

boost a phagocyte which is the process in which certain white blood cells called macrophages attack and literally digest infectious organisms.

Interestingly, the anti-tumor action of Noni has been ascribed to an immune system response which involves stimulating T-cells. Tropical regions during World War II learned of the fruit's ability to boost endurance and stamina. Fruit has been used in cooked and raw forms. *M. citrifolia* is considered a tonic and is especially recommended for debilitated conditions.

#### Antioxidant

The process of aging bombards the body with free radicals which can cause all kinds of degenerative diseases. The xeronine theory promoted by Dr. Heinicke submits that as our body's age, we lose our ability to synthesize xeronine. To make matters worse, the presence of many environment toxins actually blocks the production of xeronine as well.

He believes that the proxeronine content of Noni fruit juice can help to block these actions, thereby working as an anti-aging compound. The phytonutrients found in Noni assist in promoting cell nourishment and protect ion from free radicals created by exposure to pollution and other potentially damaging agents. In addition, *Morinda citrifolia* contains selenium, which is considered one of the best antioxidant compounds available.

#### Diabetes

While scientific studies are lacking in this particular application of Noni, ancients used various parts of the plant and its fruit to treat blood sugar disorders. Anecdotal surveys have found that Noni is currently recommended for anyone with diabetes.

#### Pain Killer

A 1990 study found that extracts derived from the *Morinda citrifolia* root have the ability to kill pain in animal experiments. Interestingly, it was during this study that the natural sedative action of the root was also noted. This study involved a French team of scientists who noted a significant central analgesic activity in laboratory mice. Dr. Heinicke has stated, "Xeronine also acts as a pain reliever. A man with very advanced intestinal cancer was given three months to live. He began taking the proxeronine and lived for a whole year, pain-free."

#### Skin Healing Agent

One of the most prevalent historical uses of Noni was in poultice form for cuts, wounds, abrasions, burns and bruises. Using its fruit extract for very serious burns has resulted in some extraordinary healing. Because skin is comprised of protein, it immediately responds to the presence of xeronine.

Topical application to burns of a Noni poultice is considered quite effective by Dr. Heinicke and his colleagues, who have studied enzymatic therapy. Concerning burns, he has written: I believe that each tissue has cells which contain proteins which have receptor sites for the absorption of xeronine. Certain of these proteins are the inert for most of enzymes which require absorbed xeronine to become active.



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# NONI News Letter

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## Mental Health: Keeping Your Emotional Health

### What is good emotional health?

People with good emotional health are in control of their thoughts, feelings and behaviours. They feel good about themselves and have good relationships. They can keep problems in perspective.

It's important to remember that people with good emotional health sometimes have emotional problems or mental illness. Mental illness often has a physical cause such as a chemical imbalance in the brain. Stress and problems with family, work or school can sometimes trigger mental illness or make it worse. However, people with good emotional health have learned ways to cope with stress and problems. They know when they need to seek help from their doctor or a counselor.

### What about anger?

People are sometimes not aware of what causes their anger, how much anger they are holding inside or how to express anger. Certain events or actions by other people can make you angry. Also, many little things can build up to make you feel that life is unfair.

If you find yourself becoming increasingly irritable or taking unhealthy risks (like drinking too much or abusing drugs), you may have a problem dealing with anger. It's very important to talk with your doctor or a counselor about getting help.

### What can I do to avoid problems?

First, try to recognize your emotions and understand why you are having them. Learning how to sort out the causes of sadness, frustration and anger in your life can help you better manage your emotional health.

### How does stress affect my emotions?

Stress can come from situations such as personal or work problems, having too much to do or too many responsibilities, working too hard and being exhausted.

Your body responds to stress by making stress hormones. These hormones help your body respond to situations of extreme need. But when your body makes too many of these hormones for a long period of time, the hormones wear down your body - and your emotions. People under stress are often emotional, anxious, irritable and even depressed.

If possible, try to change the situation that is causing your stress. Relaxation methods, such as deep breathing and meditation, and exercise are also useful ways to cope with stress.

