

Coconut, Cholesterol & Kerala



Recent researches show that the monolaurin found in coconut inhibits the viruses causing plaques in the arteries. Thus, ironically enough, avoiding coconut would only contribute to the increase of coronary heart disease.



NEVER SAY 'NO' TO COCONUT OIL

**Dr. D. M. Vasudevan
& Dr. N. Ananth Rao**

Coronary artery disease is a condition in which the blood supply to the heart muscle is partially or completely blocked. Coronary artery disease (CAD) is a complex degenerative disease that causes reduced or absent blood flow in one or more of the arteries that encircle and supply the heart. The disease may be focal or diffuse.

On an average, men develop it about 10 years earlier than women, because until menopause, women are protected from the **disease** by high levels of estrogen. **Coronary artery disease** affects people of all races, but the incidence is extremely high among blacks and southeast Asians. The death rate is higher for black men than for white men until age 60 and is higher for black women than for white women until age 75.

Coronary artery atherosclerosis is the principal cause of coronary artery disease (CAD) and is the single largest killer of

both men and women. Each year, 1.5 million individuals develop the most deadly presentation of CAD, and acute myocardial infarction (AMI). Coronary artery atherosclerosis or CAD refers to the presence of atherosclerotic changes within the walls of the coronary arteries, which causes impairment or obstruction of normal blood flow with resultant myocardial ischemia. The distribution of lipid and connective tissue in the atherosclerotic lesions determines whether they are stable or at risk of rupture, thrombosis, and clinical sequelae.

Atherosclerosis is a disease of large and medium-sized muscular arteries and is characterized by endothelial dysfunction, vascular inflammation, and the buildup of lipids, cholesterol, calcium, and cellular debris within the intima of the vessel wall.

According to the response-to-vascular injury theory, injury to the endothelium by local disturbances of blood flow at angulated or branch points, along with

systemic risk factors, such as hyperglycemia, dyslipidemia, cigarette smoking, and, possibly, infection, perpetuates a series of events that culminate in development of atherosclerotic plaque. However, even today a complex and incompletely understood interaction exists between the critical cellular elements of the atherosclerotic lesion. These cellular elements are endothelial cells, smooth muscle cells, platelets, and leucocytes. Endothelium under normal circumstances regulates Vascular tone, Platelet activation Monocyte adhesion and inflammation,

Thrombus generation, Lipid metabolism, Cellular growth and vascular remodeling.

Multiple studies have demonstrated that risk factor modification through therapeutic lifestyle change (TLC), reduction of low-density lipoprotein (LDL) cholesterol levels, and smoking cessation rapidly improves endothelial function. Elevated serum levels of LDL cholesterol overwhelm the antioxidant properties of the healthy endothelium and result in abnormal endothelial metabolism of this lipid moiety. Oxidized LDL is capable of a wide range of toxic effects and cell/vessel wall dysfunctions that are

characteristically and consistently associated with the development of atherosclerosis.

Atherosclerotic plaques characteristically occur in regions of branching and marked curvature at areas of geometric irregularity and where blood undergoes sudden changes in velocity and direction of flow. Decreased fluid and shear stress and turbulence may promote atherogenesis at these important sites within the coronary arteries, the major branches of the thoracic and abdominal aorta, and the large conduit vessels of the lower extremities.

Cholesterol is a waxy, fat-like substance that is naturally found in all parts of our bodies. It is present in the walls and membranes of every cell, including cells in the brain, nerves, muscle, skin, liver, intestines, and heart. Without cholesterol, our bodies could not function properly. It acts as the backbone of hormones like estrogen and testosterone, vitamin D, and bile acids that help us to digest fat.

Cholesterol in the body comes from two major sources. The first is from the liver, which is the body's major cholesterol-producing organ. We also consume foods that contain cholesterol – red meat and eggs have particularly high levels. Because the liver is usually able to make enough cholesterol to satisfy all of our bodily needs, however, too much dietary cholesterol can lead to high bodily levels of cholesterol. (Some liver disorders also lead to excess cholesterol levels.)

These high levels are undesirable because it is difficult for our bodies to appropriately dispose of excess cholesterol. Excess cholesterol has a tendency to deposit into the walls of our arteries, particularly the arteries that lead to our hearts (or coronary arteries). It is these deposits that lead to development of “hardening of the arteries,” or atherosclerosis.

Atherosclerosis is a condition that causes progressive narrowing of the arteries. Narrowing may even occur to the point where the artery becomes either severely or completely blocked. If the blockage occurs in a coronary artery, you may have severe chest pain (called angina) or a heart attack. If the blockage involves an artery in the

brain, you may have a stroke.

LDL and HDL -What make them apart

Cholesterol does not travel freely in the bloodstream. Rather, cholesterol is carried through the blood by particles called lipoproteins. Cholesterol also behaves differently depending on which type of

high-density lipoproteins (HDL) remove excess cholesterol from the blood (HDL cholesterol is the “good” cholesterol). Triglycerides are another type of substance closely related to cholesterol. They are mostly carried throughout the bloodstream by particles called chylomicrons or very low-density lipoproteins (VLDLs). While less is known about triglycerides, in general, there is some evidence to suggest that they are a particularly important cause of coronary artery disease among women and people with other risk factors such as diabetes and obesity.

Everyone above the age of 20 should have his/her cholesterol and triglyceride levels measured at least once every five years. This blood test is done after a nine- to 12-hour fast and provides information about your total cholesterol

Cholesterol friend & foe

lipoprotein carries it. Low-density lipoproteins (LDL) deposit excess cholesterol on the artery linings (LDL cholesterol is the “bad” cholesterol), and

(TC), LDL and HDL cholesterol, and triglycerides. If your total blood cholesterol is 200 milligrams (mg) per deciliter (dL) or more, or if your HDL level is less than 40 mg/dL, you should talk to your doctor about ways to lower your cholesterol, which may include changing your diet, increasing exercise, or medication.

HDL cholesterol protects against heart disease. This means that higher numbers of HDL cholesterol are better. A level less than 40 mg/dL is considered low and a major risk factor for the development of coronary artery disease. HDL levels of 60 mg/dL or more help to lower your risk for heart disease.

Triglycerides also can raise heart disease risk. Levels that are borderline high (150-199 mg/dL) or high (200 mg/dL or more) may require treatment for some people.

Classification of LDL and HDL cholesterol, total cholesterol and triglycerides

LDL (“bad”) cholesterol	
Less than 100	Optimal
100-129	Near optimal/ above optimal
130-159	Borderline high
160-189	High
Equal to or higher than 190	Very high
HDL (“good”) cholesterol	
Less than 40	Low
Equal to or higher than 60	High
Total cholesterol (TC)	
Less than 200	Desirable
200-239	Borderline high
Equal to or higher than 240	High
Triglycerides	
Less than 150	Normal
150-199	Borderline high
200-499	High
Equal to or higher than 500	Very high

The earliest pathologic lesion of atherosclerosis is the fatty streak, which has been observed in the aorta and coronary arteries of most individuals by the age 20 years!! The fatty streak may progress to form a fibrous plaque, the result of progressive lipid accumulation and the migration and proliferation of smooth muscle cells. Platelet-derived growth factor, insulin like growth factor, transforming growth factors alpha and beta, thrombin, and angiotensin II are potent mitogens that are produced by activated platelets, macrophages, and dysfunctional endothelial cells that characterize early atherogenesis, vascular inflammation, and platelet-rich thrombosis at sites of endothelial disruption. The relative deficiency of endothelium-derived nitric oxide further potentiates this proliferative stage of plaque maturation. The smooth muscle cells are responsible for the deposition of extracellular connective tissue matrix and form a fibrous cap that overlies a core of lipid-laden foam cells, extracellular lipid, and necrotic cellular debris. Growth of the fibrous plaque results in vascular remodeling, progressive luminal narrowing, blood-flow abnormalities, and compromised oxygen supply to the target organ. Furthermore, activated macrophages produce matrix metalloproteinases that degrade collagen. These mechanisms explain the predisposition to plaque rupture and highlight the role of inflammation in the

genesis of the complications of the fibrous atheromatous plaque.

A number of large epidemiological studies in North America and Europe have identified numerous risk factors for the development and progression of atherosclerosis. The risk factors can be divided into modifiable and nonmodifiable risk factors and include hyperlipidemia (high concentrations of fats or lipids in blood), hypertension, cigarette habituation, diabetes mellitus, age, and sex. Hyperlipidemia is an established risk factor for atherosclerosis. Convincing evidence that lowering serum cholesterol reduces

the risk of subsequent coronary heart disease events and overall mortality exists.

