INFORMATION BULLETIN

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(*FOCUS ON NONI*)

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Chemical Constituents of Noni

The health benefits of consuming certain fruit and vegetables have been known for centuries. Epidemiological studies of the 20th century clearly demonstrated that eating certain plants or plant-based foods protects against several chronic disease conditions, such as cardiovascular disease and cancer. For example, people who consume nutrient-rich foods and get enough vitamins and minerals from the diet reduce their risk of common illnesses such as cancer, heart disease and osteoporosis.

Noni, like all plants is a living biochemical factory. It produces many biologically active and useful chemical compounds. The list of chemical components found in noni grows longer each year as scientists refine their focus and characterize new molecules. Some of the discoveries have revealed significant medically active compounds. To date, the major groups of chemical constituents of most significance found in noni are the complex polysaccharides, anthraquinones, glycosides, scopoletin, triterpenoids, lignans and sterols. These important and medically promising chemical constituents have a major impact on human health.

- ***Anthraquinones*** are antibacterial, antiviral, cholesterol reducing, triglyceride reducing, anti-tumor, analgesic and sedative.
- ***Glyocosides*** are anticancer and antitumor.
- ***Lignans*** and ***Neolignans*** are antioxidants.
- ***Polysaccharides*** are immunomodulatory, anti-cancer and anti-tumor.
- ***Sterols*** are needed for steroid hormone production.

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Noni and Cardiovascular Diseases - Part I

Cardiovascular disease is the most prevalent killer in the world. The two most common types of cardiovascular diseases are heart attacks and strokes, caused by impairment of circulation to the heart and brain. Healthy arteries are strong, elastic structures that carry oxygenated blood from the heart to other vital organs. However, these arteries may be damaged, leading to the accumulation of fatty deposits (atherosclerotic plaque – see below) and arterial hardening. When arteries are damaged to the extent that blood can no longer easily flow through them, patients experience heart attacks and strokes.

It has long been known that elevated level of cholesterol is a key risk factor for developing atherosclerosis or hardening of arteries. When there is too much cholesterol in the blood, it builds up on artery walls. Scientists are not sure why this buildup occurs, but they do know that if you lower your cholesterol, heart disease can often be prevented. There are mainly two forms of cholesterol found in our body: LDLs or "bad"

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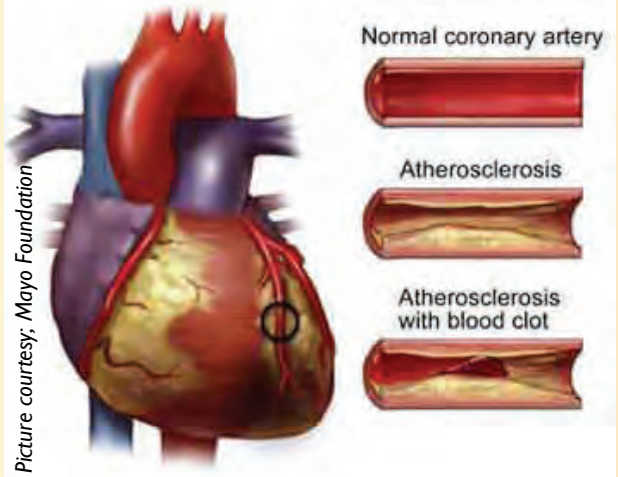

Picture courtesy; Mayo Foundation

Atherosclerosis

Atherosclerosis comes from the Greek words *athero* (meaning gruel or paste) and *sclerosis* (hardness). It is the name of the process in which deposits of fatty substances, cholesterol, cellular waste products, calcium and other substances build up in the inner lining of an artery. This buildup is called plaque. It usually affects large and medium-sized arteries. Some hardening of arteries often occurs when people grow older.

Plaques can grow large enough to significantly reduce the blood's flow through an artery. But most of the damage occurs when they become fragile and rupture. Plaques that rupture cause blood clots to form that can block blood flow or break off and travel to another part of the body. If either happens and blocks a blood vessel that feeds the heart, it causes a heart attack. If it blocks a blood vessel that feeds the brain, it causes a stroke. And if blood supply to the arms or legs is reduced, it can cause difficulty walking and eventually lead to gangrene (death of an area of the body).

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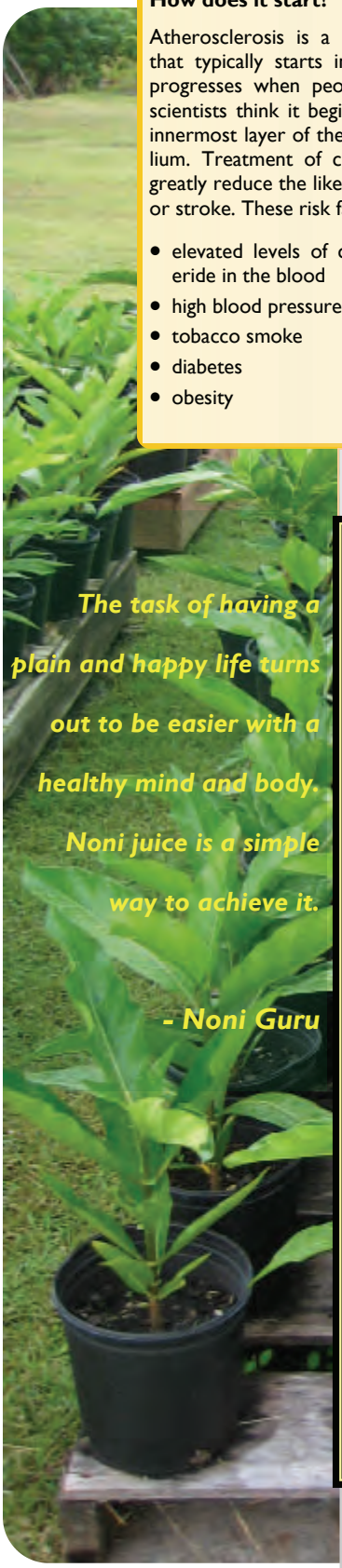

Atherosclerosis… contd.