#### Can emotional problems be treated?

Yes. Counseling, support groups and medicines can help people who have emotional problems or mental illness. If you have an ongoing emotional problem, talk to your family doctor. He or she can help you find the right type of treatment.

The box given in the next page gives some other helpful tips.

#### Tips on dealing with your emotions

**Learn to express your feelings in appropriate ways.** It's important to let people close to you know when something is bothering you. Keeping feelings of sadness or anger inside takes extra energy and can cause problems in your relationships and at work or school.

**Think before you act.** Emotions can be powerful. But before you get carried away by your emotions and say or do something you might regret, consider the possible positive and negative consequences.

**Strive for balance in your life.** Don't obsess about problems at work, at school or at home. Focus on positive things in your life. Make time for things you enjoy.

**Take care of your physical health.** Your physical health can affect your emotional health. Take care of your body by exercising regularly, eating healthy meals and getting enough sleep. Don't abuse drugs or alcohol.

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*“Indian Noni  
An ideal choice  
for a Quality Living”*

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## Nitric Oxide can help women stay fertile longer

Nitric oxide, a chemical compound, could one day help women in their 30s and 40s remain fertile longer, says study, Indian-origin scientist Anuradha Goud and Colleagues at Wayne State University School of Medicine, in Detroit, studied the effects of nitric oxide on 1,500 eggs gathered from mouse ovarian ducts one to two hours or four to six hours after ovulation. According to a report in sciences portal Eurek Alert, mouse eggs that aren't fertilised within hours of ovulation begin to age rapidly. After about six hours, these eggs are less likely to be fertilized properly, leading to chromosomal abnormalities in the embryos. To prevent this, they exposed the eggs to varying concentrations of nitric oxide, a multipurpose signaling molecule that helps keep arteries supple and helps men achieve erections.

## Internal Applications of Noni

Drinking Noni and applying it topically are the two most obvious uses of Noni. But this remarkable juice can also be therapeutic in ways that one might not expect. If it seems too odd to try putting fruit juice in your nose or ears, for example, don't think of Noni as a juice drink. Think of it as the liquid extract of an amazing tropical fruit, which contains special healing compounds.

When you use internal applications, plan to drink Noni as well. Oral and internal Noni applications will enhance each other's benefits. To decide how much Noni fruit juice to take orally suits your condition. Internal applications also draw the healing compounds from the Noni that you drink to those parts of the body where the Noni is applied.

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*“It's no use saying,  
“We are doing our best”.  
You have got to succeed  
in doing what is necessary.”*

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## How do Wounds, Cuts, Scrapes, Lacerations Heal?

Fascinating is a good word for healing - the moment you cut or tear a blood vessel, the body's Superheros of Healing spring into action. Here's how healing works:

First comes vasoconstriction - blood vessels leading to the wound tighten to reduce the flow of blood to the injured area.

Platelets (triggered by enzymes leaked from the torn blood vessel) rush to the scene. These sticky blood cells clump to each other and then adhere to the sides of the torn blood vessel, making a plug.

Clotting proteins in the blood join forces to form a fibrin net that holds the platelet plug in place over the tear, and in just a few seconds or minutes (depending on how bad the scrape is), BLEEDING STOPS, thanks to coagulation! The fibrin plug becomes a scab that will eventually fall off or be reabsorbed into the body once healing is complete.

Once bleeding has been controlled, the next step is stopping infection:

The blood vessels that were constricted now dilate to bring white blood cells rushing to the scene. White blood cells engulf and destroy any germs that may have gotten into the body through the open wound.

When the enemies of blood loss and infection have been vanquished, the body turns its attention to healing and rebuilding:

Fibroblasts (cells that are capable of forming skin and other tissue) gather at the site of injury and begin to produce collagen, which will eventually fill in the wound under the scab and create new capillaries to bring oxygen-rich blood to the recovering wound.

Skin along the edges of the wound becomes thicker and then gradually migrates (or stretches) under the scab to the center of the wound, where it meets skin from the other side and forms a scar (about three weeks after the initial injury).