COCONUT OIL AND HYPERCHOLESTEROLEMIA

Historically, coconuts and their extracted oil have served man as important foods for thousands of years. In the US the use of coconut oil was popular at the end of the 19th century. Both the health-promoting attributes of coconut oil and those functional properties useful to the homemaker were recognized 100 years ago. Coconut oil has a unique role in the diet as an important physiologically functional food. Coconut oil is a “functional food,” defined as a food that “provides a health benefit over and beyond the basic nutrients”. The health and nutritional benefits that can be derived from consuming coconut oil have been recognized in many parts of the world for centuries. The health and nutritional benefits derived from coconut oil are unique and compelling. In Kerala, coconut tree has been considered “*Kalpavriksha*” that gives all boons.

Although popular literature of epidemiological studies usually attribute an increased risk of coronary heart disease (CHD) to elevated levels of serum cholesterol, which in turn are thought to derive from a dietary intake of saturated fats and cholesterol. Saturated fats may be considered a major culprit for CHD because there is some association between serum cholesterol and CHD, and between saturated fat and serum cholesterol are each firmly established. However, a fear complex has been created among the general public that consumption of coconut oil results in elevated cholesterol levels. This myth was primarily due to equating coconut oil with saturated fat without knowing that saturated fat in coconut oil are of the short chain and medium chain fatty acids.

Certain pronouncements made few decades ago now stand out as dogma:

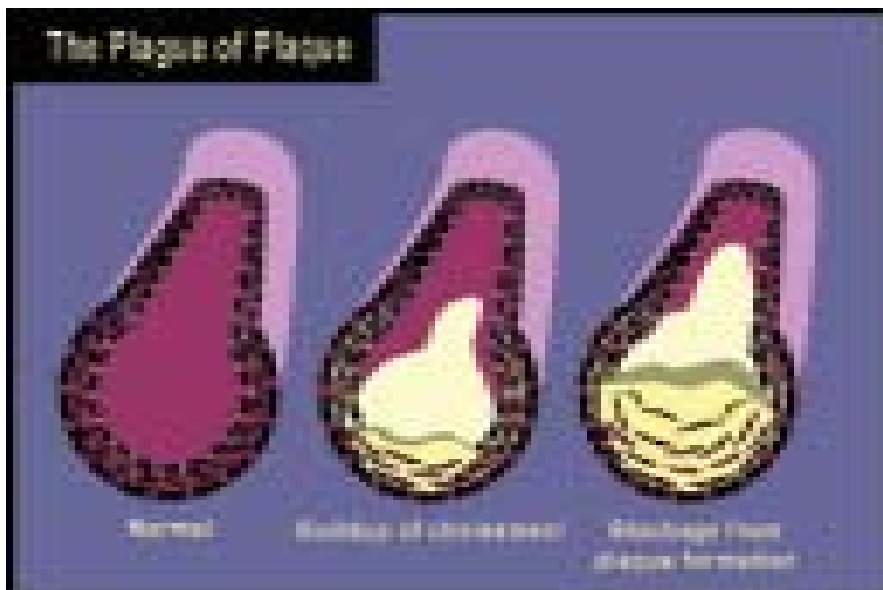
“All fats raise serum cholesterol!”

Nearly half of total fat comes from vegetable fats and oils”

No difference between animal and vegetable fats in effect on CHD”

“All fats are comparable; Saturated fats

That the consumption of coconut oil result in elevated cholesterol levels is a myth. Coconut oil is equated with saturated fat without knowing that saturated fats in coconut oil are of the short chain and medium chain fatty acids.



Reducing cholesterol



Lifestyle changes

There are several ways to treat high cholesterol. One option is known as therapeutic lifestyle changes (TLC), which includes a cholesterol-lowering diet (called the TLC diet), physical activity, and weight management. In some cases, it may be necessary to take cholesterol-lowering drugs together with TLC treatment to lower LDL cholesterol levels. Depending on what your LDL level is, your doctor will decide which approach is best for you.

A healthier diet

You don't always have to give up everything that you enjoy eating. Just try to change a few of choices you make every day to get balance of healthy foods like fruit, vegetables, grains and lean proteins every day. Then you can add favorite foods in as special treats. A healthier diet will take you a lot back from the disease.

Regular exercise

30 minutes of activity a day, most days of the week is recommended. That exercise can include walking, swimming, cycling, jogging, or any activity that you enjoy that increases your heart rate safely. Before beginning any exercise program, ask your doctor what is right for you.

Weight loss

Losing extra weight can help lower LDL or "bad" cholesterol. It's also important if you are at risk for heart disease or you have diabetes. To find out the healthiest way to lose extra weight, make sure you talk to your doctor.

raise and polyunsaturated fats lower serum cholesterol; Hydrogenated vegetable fats are the problem; Animal fats are the problem"

It is believed that the main beneficiaries of such pronouncements are the edible oil industry in the United States who seized the opportunity to promote its polyunsaturated oils. The industry did this by developing a health issue focusing on this anti-saturated fat bias.

A major concept about coconut oil has been its saturated fatty acid content. It is better clarified that all saturated fat are not harmful. While it is true that saturated

fats dominate the lipid content of coconut oil, it is equally true that two thirds of them are medium chain fats. These medium chain fatty acids are absorbed directly through the portal vein into the liver and do not require the carnitine transport for their entry into the cells and subsequent metabolism. They are immediately made available to the body's molecular repertoire unlike long-chain fatty acids, which require emulsification in the intestine for absorption and are later packaged into lipoproteins. In other words, it is the most easily digestible and absorbed class of fats and does not circulate in the

blood stream and not stored. It has been shown that nearly 50% of the fat in coconut oil is Lauric acid, which is converted to the fatty acid Monolaurate in the body. Capric acid comprises about 7 % of the coconut oil fat content.

It appears from many of the research reports that the effect of coconut oil on serum cholesterol is the opposite in individuals with low serum cholesterol values and those with high serum values. We see that there may be a raise in serum total cholesterol, LDL cholesterol and especially HDL cholesterol in individuals with low serum cholesterol. On the other hand there is lowering of total cholesterol and LDL cholesterol in hypercholesterolemics as noted above.

Studies that supposedly showed a *hypercholesterolemic* effect of coconut oil feeding, in fact, usually have only shown that coconut oil was not as effective at lowering the serum cholesterol as was the more unsaturated fat being compared. The chemical analysis of the atheroma shows that the fatty acids from the cholesterol esters are 74% unsaturated (41% is polyunsaturated) and only 24% are saturated. None of the saturated fatty acids were reported to be lauric acid or myristic acid (Felton et al 1994).

Recent research is suggestive that there is a causative role for the herpes virus and cytomegalovirus in the initial formation of atherosclerotic plaques and the relogging of arteries after angioplasty. (*New York Times* 1991) What is so interesting is that the herpes virus and cytomegalovirus are both inhibited by the antimicrobial lipid monolaurin. Thus, ironically enough, one could consider the recommendations to avoid coconut and other lauric oils as contributing to the increased incidence of coronary heart disease.

The major fat in mother's milk is the same lauric acid as in coconut oil. If coconut oil is considered atherogenic and its use prohibited, then mother's milk should also be considered so and prohibited too!

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Coconut and its extracted oil are important part of the daily diet in the population in Kerala. Coconut oil has a unique role in the diet as an important physiologically functional food. The health and nutritional benefits that can be derived from consuming coconut oil have been recognized in many parts of the world for centuries. Coconut oil has proven, in both laboratory and clinical experiments, to be good for patients with malabsorption syndrome, disorders in digestion, obesity, post-surgical patients and premature infants in whom long chain

hydrogenated coconut oil as the only source of fat, nearly became essential fatty acid deficient. The hydrogenated coconut oil was selected instead of hydrogenated cotton seed oil, corn or soybean oil because it was soft for blending into diets due to the presence of the lower melting medium chain fatty acids. The same functionality could not be obtained from the cotton seed, corn or soybean oil if they were made totally

coconut oil feeding only showed that coconut oil was not effective at lowering serum cholesterol as was the more unsaturated fat being compared. This appears to be in part because coconut oil drive cholesterol into tissues as does the more poly unsaturated fatty acids. When we consider coronary heart disease, elevated blood cholesterol is an established risk factor.

