

Morinda citrifolia

Noni



Morinda citrifolia commonly known as noni is a perennial plant originating in Southeast Asia, consumed over 2000 years. Due to its versatility of adaptation and use of the structures of the plant for different therapeutic purposes, noni attracted the attention of researchers from the pharmaceutical and food industry. Chemical and nutritional analyzes already performed in *M. citrifolia* reveal the existence of more than 200 phytochemical substances with bioactive properties such as acids, alcohols, phenols, saccharides, anthraquinones, carotenoids, esters, triterpenoids, flavonoids, glycosides, lactones, iridoids, ketones, lignans, nucleosides, triterpenides, sterols, and aromatic compounds. The high nutritional value of *M. citrifolia* may induce therapeutic effects, including antimicrobial and antioxidant properties. The main industrial products from this plant are beverages (juice drinks), powders (from dried fruits), oil (from seeds), and leaf powders. Biological and phytotherapeutic applications of *M. citrifolia* are promising, but more extensive studies are still required. Thus, this review aims to gather updated and comprehensive information on *Morinda citrifolia*, discussing its traditional use, biochemical, phytotherapics, and toxicological properties, as well as the recent advances in the processing and standardization of products derived from noni fruit.

Noni juice is a tropical drink derived from the fruit of the *Morinda citrifolia* tree. This tree and its fruit grow among lava flows in Southeast Asia, especially in Polynesia.



Noni (pronounced NO-nee) is a lumpy, mango-sized fruit that is yellow in color. It's very bitter and has a distinct odor that is sometimes compared to stinky cheese.

Polynesian peoples have used noni in traditional folk medicine for over 2,000 years. It's commonly used to treat health issues like constipation, infections, pain, and arthritis.

Today, noni is mostly consumed as a juice blend. The juice is packed with potent antioxidants and may provide several health benefits. The nutritional content of noni juice varies widely.

One study analyzed 177 different brands of noni juice and found significant nutritional variability among them .

This is because noni juice is often mixed with other fruit juices or added sweeteners to mask its bitter taste and foul odor.

That said, Tahitian Noni Juice — produced by Morinda, Inc. — is the most popular brand on the market and widely used in studies. It's comprised of 89% noni fruit and 11% grape and blueberry juice concentrates .

The nutrients in 3.5 ounces (100 ml) of Tahitian Noni Juice are :

Calories: 47 calories

Carbs: 11 grams

Protein: less than 1 gram

Fat: less than 1 gram

Sugar: 8 grams

Vitamin C: 33% of the Reference Daily Intake (RDI)

Biotin: 17% of the RDI

Folate: 6% of the RDI

Magnesium: 4% of the RDI

Potassium: 3% of the RDI

Calcium: 3% of the RDI

Vitamin E: 3% of the RDI

Like most fruit juice, noni juice contains mostly carbs. It's rich in vitamin C, which is essential for skin and immune health (4Trusted Source).

Additionally, it's a great source of biotin and folate — B vitamins that play many important roles in your body, including helping convert food into energy.

May reduce cellular damage from tobacco smoke

Noni juice may reduce cellular damage — particularly from tobacco smoke.

Exposure to tobacco smoke generates dangerous amounts of free radicals. Excessive amounts can cause cellular damage and lead to oxidative stress .

Oxidative stress is associated with many ailments, including heart disease, diabetes, and cancer. Studies show that consuming foods rich in antioxidants may reduce oxidative stress .

In one study, heavy tobacco smokers were given 4 ounces (118 ml) of noni juice per day. After 1 month, they experienced a 30% reduction of two common free radicals compared to their baseline levels .

Tobacco smoke is also known to cause cancer. Certain chemicals from tobacco smoke may bind to cells in your body and lead to tumor growth.

Noni juice may reduce levels of these cancer-causing chemicals. Two clinical trials found that drinking 4 ounces (118 ml) of noni juice daily for 1 month reduced the levels of cancer-causing chemicals in tobacco smokers by about 45% .

Yet, noni juice does not negate all of smoking's negative health effects — and should not be considered a replacement for quitting.

May support heart health in smokers

Noni juice may support heart health by lowering cholesterol levels and reducing inflammation.