Scar tissue will become stronger and fade gradually over the next several years as more collagen is added, but will only have about 80 percent of the strength of the original skin.

Not all wounds heal equally. Generally speaking, more serious wounds take longer to heal. Individual factors also influence how quickly your body is able to recover from a wound, including:

Age - young'uns usually heal faster than older folks

Nutrition - the body needs a good supply of vitamin C to make collagen

Smoking - non-smokers, on average, heal more quickly than smokers

Stress - large amounts of stress can delay the healing process

Moisture - keeping wounds covered helps them heal more quickly because moisture allows skin to migrate across the wound surface with greater ease

Other infections or illnesses - diabetes, thyroid disease, high blood pressure, and poor circulation, for example, can decrease the body's ability to heal

If you have wounds that are slow to heal, check with your health care provider. It could be a sign of an underlying illness.

## When should I take Noni and how do I know I am taking enough?

Ideally, Noni juice should be consumed just 30 minutes before breakfast and 30 minutes before dinner. (However, if this schedule cannot be followed, it is better to use noni whenever possible rather than no taking it at all.) It is also important to remember that noni exerts its positive effects quickly in many people, and most people experience results within days to weeks. But you should commit to using noni for six months before deciding how much it helps.

If you feel that during months two through seven you are not getting optimal improvement, increase your daily intake by an additional, one-half ounce of noni juice for seven days, dividing the total serving size between morning, noon, and evening. Increase the total serving every seven days by the same amount until you obtain the desired results or until you drink a bottle more or more of noni per day (very few people need more than this)."

## Why All the Fuss About Antioxidants?

Over the past few years, there has been a lot of hype over antioxidants, including beta carotene (the building block for vitamin A), and vitamins C and E. Yet most people still don't know what antioxidants are or what they do, much less how they do it.

In order to understand the importance of antioxidants, it is first necessary to understand oxidation. The oxidation process is familiar: it causes metal to rust, fruit to turn brown and oils to go rancid. Inside the body, oxidation can severely damage cells and allow diseases to get a foothold. Destructive oxygen byproducts, called *free radicals*, are produced both in our bodies and in the environment by factors like cigarette smoke and polluted air. Antioxidants seem to deactivate free radicals, and therefore protect cells from damage.

Some research shows that these vitamins may reduce the risk of heart disease and cancer. Vitamin C, for example, may reduce blood pressure in patients with borderline hypertension and

raise blood levels of *high density lipoprotein* (HDL), the good cholesterol. Antioxidant vitamins may also help prevent some of the adverse effects of smoking, and they may help prevent the buildup of *low density lipoprotein* (LDL), known as bad cholesterol, in artery walls.

In addition, antioxidant vitamins, especially vitamins C and E, appear to play an important role in protecting the body against cancer. They seem to block the formation of chemical carcinogens in the stomach, protect DNA and fats in the blood from damage, and enhance the function of the immune system.

Based on these findings, experts recommend eating a balanced diet that includes at least five to six servings of fruits and vegetables high in antioxidants each and every day. Antioxidant nutrients can be obtained by taking supplements too, but doctors agree that vitamin pills are no substitute for a healthy diet. They also agree that it is too early to recommend vitamins or food fortification as a cancer prevention strategy.