COVER STORY

Cholesterol level

Coconut oil brings in no evil

Dr. T. Rajamohan

fatty acids cannot be digested. It is used widely in Ayurvedic medicines to cure bites, burns etc. Daily use of coconut oil over the body prevents skin diseases, dryness of skin, hair fall, dandruff and promote growth of hair. Clinical studies have shown that coconut oil has anti-microbial and anti-viral properties.

Misconception about coconut oil

Eventhough coconut oil has many beneficial uses, there are people who believe that consumption of coconut oil increases blood cholesterol and thus promote the risk for the occurrence of coronary heart disease (CHD). This myth is primarily due to the saturated fat content of the oil.

The problem for coconut oil started several decades ago when researchers fed animals with hydrogenated coconut oil. The animals which are fed by

saturated, since all their fatty acids were long chain and high melting and could not be easily blended nor were they are readily digestible. Diet that cause essential fatty acid deficiency, always produce an increase in serum cholesterol. Due to the specific composition of the saturated fatty acids, coconut oil consumption as part of the normal diet does not cause elevation of blood cholesterol.

Coconut and coconut oil have been consumed for many centuries by millions of people in Philippines, Indonesia, Sri lanka and the islands in the Pacific for whom it was their main source of fat. However the incidence of heart attacks among the villagers in these countries have been relatively low. Studies that showed a hypercholest-erolemic effect of

Dietary fat is only one of the factors that influence Coronary Heart disease. Several other factors are in our diet and lifestyle that influence cholesterol and heart disease. The intake of coconut or its oil as part of normal diet has no deleterious effect.

Where does cholesterol come from?

The human body obtains part of its cholesterol from the animal fatty products. But the greatest part of the cholesterol is produced within the body itself mainly by the liver. Appreciable amounts of cholesterol is also formed in the small intestine. As much as 1gram a day being synthesized in these organs. Even if we take no dietary cholesterol, no dietary animal fat and only limited amounts of vegetable fat, as provided by a vegetarian diet, our body continues to synthesize cholesterol. An adult on a low cholesterol diet typically synthesizes about 800 mg cholesterol/day. The rate of cholesterol formation by these organs is highly responsive to the amount of

cholesterol absorbed from dietary sources.

Chemical features of coconut oil

Since coconut oil consists of mostly saturated fatty acids, it is generally believed that consumption of coconut oil increases blood cholesterol and thus promote heart disease. Among the vegetable oils, coconut oil stands out for having one of the highest saturated fatty acid contents (90%). All the Saturated fatty acids are not as same. Saturated fatty acids in coconut oil are of short and medium chain length. Nearly 15% of the total fatty acids are composed of short chain fatty acids (caprylic- C8:0 and capric- C10: 0). About 48% of fatty acid is of medium chain fatty acid, lauric acid -C12:0. coconut oil supplies only 2 % linoleic acid, the only polyunsaturated fatty acid in coconut oil. Because coconut oil contains mostly short and medium chain saturated fats it is easily digested, absorbed and utilized by the body. They are transported to the liver via portal vein and preferentially used for energy production and appeared to be less fat deposition when compared to long chain fatty acids.

Before we consider the effect of coconut oil on blood cholesterol and heart disease it is very important to remember that dietary fat is only one of the factors that influence CHD. There are several other factors in your diet and life style that influence blood cholesterol and heart disease. The nature and quantity of carbohydrates, proteins, dietary fiber , deficiency of certain vitamins and minerals in your diet, physical activity , alcohol consumption, smoking, stress and strain in your daily life, genetics, all these factors and many others are known to influence blood cholesterol and CHD. Therefore in the human situation it is the interaction of all these factors which is important rather than the contribution of any one factor alone. Among the dietary factors, the proportion of saturated fats in the diet seems to be greater importance in producing an excess cholesterol in the body.

Sufficiently strong proofs now exists to disprove the allegation about coconut oil consumption and its relation to enhancing the risk for the occurrence of

The nature and quantity of carbohydrates, proteins, dietary fiber, deficiency of certain vitamins and minerals in our diet, physical activity, alcohol consumption, smoking, stress and strain in our daily life, genetics, all these factors and many others are known to influence blood cholesterol and Coronary Heart Diseases.

coronary heart disease. Kaunitz and Dayrit (1992) have reviewed some of the epidemiological and experimental data regarding coconut consuming groups and noted that the available population studies show that dietary coconut oil does not lead to high serum cholesterol nor to high coronary heart disease mortality or morbidity. Previously Blackburn et al (1988) have reviewed the published literature on the effect of coconut oil on serum cholesterol and atherogenesis and have concluded that when coconut oil is fed physiologically with other fats or adequately supplemented with linoleic acid, coconut oil is a neutral fat in terms of atherogenicity.

Studies in Kerala population

The characteristic feature of Kerala diet is the use of coconut kernel and coconut oil in most culinary preparations. Thus coconut oil in the diet is partly from free oil and partly from coconut kernel. Studies carried out in humans in the

Department of Biochemistry, University of Kerala clearly disprove the allegation against coconut and coconut oil consumption. A total number of 258 volunteers (163 male and 95 female) were participated in this study. Average daily consumption of coconut kernel of these subjects was 55.8 g/head/day. The average free oil consumption was 15.4g/head/day. Thus the average coconut oil consumption (free oil + oil derived from kernel) was 38g/head/day. The results of the study



Coconut or its oil does not play a harmful role.

indicate that coconut oil consumption does not cause increase in blood cholesterol or LDL cholesterol, but increase HDL cholesterol. Consumption of coconut kernel along with coconut oil, as is the invariable practice in the Kerala population produced lower total cholesterol and LDL cholesterol and higher HDL cholesterol. Apart from coconut oil, coconut kernel contains 5% protein and 7% dietary fiber. Further studies indicate that the beneficial effect of the coconut kernel is mainly due to coconut fiber and coconut protein present in it. These observations clearly indicate that coconut and coconut oil consumption as part of a normal diet has no deleterious effect with respect to blood cholesterol.

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The health and nutritional benefits derived from coconut oil are unique and compelling. Although the baker and food processor have recognized the functional advantages of coconut oil in their industries, over most competing oils, for many years, I believe these benefits are underappreciated today by both the producer and the consumer. It is time to educate and reeducate all those who harbour this misinformation.

Historically, coconuts and their extracted oil have served man as important foods for thousands of years. The use of coconut oil as a shortening was advertised in the United States in popular cookbooks at the end of the 19th century. Both the health-promoting attributes of coconut oil and those functional properties useful to the homemaker were recognized 100 years ago. These same attributes, in addition to some newly discovered ones, should be of great interest to both the producing countries as well as the consuming countries.

Heart hypothesis

For the past several decades you have heard about animal and human studies feeding coconut oil that purportedly showed increased indices for cardiovascular risk. Blackburn et al (1988) have reviewed the published literature of coconut oil's effect on serum cholesterol and atherogenesis and have concluded that when ...*[coconut oil is] fed physiologically with other fats or adequately supplemented with linoleic acid, coconut oil is a neutral fat in terms of atherogenicity.* After reviewing this same literature, Kurup and Rajmohan (1995) (Dr. T.Rajmohan and Kurup are Thiruvananthapuram based researchers. They contribute their latest views on the topic in separate articles in this issue-*Editor.*) conducted a study on 64 volunteers and found ...*no statistically significant alteration in the serum total cholesterol, HDL cholesterol, LDL cholesterol, HDL cholesterol/total cholesterol ratio and LDL cholesterol/HDL cholesterol ratio of triglycerides from the baseline values...* A beneficial effect of adding the coconut kernel to the diet was noted by these researchers.

COVER STORY

Mary G. Enig is an expert of international renown in the field of lipid biochemistry. She has headed a number of studies on the content and effects of *trans* fatty acids found in coconut oil and has successfully challenged assertions that dietary animal fat causes cancer and heart disease. Recent scientific and media attention on the possible adverse health effects of *trans* fatty acids has brought increased attention to her work. Mary Enig has been vehemently arguing for the nutritional values of coconut oil for the past several years. This article contains excerpts from the study she presented at various seminars in Kerala as well as other parts of the world.

Coconut Oil: An Important Functional Food

Dr. Mary. G. Enig



How did coconut oil get such a negative reputation?