Cholesterol has many important functions in your body, but certain types in excess may increase your risk of heart disease — as may chronic inflammation.

One study found that drinking up to 6.4 ounces (188 ml) of noni juice per day for 1 month significantly reduced total cholesterol, LDL (bad) cholesterol levels, and the inflammatory blood marker C-reactive protein.

However, the subjects of the study were heavy cigarette smokers, so the results cannot be generalized to all people. Researchers suspect that noni juice's antioxidants may reduce the high cholesterol levels caused by smoking tobacco .

A separate, 30-day study gave non-smokers 2 ounces (59 ml) of noni juice twice daily. Participants did not experience significant changes in cholesterol levels.

These results suggest that the cholesterol-lowering effect of noni juice may only apply to heavy cigarette smokers.

That said, more research on noni juice and cholesterol is needed.

May improve endurance during exercise

Noni juice may improve physical endurance. In fact, Pacific Islanders believed that eating noni fruit strengthened the body during long fishing trips and voyages.

A few studies show positive effects of drinking noni juice during exercise.

For example, one 3-week study gave long-distance runners 3.4 ounces (100 ml) of noni juice or a placebo twice daily. The group that drank noni juice experienced a 21% increase in average time to fatigue, which suggests improved endurance .

Other human and animal research reports similar findings for using noni juice to combat fatigue and improve endurance .

The increase in physical endurance associated with noni juice is likely related to its antioxidants — which may reduce the damage to muscle tissue that normally occurs during exercise.

May relieve pain in people with arthritis

For over 2,000 years, noni fruit has been used in traditional folk medicine for its pain-relieving effects. Some research now supports this benefit.

For instance, in a 1-month study, people with degenerative arthritis of the spine took 0.5 ounces (15 ml) of noni juice twice daily. The noni juice group reported a significantly lower pain score — with complete relief of neck pain in 60% of participants.

In a similar study, people with osteoarthritis took 3 ounces (89 ml) of noni juice daily. After 90 days, they experienced a significant decrease in the frequency and severity of arthritis pain, as well as an improved quality of life.

Arthritis pain is often associated with increased inflammation and oxidative stress. Therefore, noni juice may provide natural pain relief by reducing inflammation and combatting free radicals.

May improve immune health

Noni juice may support immune health.

Like some other fruit juices, it's rich in vitamin C. For example, 3.5 ounces (100 ml) of Tahitian Noni Juice packs about 33% of the RDI for this vitamin.

Vitamin C supports your immune system by protecting your cells from free radical damage and environmental toxins .

Many other antioxidants present in noni juice — such as beta carotene — may improve immune health as well.

One small, 8-week study found that healthy people who drank 11 ounces (330 ml) of noni juice daily had increased immune cell activity and lower levels of oxidative stress.

Dosage, safety, and side effects

There is conflicting information regarding the safety of noni juice, as only a few human studies have evaluated its dosage and side effects.

For example, one small study in healthy adults indicated that drinking up to 25 ounces (750 ml) of noni juice per day is safe

However, in 2005, a few cases of liver toxicity were reported in people consuming noni juice. The European Food Safety Authority (EFSA) then re-evaluated the fruit, concluding that noni juice alone did not cause these effects .

In 2009, EFSA issued another statement confirming the safety of noni juice for the general population. However, EFSA experts did report that some individuals may have a particular sensitivity for liver toxicity effects.

In addition, people with chronic kidney disease or kidney failure may want to avoid noni juice — as it's high in potassium and may lead to unsafe levels of this compound in the blood.

Additionally, noni juice may interact with certain medications, such as those used to treat high blood pressure or those used to slow blood clotting. For this reason, it is important to consult with your medical provider before drinking noni juice.

High in sugar

Noni juice may contain high amounts of sugar due to the variability between brands. What's more, it's mixed with other fruit juices that are often very sweet.

In fact, 3.5 ounces (100 ml) of noni juice contains roughly 8 grams of sugar. Studies show that sugar-sweetened beverages like noni juice may increase your risk of metabolic diseases, such as nonalcoholic fatty liver disease (NAFLD) and type 2 diabetes .

Thus, it may be best to drink noni juice in moderation — or avoid it if you limit your sugar intake.