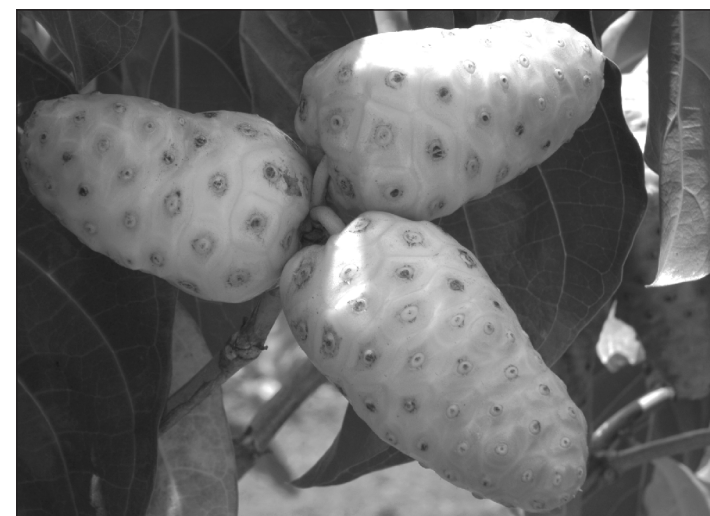
## The discovery of Xeronine

Growing up in the cold state of Minnesota, Ralph Heinicke had no idea he would one day become the world's expert on a fruit indigenous to the warm, sunny islands of Polynesia. His interest in noni began after graduating in biochemistry with his doctorate degree from the University of Minnesota and accepting a job in Hawaii with the Pineapple Research Institute.

He was first hired by the Pineapple Research Institute in the 1950s to find a way to make pineapple compatible with gelatin. Previous attempts at flavouring gelatin with pineapple prohibited the gelatin from setting up. His research led him to certain enzymes in pineapple called bromelain which prevented pineapple-flavored gelatin from functioning. He and his associates at the institute isolated and extracted the enzyme from the pineapple and then Dr. Heinicke set out to find a commercial use for the crude bromelain. In his search, he came across a gynaecologist who was having trouble taking x-rays of the female reproductive system because the mucus found in the vagina was hard to distinguish from tumorous growths. When the doctor injected bromelain into the vagina, however, the mucus was eliminated.

The first indication of medicinal properties in the bromelain came when a woman receiving x-rays reported that the painful complications she had for years disappeared after being injected with the crude bromelain. However, when Dr. Heinicke tried purifying the bromelain to conform the product to FDA standards, it did not exhibit the same medicinal properties.

Dr. Heinicke's research with the pineapple eventually led him to the noni fruit which also contains proxeronine but to a much higher degree. After years of trying to understand why purification of the bromelain destroyed its pharmacological properties, Dr. Heinicke eventually identified the alkaloid xeronine and its precursor, proxeronine. Dr. Heinicke is confident that the noni juice is the best raw material available as a source for the vital alkaloid.



## B Vitamins and Heart Disease

In 1968, a Boston pathologist investigated the deaths of two children from massive strokes. Both had inherited conditions that caused them to have high levels of a protein breakdown product called homocysteine in their blood, and both had arteries as clogged with cholesterol as those of a 65-year-old fast food addict. Putting one and one together, he hypothesized that high levels of homocysteine contribute to the artery-clogging process of atherosclerosis. Since then, some-but not all-studies have linked high levels of this breakdown product, called homocysteine, with increased risks of heart disease and stroke.

Folic acid, vitamin B6, and vitamin B12 play key roles in recycling homocysteine into methionine, one of the 20 or so building blocks from which the body builds new proteins. Without enough folic acid, vitamin B6, and vitamin B12, this recycling process becomes inefficient and homocysteine levels increase. Several observational studies show that high levels of homocysteine are associated with increased risks of heart disease and stroke. Increasing intake of folic acid, vitamin B6, and vitamin B12 decreases homocysteine levels. And some observational studies show lower risks of cardiovascular disease among people with higher intakes of folic acid, those who use multivitamin supplements, or those with higher levels of serum folate (the form of folic acid found in the body). However, other prospective studies show little or no association between homocysteine and cardiovascular disease.

The first large trial of homocysteine to be completed ended with negative results. In the Vitamin Intervention for Stroke Prevention trial, 3680 adults who had had nondisabling strokes took a pill containing high doses of vitamins B6, B12, and folic acid or one containing low doses of these three B vitamins. After two years, second strokes, heart attacks and other coronary heart disease events, and deaths were the same in the two groups. However, in that trial, high levels of homocysteine at baseline were associated with higher risk of cardiovascular disease. Other ongoing randomized trials, such as the Women's Antioxidant Cardiovascular Study and the Vitamin Intervention in Stroke Prevention Study should yield more definitive answers regarding homocysteine, B vitamins, and cardiovascular risk.