The problems for coconut oil started four decades ago when researchers fed animals hydrogenated coconut oil that was purposefully altered to make it completely devoid of any essential fatty acids. The hydrogenated coconut oil was selected instead of hydrogenated cottonseed, corn or soybean oil because it was a soft enough fat for blending into diets due to the presence of the lower melting medium chain saturated fatty acids. The same functionality could not be obtained from the cottonseed, corn or soybean oils if they were made totally saturated, since all their fatty acids were long chain and high melting and could not be easily blended nor were they as readily digestible.

The animals fed the hydrogenated coconut oil (as the only fat source) naturally became essential fatty acid deficient; their serum cholesterol levels increased. Diets that cause an essential fatty acid deficiency always produce an increase in serum cholesterol levels as well as an increase in the atherosclerotic indices. The same effect has also been seen when other essential fatty acid deficient, highly hydrogenated oils such as cottonseed, soybean, or corn oils have been fed; so it is clearly a function of the hydrogenated product, either because the oil is essential fatty acid (EFA) deficient or because of *trans* fatty acids (TFA).

Coconut oil as part of the normal diet

Kaunitz and Dayrit (1992) have reviewed some of the epidemiological and experimental data regarding coconut-eating groups and noted that the *available population studies show that dietary coconut oil does not lead to high serum cholesterol nor to high coronary heart disease mortality or morbidity*. They noted that in 1989 Mendis et al reported undesirable lipid changes when young adult Sri Lankan males were changed from their normal diets by the substitution of corn oil for their customary coconut oil. Although the total serum cholesterol decreased 18.7% from 179.6 to 146.0 mg/dl and the LDL cholesterol decreased 23.8% from 131.6 to 100.3 mg/dl, the HDL cholesterol decreased 41.4% from 43.4 to 25.4 mg/

Cholesterol

Q & A

Q: At what age should one start having his cholesterol checked?

A: Experts recommend that all adults over the age of 20 have their cholesterol measured at least once every 5 years.

Q: Does menopause affect cholesterol levels?

A: Yes. Before menopause, women usually have total cholesterol levels that are lower than those of men the same age do. As women and men get older, their blood cholesterol levels rise until about 60 to 65 years of age. In women, menopause often causes an increase in their LDL-cholesterol and a decrease in their HDL-cholesterol level, and after the age of 50, women often have higher total cholesterol levels than men of the same age.

Q: Can stress affect one's cholesterol levels?

A: The word "stress" refers to the condition that results from a person's response to physical, chemical, emotional, or environmental factors. It can mean physical effort as well as mental tension. All people feel stress differently and react to it in different ways.

Stress may play a role in raising cholesterol by affecting an individual's habits. Some people try to console themselves during stressful periods by overeating or eating foods with high fat content or by smoking. It is the saturated fat and cholesterol in these foods combined with smoking that contribute to high cholesterol. Instead of trying to relieve stress with high-fat foods or cigarettes, try exercise. It can be a healthy way to reduce your stress levels.

Q: How can diabetes affect one's cholesterol?

A: Having diabetes is a strong risk factor for developing heart disease.

Because a diabetic's risk of having a heart attack is typically as high as a person with heart disease, their LDL goal and cholesterol-lowering treatment are the same as for someone who has heart disease. High triglyceride and low HDL levels are often present in people who have diabetes. After an LDL goal has been reached, attention may have to be paid to the high triglyceride and low HDL levels.

Q: How does smoking affect one's risk?

A: Smoking affects heart disease by working together with other risk factors to increase your risk even further. Smoking has been shown to raise LDL cholesterol levels and speed up atherosclerosis.

Q: What can I do to cut back on cholesterol and fatty foods?

A: For about a week, write down everything you eat and drink. Also write the time you ate, where you ate, and what you were doing and thinking when you ate. By creating a diary, you will see patterns you may not have known existed, such as eating when you're feeling stressed or when you're bored. When you're aware of what's going on, it's much easier to change it. Say YES only to foods high in fiber (fruit, vegetables).

Q: Can children have high cholesterol?

A: It is possible for children to have high cholesterol. While very few children have it, about 90% of those who do have a parent with elevated levels. It is important to check a child's level if a parent has high cholesterol or if there is a family history of early heart disease.

The best course of treatment is to make family-wide changes in diet and exercise habits. Also, it is best to start these habits at an early age.

dl (putting the HDL values below the acceptable lower limit) and the LDL/HDL ratio increased 30% from 3.0 to 3.9. These latter two changes would be considered quite undesirable. As noted above, Kurup and Rajmohan (1995) studied the addition of coconut oil alone to previously mixed fat diets and report no significant difference.

Previously, Prior et al (1981) had shown that islanders with high intake of coconut oil showed *no evidence of the high saturated fat intake having a harmful effect in these populations*. When these groups migrated to New Zealand however, and lowered their intake of coconut oil, their total cholesterol and LDL cholesterol increased, and their HDL cholesterol decreased.

Halden and Lieb (1961) also showed similar results in a group of hypercholesteroleemics when coconut oil was included in their diets. Original serum cholesterol levels were reported as 170 to 370 mg/dl. Straight coconut oil produced a range from 170 to 270 mg/dl. Coconut oil combined with 5% sunflower oil and 5% olive oil produced a range of 140 to 240 mg/dl.

Earlier, Hashim and colleagues (1959) had shown quite clearly that feeding a fat supplement to hypercholesteroleemics, where half of the supplement (21% of energy) was coconut oil (and the other half was safflower oil), resulted in significant reductions in total serum cholesterol. The reductions averaged -29% and ranged from -6.8 to -41.2%.

as corn oil or safflower. Both groups fared better than the untreated controls.

More recently, Sundram et al (1994) fed whole foods diets to healthy normocholesterolemic males, where approximately 30% of energy was fat. Lauric acid and myristic acid from coconut oil supplied approximately 5% of energy. Relative to the baseline measurements of the subjects prior to the experimental diet, this lauric and myristic acid-rich diet showed an increase in total serum cholesterol from 166.7 to 170.0 mg/dl (+1.9%), a decrease in low density lipoprotein cholesterol (LDL-C) from 105.2 to 104.4 mg/dl (-0.1%), an increase in high density lipoprotein cholesterol (HDL-C) from 42.9 to 45.6 mg/dl (+6.3%). There was a 2.4% decrease in the LDL-C/HDL-C ratio from 2.45 to 2.39. These findings indicate a favorable alteration in serum lipoprotein balance was achieved when coconut oil was included in a whole food diet at 5% of energy.

Tholstrup et al (1994) report similar results with whole foods diets high in lauric and myristic acids from palm kernel oil. The HDL cholesterol levels increased significantly from baseline values (37.5 to 46.0 mg/dl,) and the LDL-C/HDL-C ratios decreased from 3.08 to 2.69. The increase in total cholesterol was from 154.7 (baseline) to 170.9 mg/dl on the experimental diet.

When unprocessed coconut oil is added to an otherwise normal diet, there is frequently no change in the serum cholesterol although some studies have shown a decrease in total cholesterol. It appears from many of the research reports that the effect coconut oil has on serum cholesterol is the opposite in individuals with low serum cholesterol values and those with high serum values. We see that there may be a raising of serum total cholesterol, LDL cholesterol and especially HDL cholesterol in individuals with low serum cholesterol. On the other hand there is lowering of total cholesterol and LDL cholesterol in hypercholesteroleemics as noted above.

Studies that supposedly showed a *hypercholesterolemic* effect of coconut oil feeding, in fact, usually only showed that

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When coconut oil was deliberately fed to human beings.

Some of the studies reported thirty and more years ago should have cleared coconut oil of any implication in the development of coronary heart disease (CHD).

For example, when Frantz and Carey (1961) fed an additional 810 kcal/day fat supplement for a whole month to males with high normal serum cholesterol levels, there was no significant difference from the original levels even though the fat supplement was hydrogenated coconut oil.

Bierenbaum et al (1967) followed 100 young men with documented myocardial infarction for 5 years on diets with fat restricted to 28% of energy. There was no significant difference between the two different fat mixtures (50/50 corn and safflower oils or 50/50 coconut and peanut oils), which were fed as half of the total fat allowance; both diets reduced serum cholesterol. This study clearly showed that 7% of energy as coconut oil was as beneficial to the 50 men who consumed it as for the 50 men who consumed 7% of energy as other oils such

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Continued from page 12

coconut oil was not as effective at lowering the serum cholesterol as was the more unsaturated fat being compared. This appears to be in part because coconut oil does not *drive* cholesterol into the tissues as does the more polyunsaturated fats. The chemical analysis of the atheroma shows that the fatty acids from the cholesterol esters are 74% unsaturated (41% is polyunsaturated) and only 24% are saturated. None of the saturated fatty acids were reported to be lauric acid or myristic acid (Felton et al 1994).

coconut oil to prevent coronary heart disease?

