 μmol TE per 100 g in freeze-dried pulp powder, it appears to be among the most antioxidant-rich edible plants.

Clinical studies are scarce, primarily limited to chemical isolation of phenolic antioxidants. There was a report with evidence the berry can inhibit leukemia cell development in vitro.³ Its potential health benefits have been unexamined at present; however, demonstration of rich phenolic content indicates potential benefits for all diseases that are purportedly also affected by blueberries and black raspberries, such as cancer, cardiovascular diseases, chronic inflammation, cognitive disorders, aging and age-related visual decline and bacterial infections, among others.

Açai’s delicious taste, sometimes described as the marriage of blueberries with chocolate, combined with what appears to be



exceptional nutrient density and antioxidant strength, assures that açai will remain a focus of research and product development for years to come.

Sea Buckthorn

An ancient Asian herbal remedy for many disorders in traditional Asian medicine, sea buckthorn (*Hippophae rhamnoides* L.) has only recently attracted attention of Western scientists. This yellow-orange berry grows on large vines dense with sharp, long thorns, making it a desirable protective hedgerow but very challenging to harvest. Sea buckthorn also has very aggressive and deep roots, making the bush valuable in China for wildlife