How does it start?

Atherosclerosis is a slow, complex disease that typically starts in childhood and often progresses when people grow older. Many scientists think it begins with damage to the innermost layer of the artery called endothelium. Treatment of certain risk factors can greatly reduce the likelihood of a heart attack or stroke. These risk factors include:

- elevated levels of cholesterol and triglyceride in the blood
- high blood pressure
- tobacco smoke
- diabetes
- obesity
- physical inactivity

Because of the damage to the endothelium, fats, cholesterol, platelets, cellular waste products, calcium and other substances are deposited in the artery wall. These may stimulate artery wall cells to produce other substances that result in further buildup of cells. These cells and surrounding material thicken the endothelium significantly. The artery's diameter shrinks and blood flow decreases, reducing the oxygen supply. Often a blood clot forms near this plaque and blocks the artery, stopping the blood flow.

Prevention

Since prevention is always better than cure, one must consider the following steps to prevent or even reverse atherosclerosis.

- Eat a balanced diet, one that is low in saturated fat and cholesterol, and rich in whole grains, fruits, and vegetables. **Remember, plant foods do not contain cholesterol.**
- Exercise regularly.
- Maintain a healthy weight.
- Do not smoke.
- Control diabetes.
- Consult your physician about screening tests for atherosclerosis, if you have risk factors (such as high blood pressure or high cholesterol). If necessary, take medication, to reduce your risk factors.
- Use noni juice or noni powder as your food supplement. It will help to expel toxins out of your body, boost your immune system, protects your liver and repair cellular damage. **Stay healthy!**

Noni and Cardiovascular Diseases… contd.

form of cholesterol and HDLs or "good" form of cholesterol (below).

CHOLESTEROL— THE BAD AND THE GOOD

Cholesterol *is a waxy, fat-like substance that is made in the body by the liver. Cholesterol forms part of every cell in the body and serves many vital functions. It cannot dissolve in the blood. It has to be transported to and from the cells by carriers called lipoproteins.*

LDL (Bad) Cholesterol
When too much LDL (bad) cholesterol circulates in the blood, it can slowly build up in the inner walls of the arteries that feed the heart and brain. Together with other substances, it can form plaque that can narrow the arteries and make them less flexible and leads to heart attack or stroke.

HDL (Good) Cholesterol
About one-fourth to one-third of blood cholesterol is carried by high-density lipoprotein (HDL). HDL cholesterol is known as "good" cholesterol, because high levels of HDL seem to protect against heart attack. Low levels of HDL (less than 40 mg/dL) also increase the risk of heart disease. Medical experts believe that HDL tends to carry cholesterol away from the arteries and back to the liver, where it is passed from the body. Some experts think that HDL removes excess cholesterol from arterial plaque, slowing its buildup.

Triglycerides
Triglyceride is a form of fat made in the body. Elevated triglycerides can be due to overweight/obesity, physical inactivity, cigarette smoking, excess alcohol consumption and a diet very high in carbohydrates (60 percent of total calories or more). People with high triglycerides often have a high total cholesterol level, including a high LDL (bad) level and a low HDL (good) level. Many people with heart disease and/or diabetes also have high triglyceride levels.

Lp(a) Cholesterol
Lp(a) is a genetic variation of LDL (bad) cholesterol. A high level of Lp(a) is a significant risk factor for the premature development of fatty deposits in arteries. Lp(a) is not fully studied yet, but it may interact with substances found in artery walls and contribute to the buildup of fatty deposits.

LDLs, HDLs, triglycerides and Lp(a) make up one's total cholesterol count, which can be determined through a blood test.

... to be continued in the next issue

Chemical Constituents of Noni...contd.

- ***Scopoletin*** is antibacterial and antifungal, anti-inflammatory, analgesic, histamine-inhibiting, assists in arthritic conditions, allergies, sleep disorders, migraine, headaches, depression and Alzheimer's disease.
- ***Triterpenoids*** are antitumor (skin cancer) hepato-protective, anti-inflammatory (oral and topical), antiulcer, antimicrobial, anti-hyperlipidemic (hyperlipidaemia is a condition of excess lipids in the blood) and antiviral.

These are examples of many of the chemical constituents that noni contains, plus there are many more. The wonder and miracle of noni is that all of these found in one plant. Instead of taking many supplements for differing ailments, which can often knock out the finely tuned balance of our body, nature has provided us with one super-plant which gives so many of the nutrients we need to sustain ourselves in optimum health.

Noni is a highly regarded folk remedy, which genuinely beneficial to health in numerous ways. Approach with intelligence and good science, noni will prove to be one of the most diverse valuable agents in nature's medicine chest, and an enduring dietary supplement which serves the health needs of many.

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