There is another aspect to the coronary heart disease picture. This is related to the initiation of the atheromas that are reported to be blocking arteries. Recent research is suggestive that there is a causative role for the herpes virus and cytomegalovirus in the initial formation of atherosclerotic plaques and the reclogging of arteries after angioplasty. What is so interesting is that the herpes virus and cytomegalovirus are both inhibited by the antimicrobial lipid monolaurin; but monolaurin is not formed in the body unless there is a source of lauric acid in the diet. Thus, ironically enough, one could consider the recommendations to avoid coconut and other lauric oils as contributing to the increased incidence of coronary heart disease.

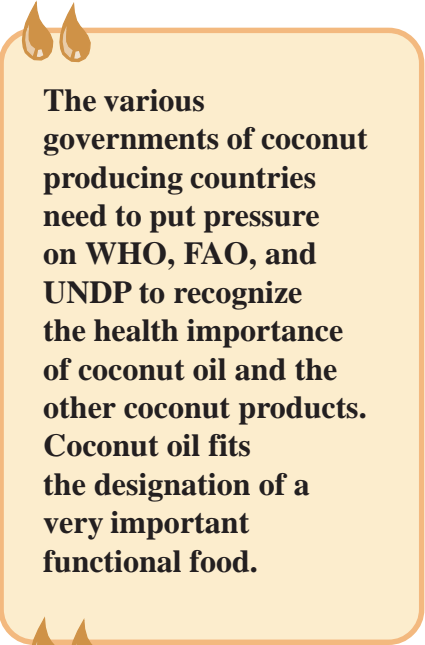
Perhaps more important than any effect of coconut oil on serum cholesterol is the additional effect of coconut oil on the disease fighting capability of the animal or person consuming the coconut oil.

Cocunut oil and cancer

In a study by Reddy et al (1984) straight coconut oil was more inhibitory than MCT oil to induction of colon tumors by azoxymethane. Chemically induced adenocarcinomas differed 10-fold between corn oil (32%) and coconut oil (3%) in the colon. Both olive oil and coconut oil developed the low levels (3%)

of the adenocarcinomas in the colon, but in the small intestine animals fed coconut oil did not develop any tumors while 7% of animals fed olive oil did.

Studies by Cohen et al (1986) showed that the nonpromotional effects of coconut oil were also seen in chemically induced breast cancer. In this model, the slight elevation of serum cholesterol in the animals fed coconut oil was protective as the animals fed the more polyunsaturated oil had reduced serum cholesterol and more tumors. The authors



The various governments of coconut producing countries need to put pressure on WHO, FAO, and UNDP to recognize the health importance of coconut oil and the other coconut products. Coconut oil fits the designation of a very important functional food.

noted that "...an overall inverse trend was observed between total serum lipids and tumor incidence for the 4 [high fat] groups."

This is an area that needs to be pursued.

Anti microbial benefits from coconut oil

I would now like to review for you some of the rationale for the use of coconut oil as a food that will serve as the raw material to provide potentially useful levels of antimicrobial activity in the individual.

The lauric acid in coconut oil is used by the body to make the same disease-fighting fatty acid derivative monolaurin that babies make from the lauric acid they get from their mothers= milk. The monoglyceride monolaurin is the substance that keeps infants from getting viral or bacterial or protozoal infections. Until just recently, this important benefit has been largely overlooked by the medical and nutrition community.

Recognition of the antimicrobial activity of the monoglyceride of lauric acid (monolaurin) has been reported since 1966. The seminal work can be credited to Jon Kabara. This early research was directed at the virucidal effects because of possible problems related to food preservation. Kabara (1978) and others have reported that certain fatty acids (e.g., medium-chain saturates) and their derivatives (e.g., monoglycerides) can have adverse effects on various microorganisms: those microorganisms that are inactivated include bacteria, yeast, fungi, and enveloped viruses.

The medium-chain saturated fatty acids and their derivatives act by disrupting the lipid membranes of the organisms. In particular, enveloped viruses are inactivated in both human and bovine milk by added fatty acids (FAs) and monoglycerides (MGs) as well as by endogenous FAs and MGs.

The properties that determine the anti-infective action of lipids are related to their structure; e.g., monoglycerides, free fatty acids. The monoglycerides are active, diglycerides and triglycerides are inactive. Of the saturated fatty acids, lauric acid has greater antiviral activity than either caprylic acid (C-10) or myristic acid (C-14).

The action attributed to monolaurin is that of solubilizing the lipids and phospholipids in the envelope of the virus causing the disintegration of the virus envelope. In effect, it is reported that the fatty acids and monoglycerides produce their killing/inactivating effect by lysing the (lipid bilayer) plasma membrane. However, there is evidence from recent studies that one antimicrobial effect is related to its interference with signal transduction.

Some of the viruses inactivated by these lipids, in addition to HIV, are the measles virus, herpes simplex virus-1 (HSV-1), vesicular stomatitis virus (VSV), visna virus, and cytomegalovirus (CMV). Many of the pathogenic organisms reported to be inactivated by these antimicrobial lipids are those known to be responsible for opportunistic infections in HIV-positive individuals. For example, concurrent infection with cytomegalovirus is recognized as a serious complication for HIV+ individuals. Thus, it would appear to be important to investigate the practical aspects and the potential benefit of an adjunct nutritional support regimen for HIV-infected individuals, which will utilize those dietary fats that are sources of known anti-viral, anti-microbial, and anti-

Lauric acid in foods

Whole coconut as well as extracted coconut oil has been a mainstay in the food supply in many countries in parts of Asia and the Pacific Rim throughout the centuries. Recently though, there has been some replacement of coconut oil by other seed oils. This is unfortunate since the benefits gained from consuming an adequate amount of coconut oil are being lost.

Based on the per capita intake of coconut oil in 1985, the per capita daily intake of lauric acid can be approximated. For those major producing countries such as the Philippines, Indonesia, and Sri Lanka, and consuming countries such as Singapore, the daily intakes of lauric acid

effective in reversing severe weight loss in AIDS patients, but it is discontinued when the patients leave the hospital because it is not sufficiently palatable for oral use. The more widely promoted enteral formulas (e.g., Ensure7, Nutren7) are not made with lauric oils, and, in fact, many are made with partially hydrogenated oils.

How much lauric acid ?

It is not known exactly how much food made with lauric oils is needed in order to have a protective level of lauric acid in the diet. Infants probably consume between 0.3 and 1 gram per kilogram of body weight if they are fed human milk or an enriched infant formula that contains coconut oil. This amount appears to have always been protective. Adults could probably benefit from the consumption of 10 to 20 grams of lauric acid per day. Growing children probably need about the same amounts as adults.

Further action

The coconut oil industry needs to make the case for lauric acid now. It should not wait for the rapeseed industry to promote the argument for including lauric acid because of the increased demand for laurate. In fact lauric acid may prove to be a conditionally essential saturated fatty acid, and the research to establish this fact around the world needs to be vigorously promoted.

Although private sectors need to fight for their commodity through the offices of their trade associations, the various governments of coconut producing countries need to put pressure on WHO, FAO, and UNDP to recognize the health importance of coconut oil and the other coconut products. Moreover, those representatives who are going to do the persuading need to believe that their message is scientifically correct. Because it is.

Among the critical foods and nutrition “buzz words” for the 21st Century is the term “functional foods.” Clearly coconut oil fits the designation of a very important functional food. ■



protozoal monoglycerides and fatty acids such as monolaurin and its precursor lauric acid.

No one in the mainstream nutrition community seems to have recognized the added potential of antimicrobial lipids in the treatment of HIV-infected or AIDS patients. These antimicrobial fatty acids and their derivatives are essentially non-toxic to man; they are produced in vivo by humans when they ingest those commonly available foods that contain adequate levels of medium-chain fatty acids such as lauric acid. According to the published research, lauric acid is one of the best “inactivating” fatty acids, and its monoglyceride is even more effective than the fatty acid alone.

were approximately 7.3 grams (Philippines), 4.9 grams (Sri Lanka), 4.7 grams (Indonesia), and 2.8 grams (Singapore). The intake of lauric acid from coconut oil in Kerala ranges from about 12 to 20 grams per day (Eraly 1995), whereas the average for the rest of the country is less than half a gram. An average high of approximately 68 grams of lauric acid is calculated from the coconut oil intake reported in (1981) for the Tokelau Islands. Other coconut producing countries may also have intakes of lauric acid in the same range.