**“Drink Noni together  
with your Family and  
Stay Healthy”**

## Noni - Proof of the Pudding

If you're having digestive difficulty constipation, stomach pain, or a general feeling of sluggishness in your gastrointestinal system you may want to drink a little noni juice. Pressed from the fruit of a hardy plant that thrives in the Asian Pacific from Hawaii to India, noni juice has a long history of fixing what ails the digestive tract. No surprise there: noni contains anthraquinones, plant chemicals known for their ability to relieve constipation.

The plant itself has been valued in the Asian Pacific for centuries and is called by many different names. Ancient cultures have depended on noni seeds, leaves, bark, root, and fruit for nourishment, healing (see “Global Use of Noni”), and even textile dyeing the anthraquinones also provide deep yellow, red, and purple pigments. While healers utilize all parts of the noni plant, often in addition to other plants, noni products available come exclusively for the time being from the bitter-tasting fruit.

Shaped like a potato, the fruit has soft flesh and a cheesy scent that becomes more pungent over time. Despite its unappetizing fragrance, the dried, juiced, and freeze-dried product can be made palatable with the addition of other juices and sweeteners, or taken as a capsule. Noni does have nutritive value, as it, like most fruits, contains vitamin C, B vitamins, beta carotene, potassium, amino acids, sodium, magnesium, iron, calcium, and phosphorus.

In addition, many of the plant chemicals isolated from noni fruits have well-known laboratory activity (that is, the chemicals have shown effects when tested on animals or in cell cultures; clinical trials, using humans, are lacking). Limonene, for example, is a bitter compound commonly found in citrus fruits. It may be an anticancer element, and cancer prevention is just one of the effects noni is said to exert. One of the primary anthraquinones, damnacanthol, has also been shown in laboratory studies to promote cancer cell-death and prevent one type of DNA damage (ras mutation) that stimulates cancer cell growth. Interestingly, a polysaccharide-rich, alcohol extract of noni juice—noni-ppt—shows strong anti-cancer effects (Lewis lung carcinoma and Rauscher retroviral leukemia) in animal studies. Researchers note that part of this activity may lie in T-cell stimulation, which heightens immune response. Noni fruits also contain a number of chemicals that have been shown to reduce inflammation and pain. Additional laboratory studies also suggest sedative activity, and noni may suppress the growth of certain types of fungi, such as candida and cryptococcus. Claims that noni contains precursors to an alkaloid, discovered, named, and patented by a researcher in 1985, remain unsubstantiated.

Ongoing tests suggest that the noni plant may one day weigh in as a significant adversary to a broad range of illnesses. In the meantime, take juice preparations if you're constipated.

# A true tropical herb - Noni

## Introduction

In a time when we are more concerned than ever with issues of health, a tried and true tropical herb called noni needs to be added to our list of the best natural healers. Its usage over hundreds of years supports its description as a good food supplement. At this writing, Noni continues to accrue impressive credentials, and its emergence as an effective natural healing agent is a timely one. Amidst rising cancer rates, the high incidence of degenerative diseases like diabetes, and the evolution of antibiotic resistant bacteria and new viral strains, herbs like Noni are sought after for their natural pharmaceutical properties.

## Unquestionably, all of us want to know how to:

- protect ourselves from toxins and pollutants
- boost our immune defenses to protect ourselves from new viral and bacterial strains that have become antibiotic resistant
- better digest our food for proper assimilation and purge the intestinal system without the dangerous side effects of harsh drugs. Its actions are multifaceted and must be considered when assessing natural treatments for disease or injury. Its impressive and widespread use among various native cultures of tropical island regions supports the notion that it does indeed possess valuable, therapeutic compounds.

## Parts Used

The parts of the Noni plant most used for their nutritional purposes are the fruit, seeds, bark, leaves, and flowers. Virtually every part of the Noni plant is utilized for its individual healing properties; however, it is the fruit portion that is regarded as its most valuable. The seeds have a purgative action, the leaves are used to treat external inflammations and relieve pain, the bark has strong astringent properties and can treat malaria, the root extracts lower blood pressure, the flower essences relieve eye inflammations and the fruit has a number of other actions.