Only one US manufactured enteral formula contains lauric acid (e.g., Impact7); this is normally used in hospitals for tube feeding; it is reported to be very

The only incriminating component in the Kerala diet from the heart angle is liberal consumption of fresh coconut and coconut oil. Coconut fat contains the highest amount of saturated fat among all edible oils.

Prevalence of lifestyle diseases and risk factors in Kerala

Community based prevalence studies are few in Kerala. However, recent studies carried out by the author and his team at Health Action by People reveal a disturbing picture in our State. The pertinent data is furnished in table 1.

Table 1 Prevalence of risk factors for coronary heart disease in urban and rural areas of Kerala.

There is a large body of evidence suggesting that Kerala is on the threshold of an epidemic of lifestyle diseases. Leading the pack of killer diseases is heart attack, technically called ischemic heart disease (IHD). Many predisposing factors lead to premature heart attacks. Important among them are hypertension, diabetes mellitus, over weight and obesity, lack of physical exercise, smoking, male gender and advancing age. Many biochemical factors are also implicated as risk factors for heart disease. Among those, the most important are total cholesterol (TC) and low density lipoprotein cholesterol (LDLC). Another component of circulating cholesterol, namely high density lipoprotein cholesterol (HDLC) is considered protective against ischemic heart disease. This article examines the present situation

in Kerala on the emergence of lifestyle diseases with particular stress on IHD and its relationship to plasma lipids.

Major causes of death of Varkala ICDS population (Year 2002-2003)

(Figures indicate percent of total deaths)

1. Heart Attack	21.1
2. Stroke	13.0
3. Cancer	11.0
4. Other Heart Disease	6.8
5. Diabetes, Kidney etc	5.1
6. Chronic lung disease	5.4
7. Infections	6.0
8. Suicides	8.1
9. Accidents	3.5
10. All other causes	3.9
11. Old age/ Unclassified	11.7

It is clear that the population of Kerala is at very high risk of death from diseases like heart attack, stroke, cancer and other chronic diseases. The fact is reinforced by the data on cause of death which our group has collected from seven Panchayats in the Varkala ICDS block as part of an ongoing study.

The information has shocking implications for the State of Kerala. If the Varkala data is representative of Kerala, at least 38, 000 people die every year from heart attacks alone. Stated in another way, every day, about 110 people die of heart attacks some where in Kerala. One out of four heart attacks end in death, it could thus be surmised that at least 1.5 lakhs heart attacks occur every year in Kerala. If a heart attack has to be properly treated the minimum cost will be Rupees 25, 000 (based on prevailing rates). The

Every day, about 110 people die of heart attacks somewhere in Kerala. One out of four heart attacks end in death. At least 1.5 lakhs heart attacks occur every year in Kerala, a study by Health Action by People shows.

annual cost burden that heart attacks alone impose on Kerala society will be Three Hundred and Seventy Five crore rupees. Added to this will be the losses incurred by death and disability. If we were to add the cost of treating and managing strokes, diabetes, hypertension and kidney diseases, the burden on Kerala's economy could be enormous.

Many risk factors contribute to the epidemic of ischemic heart disease. A few

have reached ominously low levels. This further contributes to an increasing risk of heart attack.

Among the biochemical risk factors, the most important is elevated serum cholesterol. We have already mentioned that total cholesterol (TC) and LDL cholesterol are the incriminating factors while HDL cholesterol is protective. It is important to examine the serum cholesterol status of the average Keralite. We have conducted many studies on the serum cholesterol profile of people of Kerala. Our results highlight the high risk people have in developing IHD, solely because of elevated serum cholesterol. Some of the recent observations are provided below.

Urban

Neyatinkara	220.5
Trivandrum	234.5

Rural

High Land	203.3
Mid Land	208.4
Coastal	198.0
Varkala	231.5

The picture is put in perspective, only if we realize that the serum cholesterol level of the Americans is just over 200

counterparts elsewhere in India. The principal component of elevated serum cholesterol is LDL cholesterol which is harmful. Contrary to general belief, the level of friendly cholesterol appears to be satisfactory. However, in the context of very high LDL cholesterol, the risk for heart attacks remains high indeed. Our ongoing studies suggest that in northern Kerala, sixty percent of young people (age group 18-22 years) have cholesterol above 200 mg. We haven't yet captured regional variations in serum cholesterol. A most conservative estimate suggests that at least 35 % of Keralites need lipid lowering drugs to offer partial protection from possible heart attacks.

Elevated population cholesterol has strong relationship with diet. The most important dietary factor that influences serum cholesterol is consumption of saturated fat. Both the quantum and proportion of saturated fat influence serum cholesterol level. Dominant sources of saturated fat are animal fat (structural fat, milk and milk products) and certain vegetable fats. The consumption of animal foods in Kerala is generally low. Average milk consumption is under 200 ml per day while meat consumption is less than 15 grams per day. Fish is our most important animal food and is consumed to about 40 grams per person per day. Fortunately, fish fat is protective to the heart.

The only incriminating component in the Kerala diet from the heart angle is liberal consumption of fresh coconut and coconut oil. Coconut fat (either oil or coconut milk) contains the highest amount of saturated fat among all edible oils.

Palm oil stands second from this point of view. However, coconut oil is 89 % saturated while palm oil provides only 51 % saturated fatty acids. All animal foods provide 45-50 % saturated fatty acids. Nowhere in the world people eat so much of saturated fat as in Kerala. The more affluent the person, the more saturated fat does he consume. Saturated fats promote elevated serum cholesterol. It is not because coconut oil contains any cholesterol. Saturated fatty acids promote

Risk Factors	Urban		Rural			
	Neyatinkara	Trivandrum	High Land	Mid Land	Coastal	Varkala
Diabetes	16.9%	22%	6.8%	10.1%	3.6%	21.2%
Hypertension	27.6%	37%	28.1%	38.5%	37.6%	41.4%
Over Weight & Obesity	48.7%	36%	16.1%	22.6%	28.4%	33.5%
Smoking	46.6%	57%*	52.1%	38.5%	37.6%	Not available

* Males
 * *The data for Neyatinkara represent standardized rates for persons aged 30-64 years. For Trivandrum city and Varkala, data pertains to the age 35-70 years.

are not modifiable. Male sex, advancing age and strong family history are non modifiable risk factors. Among the modifiable risk factors, the most important are physical activity, over weight and obesity, hypertension, diabetes, smoking and elevated serum lipids. We have already provided data on the prevalence of important modifiable risk factors in Kerala. Recent studies revealed that the physical activity levels of the Keralites

mg/ 100 ml. Even the poorer rural segments of Kerala's population have exceeded the American levels. In the cities, more than 50 % of the people have levels of cholesterol which necessitate cholesterol lowering drugs. On an average, the cholesterol levels of the Keralites is higher than that of neighboring Indian States by over 20 milligrams. Even an under nourished rural Keralite has serum cholesterol higher than the urban



Homocysteine in focus

DR. P. A. Kurup

Last century has witnessed an alarming increase in the global prevalence of cardiovascular disease (CVD) and India faces the greatest burden in this respect. A hundred percent increase in the mortality rate due to CVD is predicted from 1985 to 2015 in developing countries. There is paucity of reliable population based data in different states in India, but the overall prevalence of CVD is put at 11 percent of the total population. This is also very near the estimated incidence in Kerala.

A major cause of CVD is arteriosclerosis, the focal sclerotic thickening of arterial wall, causing blockage to the flow of blood. Formation of a blood clot in an already narrowed vessel is the immediate cause of heart attack.

the synthesis of cholesterol in the human body. A prudent diet which maintains cholesterol in the desirable range shall provide one third of fat energy in the form of saturated fatty acids, another third from mono-unsaturated fatty acids and the remaining third from poly-unsaturated fatty acids. All international recommendations point to this fact. In the Kerala diet however, over 60 % of fat energy will be from saturated fat. Despite some favorable contribution from fish, the diet of the Keralite is heavily atherogenic. The only practical approach is to moderate the consumption of coconut and coconut oil. Moderation is the key, not total abstinence.

Talking about coconuts is a sensitive issue. The emotional bonds that a Malayalee holds for the coconut palm and all its products are so strong that he

The increasing situation of coronary diseases in Kerala cannot be attributed to conventional risk factors alone. A mild elevation of plasma homocysteine is found to be an independent factor for cardiovascular diseases.



Several landmark studies in the West have identified a host of risk factors for CVD. The currently recognized or conventional risk factors are age, male sex

believes that the nature's gift can do no harm. Examples of our ancestors living long on diets rich in coconut often cited. Naturopathy proponents advocate coconut meat and milk as remedies. Recent studies have been cited as evidence that coconut oil does no harm. Such claims are made in popular news papers and

meetings sponsored by the Coconut Board and similar agencies. No evidence has been published suggesting the beneficial effects of coconut consumption. On the contrary, thousands of publications in the 60's and 70's have clearly demonstrated the cholesterol raising property of coconut oil.

family history (all non modifiable risk factors), cigarette smoking, hypertension, diabetes, obesity, lack of physical activity, behavioural risk factors and elevated blood cholesterol and / or triglycerides (all modifiable risk factors).

Identification of the risk factors provides a basis for prevention of CVD.

Despite the long list of these conventional risk factors, quite a large percent of CVD still remains unexplained. This led to a search for other possible risk factors, three of which are particularly important. These are elevated blood homocysteine, lipoprotein (a) [LP(a)] and insulin resistance, which is the hallmark of what is known as Syndrome- X.

If we examine the situation in Kerala, over 60% of CVD cannot be explained on the basis of the conventional risk factors alone. Considering the strong

People of Kerala are in a dilemma. Whom shall they believe? In a land in which every one claims to be an expert in every other's field, informed choice is difficult. Scientific knowledge is often subordinated to political pragmatism. The medical community of Kerala privately agree that saturated fats are harmful, but

many hesitate to air their private convictions in public. I can only say one thing. It would be prudent for Keralites to limit the intake of coconut and coconut oil to minimize potential threat from raised serum cholesterol. The other choice is to believe the quacks, continue to use coconut and oil with gay abandon and swallow "statin pills" costing ten rupees everyday throughout your life to keep cholesterol in check.

■ The author is the Chairman, Health Action by People, Trivandrum

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Table 3

association between increased blood cholesterol and CVD, these patients had total cholesterol 180 ± 18 ; LDL cholesterol 112 ± 24 and triglycerides 60 ± 20 (all mg/dl), which cannot be considered elevated levels. In many cases, the total cholesterol was still lower around 120 ± 21 , as a result of treatment with cholesterol lowering drugs. But many of these patients still had subsequent heart attacks.

Many patients who had undergone surgical procedure for removal of block in the artery did not have elevated cholesterol before or after surgery. But in many cases, recurrence of the block took place, necessitating further surgical intervention.

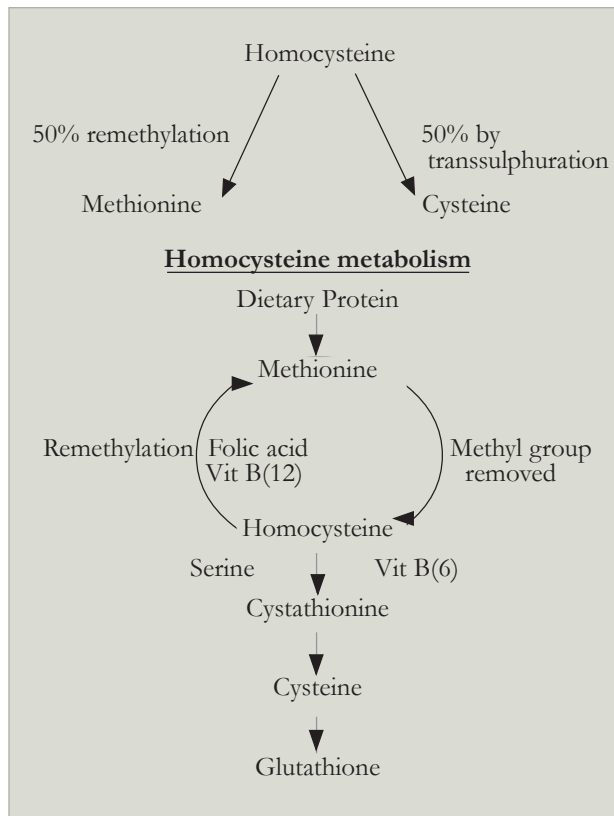
If elevated cholesterol had been the only risk factors in these cases, then it is only logical to consider that with the lower cholesterol levels, recurrence of heart attack I block should not have occurred.

Further decisive evidence comes from analysis of autopsy samples of the blocks. In many cases cholesterol content of the block was not elevated, as would have been the case if the cause of block was elevated cholesterol. The blocks in these cases, were rich in extra cellular matrix components -collagen and mucopolysaccharides -a fact which again points out to factors other than cholesterol being involved.

In a population study carried out by us, the level of total cholesterol, LDL cholesterol and triglycerides were not elevated in 70 -80 % of the normal healthy population in Kerala. Yet the incidence of CVD is no less in Kerala when compared to other States.

All these observation indicate that elevated blood cholesterol or lowering elevated blood cholesterol, if it is elevated, in CVD patients, may not be the only factor as far as the Kerala population is concerned.

It is in the light of these observations that the relevance of the newer risk factors now identified for CVD, assumes considerable significance. Even though the list of newer risk factors is growing, as I stated earlier, the three most important ones are homocysteine, Lp(a) and insulin resistance. I will deal in some detail with homocysteine as a risk factor for CVD in this article and briefly mention about Lp(a)



and insulin resistance.

The importance of homocysteine as a risk factor for CVD is becoming a familiar concept now. Since early 1990s a constantly increasing number of studies have been published on homocysteine. Homocysteine in relation to CVD has also been the topic of three international conferences, in 1995, 1998 and 2001.

A mild elevation of plasma homocysteine has been shown to be an

independent factor for cardiovascular disease. A study was undertaken by our Centre recently on homocysteine in the CVD patients. The subjects of the study were CVD patients on cholesterol lowering drugs for periods ranging from several months to several years and patients who had undergone bypass surgery. Normal healthy subjects selected from the general population formed the controls. Most of the CVD patients (around 70%) had low serum cholesterol but had elevated plasma homocysteine. Around 50% of the normal healthy people with normal blood cholesterol, had mild elevation of plasma homocysteine. Thus around 50/0 of our normal population have increased predisposition to CVD, eventhough their blood cholesterol is not elevated.

What is homocysteine, why does its level increase and how does it cause CVD.

Homocysteine is a sulphur containing amino acid, not present in our dietary protein. Our body makes it from another sulphur containing amino acid called methionine which is present in our dietary protein, by removal of its methyl group.

Methionine \longrightarrow homocysteine
(Methyl group removed)

Normally the level of homocysteine in the blood does not rise. There are two pathways by which homocysteine is metabolized in the body. 50% of the homocysteine is converted back to methionine by remethylation. The other 50% is broken down to cysteine by the trans sulphuration pathway.

Metabolism of homocysteine, thus, requires three enzymes and three vitamins as cofactors.

The enzymes are methionine synthase and methylene tetrahydro folate reductase both involved in the remethylation process and cofactors required for the process are folic acid and vitamin B(12), two B complex vitamins. The third enzyme is cystathionine synthase and the cofactor is vitamin - (pyridoxin) another B complex vitamin. These function in the transsulphuration pathway.

A genetic defect in any of these enzymes or a dietary deficiency of these

vitamins would result in increase in the level of homocysteine. Thus genetic factors or dietary deficiency of the above vitamins or both may be involved in high homocysteine levels.

If both patients have elevated homocysteine (due to defective genes) the resultant offspring will have high level of blood homocysteine and thus increased predisposition to CVD. If one of the patients has defective gene, the offspring may or may not develop high homocysteine but there can be mild elevation.

Many people with high homocysteine do not get enough of these vitamins in their diets, the reason being an unbalanced or inadequate diet.

With advancing age, gastrointestinal atrophy may result in decreased absorption of these vitamins. Therefore supplementation of these vitamins is required and there is evidence that such supplementation can result in lowering the elevated homocysteine. Even if there is a genetic deficiency of any of the enzymes involved in homocysteine metabolism, supplementation with these vitamins can result in optimal functioning of the defective enzyme.