## Physical Description

Morinda citrifolia is technically an evergreen shrub or bush, which can grow to heights of fifteen to twenty feet. It has rigid, coarse branches which bear dark, oval, glossy leaves. Small white fragrant flowers bloom out of cluster-like pods which bear creamy-white colored fruit. The fruit is fleshy and gel-like when ripened, resembling a small bread fruit. The flesh of the fruit is characteristically bitter, and when completely ripe produces a rancid and very distinctive odor. Noni has buoyant seeds that can float for months in ocean bodies.

## Pharmacology

Recent surveys have suggested that Noni fruit exerts antibiotic action. In fact, a variety of compounds which have antibacterial

properties (such as aucubin) have been identified in the fruit. The 6-Dglucopyranose pentaacetate of the fruit extract is not considered bacteriostatic. Constituents found in the fruit portion have exhibited antimicrobial action against *Escherichia coli*, *Salmonella typhi* (and other types), *Shigella paradysenteriae*, and *Staphylococcus aureus*. Compounds found in the root have the ability to reduce swollen mucous membrane and lower blood pressure in animal studies. Proxeronine is an alkaloid constituent found in Noni fruit which may prompt the production of xeronine in the body. It is considered a xeronine precursor and was discovered in Noni fruit by Dr. Ralph M. Heinicke. He has theorized that this proenzyme can be effective in initiating a series of beneficial cellular reactions through its involvement with the integrity of specific proteins. He points out that tissues contain cells which possess certain receptor sites for xeronine. Because the reactions that can occur are so varied, many different actions can result when xeronine production escalates, explaining why Noni is good for so many seemingly unrelated disorders. Damnacanthol is another compound contained in the fruit of the Noni plant which has shown the ability to block or inhibit the cellular function of RAS cells, considered precancerous cells.

## Body Systems Targeted

All systems of the body are targeted by the many alkaloids found in the plant.

## Safety

Extracts of *M. citrifolia* are considered safe if used as directed.

## Suggested Uses

Ideally, Noni extracts should be taken on an empty stomach prior to meals. The process of digesting food can interfere with the alkaloid compounds found in Noni, especially in its fruit. Apparently, stomach acids and enzymes destroy the specific enzyme which frees up the xeronine compound. Take Noni supplements without food or alcohol.

## Noni's Use And History

Noni is a tropical wandering plant. It is considered native to Southeast Asia it grows from India to the eastern region of Polynesia. *Morinda citrifolia* has a long history of uses throughout these areas. It is thought to be the "most widely and commonly used plant prior to the European era." Among all botanical agents of the 19th and 20th centuries, Noni has been used for bowel disorders (especially infant diarrhea, constipation, or intestinal parasites), indigestion, skin inflammation, infection, mouth sores, fever, contusions and sprains. Commonly prepared Noni tonics were designed to treat diabetes, stings, burns and fish poisoning. The herb's remarkable ability to purge the intestinal tract and promote colon health was well known among folk healers.

## Xeronine: The Secret Of Noni?

One informed professional on the subject of Noni is Dr. Ralph Heinicke, a biochemist who has researched the active compounds of Noni fruit for a number of years. He discovered that the Noni fruit contains an alkaloid precursor to a very vital compound called xeronine. Without xeronine, life would cease. In Dr. Heinicke's view, Noni fruit provides a safe and effective way to increase xeronine levels, which exert a crucial influence on cell health and protection. His research suggests that the juice from the *M. citrifolia* fruit contains what could technically be considered a precursor of xeronine, proxeronine. This compound initiates the release of xeronine in the intestinal tract after it comes in contact with a specific enzyme which is also contained in the fruit.

Because proteins and enzymes have so many varied roles within cell processes, the normalization of these proteins with Noni supplementation could initiate a very wide variety of body responses and treat many disease conditions. Proteins are the most important catalysts found in the body. The beauty of obtaining a precursor to xeronine from the Noni fruit is that the body naturally decides how much of this precursor to convert to xeronine. Disease, stress, anger, trauma and injury can lower xeronine levels in the body, thus creating a xeronine deficit. Supplementing the body with Noni fruit is considered an excellent way to safely and naturally raise xeronine levels. It is the research and theories of Dr. Heinicke which have made the juice of the Hawaiian Noni fruit a viable medicinal substance. He writes: Xeronine is an alkaloid, a substance the body produces in order to activate enzymes so they can function properly. It also energizes and regulates the body. This particular alkaloid has never been found because the body makes it, immediately uses it, and then breaks it down. At no time is there an appreciable, isolable amount in the blood. But xeronine is so basic to the functioning of proteins, we would die without it. Its absence can cause many kinds of illness. Because so many diseases result from an enzyme malfunction, Dr. Heinicke believes that using the Noni fruit can result in an impressive array of curative applications. Interestingly, he believes that we manufacture proxeronine while we are sleeping. He proposes that if we could constantly supply our bodies with proxeronine from other sources, our need to sleep would diminish.

## Modern Applications Of Noni

### Cancer

A study conducted in 1994 cited the anticancer activity of *Morinda citrifolia* against lung cancer. A team of scientists from the University of Hawaii used live laboratory mice to test the medicinal properties of the fruit against Lewis lung carcinomas which were artificially transferred to lung tissue. The mice that were left untreated died in nine to twelve days. However, giving Noni juice in consistent daily doses significantly prolonged their life span. Almost half of these mice lived for more than

fifty days. Research conclusions state that the chemical constituents of the juice acted indirectly by enhancing the ability of the immune system to deal with the invading malignancy by boosting macrophage or lymphocyte activity. Further evaluation theorizes that the unique chemical constituents of *Morinda citrifolia* initiate enhanced T-cell activity, a reaction that may explain Noni's ability to treat a variety of infectious diseases.

In Japan, similar studies on tropical plant extracts found that damnacanthol, a compound found in *Morinda citrifolia*, is able to inhibit the function of KRAS- NRK cells, which are considered precursors to certain types of malignancies. The experiment involved adding Noni plant extract to RAS cells and incubating them for a number of days. Observation disclosed that Noni was able to significantly inhibit RAS cellular function. Among 500 plant extracts, *Morinda citrifolia* was determined to contain the most effective compounds against RAS cells. Its damnacanthol content was clinically described in 1993 as "a new inhibitor of RAS function." The xeronine factor is also involved in that xeronine helps to normalize the way malignant cells behave. While they are still technically cancer cells, they no longer function as cells with unchecked growth. In time, the body's immune system may be able to eradicate these cells.

### Arthritis

One link to arthritic pain may be the inability to properly or completely digest proteins which can then form crystal-like deposits in the joints. The ability of Noni fruit to enhance protein digestion through enhanced enzymatic function may help to eliminate this particular phenomenon. In addition, the alkaloid compounds and plant metabolites of Noni may be linked to its apparent anti-inflammatory action. Plant sterols can assist in inhibiting the inflammatory response which causes swelling and pain. In addition, the antioxidant effect of Noni may help to decrease free radical damage in joint cells, which can exacerbate discomfort and degeneration.

### Immune System

The alkaloid and other chemical compounds found in Noni have proven themselves to effectively control or kill over six types of infectious bacterial strains including: *Escherichia coli*, *Salmonella* (and other types), *Shigella paradysenteriae*, and *Staphylococcus aureus*. In addition, damnacanthol was able to inhibit the early antigen stage of the Epstein Barr virus.

The bioactive components of the whole plant combined or in separate portions, have demonstrated the ability to inhibit several different strains of bacteria. Anecdotal reports support this action in that Noni seems particularly effective in shortening the duration of certain types of infection. This may explain why Noni is commonly used to treat colds and flu.

The chemical constituents found in Noni and the possibility that they stimulate xeronine production as well as initiate alkaloid therapy may explain Noni's reputation for having immuno-stimulatory properties. Alkaloids have been able to