How does the elevated homocysteine cause atherosclerosis. The reasons are the following:

1. It causes damage to the endothelial cells inside our arteries. Endothelial cells line the inside of arteries and other blood vessels. Functional endothelial cells are essential for the good vascular health.
2. Damage to the endothelial cells invites arteriosclerotic process, leading to heart disease.

How does homocysteine caused damage to endothelial cells?

1. Endothelial cells age faster in the presence of high level of homocysteine. The cells quit dividing and eventually die.
2. Homocysteine promotes deposition of collagen and acid mucopolysacchari causing thickening of the arterial wall, thereby promoting the artery occluding process I block formation.
3. It causes conversion of LDL to the

more hazardous oxidized LDL.

4. It increases the tendency of intravascular blood clot formation (thrombosis), a key element in heart attack and stroke.
5. Recent cell culture studies have shown



Even a mild elevation of homocysteine is a serious risk factor for cardiovascular disease. It is essential to determine plasma homocysteine level in every person early in life.



that homocysteine can induce platelet aggregation, another factor involved in thrombosis.

Elevated blood homocysteine is thus a serious risk factor for CVD. Hyperhomocysteinemia in most cases is associated with low levels of folate, vit B (12) and B(6) Successful lowering of elevated homocysteine levels, in most cases, is accomplished by simple vitamin supplementation. Ultrasound scanning studies also indicate that supplementation with these vitamins can decrease progressively the size of the block in the arteries in cardiovascular patients.

Moderate elevation of homocysteine may often be caused by unhealthy lifestyle factors, that influence the vitamin status I metabolism. There are high alcohol consumption, smoking, low nutritional intake of vitamins, lack of physical exercise, overweight and even stress.

The diagnosis of hyperhomocysteinemia could thus be an important incentive for the patient for a healthier lifestyle. It should be noted that in many Western countries, cardiologists routinely prescribe folic acid, pyridoxine and vitamin BO for every heart patient.

These studies indicate:

1. Even a mild elevation of homocysteine is a serious risk factor for cardiovascular disease.
2. It is essential to determine plasma homocysteine level in every person early in life and if it is elevated, increase dietary intake of folate, B(12) & ~B(6) or supplement these vitamins.
3. Every heart patients should receive supplementation of these vitamins, apart from other treatment.

Increase in the level of serum lipoprotein (a) [Lp(a)] and insulin resistance are also equally important independent risk factors for cardiovascular disease.

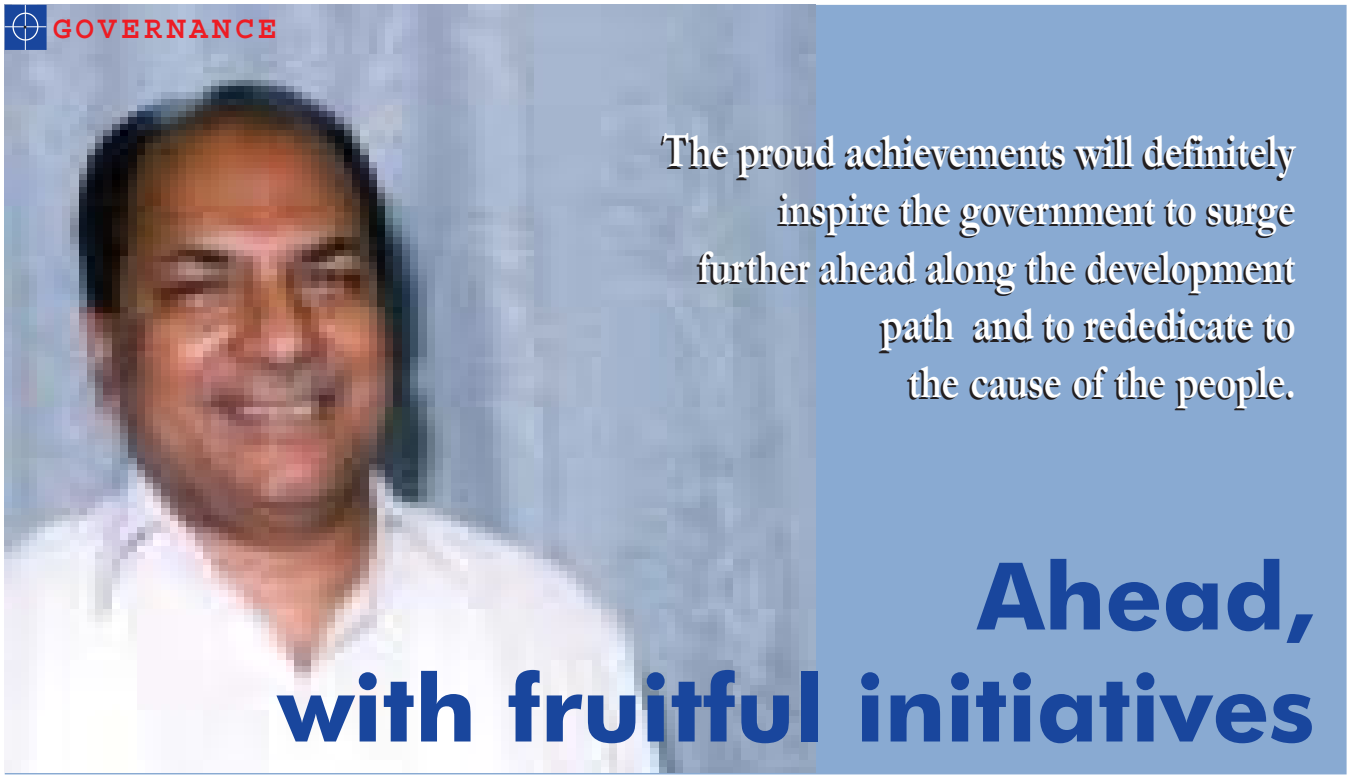
I may briefly mention that lipoprotein (a), complex of apoprotein (a) and WL is an atherothrombogenic moiety and its increased level is associated with cardiovascular disease. In Kerala around 40% of the normal healthy population has increased level of this lipoprotein. Increase in the level of Lp(a) has now been shown to be correctable by niceritol.

Insulin resistance (and a compensating increase in insulin secretion) is the primary factor involved in what is known as Syndrome -X. The secondary features of Syndrome -x are hypertension, obesity, decreased glucose tolerance, low HDL cholesterol and high triglycerides. Syndrome -X is a predisposing condition for CVD.

To conclude, cardiovascular disease is a multifactorial condition where proper attention should be paid in identifying the correct risk factor I factors involved so that effective treatment is possible. It may be hyperhomocysteinemia, elevated Lp(a), insulin resistance or elevated senm1 lipids, either singly or in combination of two or more factors. An important point which emerges out from these studies is that if the risk factor I combination of risk factor I involved can be identified in the population at an young age, then it is possible to correct the aberrant factor / factors, so that an heart attack can be prevented.

An active public health policy is urgently needed to reduce the predicted frightening increase in CVD in our country, particularly in our State.

■ The writer is the Director, Metabolic Disorders Research Centre, Thiruvananthapuram



The proud achievements will definitely inspire the government to surge further ahead along the development path and to rededicate to the cause of the people.

Ahead, with fruitful initiatives

The present government headed by Sri A.K. Antony is completing its third year in power. During the past thirty-six months the State could achieve notable changes under the rule of this government. This government came into power at a time when the state was passing through a severe financial crisis. The debt trap took the state to such a pathetic condition that it felt it difficult to meet even the daily expenses. Without wasting the time by putting all the blame on the previous regime, this Government acted prudently, right from the beginning, to avert the situation and took firm steps to observe strict financial discipline and adopted a policy of long-term vision. Even though the rigid enforcement of this policy necessitated some belt-tightening measures it led the state to a safe position again. Within this short span itself the government has been able to pay off a considerable portion of the huge debt accrued by the previous government

The modernising government programme, aiming at the total restructuring of the government to make it more people friendly by improving its efficiency and ensuring better service, has been welcomed as a right move.

A police policy devoid of any political inclination gave the police force an opportunity to act freely, without any partisan consideration. Statistics reveal the totally changed atmosphere in the law and order front of the state, quiet distinct from that of the previous government. The way the authorities tackled some grave incidents that came up during its period proved beyond doubt that the government, which is in power now in the state, is capable dealing with any such situations. The government was able to curb the violence broke out of political rivalry and consequent murders and ensure peace in the northern districts of Kerala. This give ample proof for its commitment and efficiency. Thirty eight fast

track courts have been established in the state to avoid delay in the administration of justice. Top priority has been given to the development of the Thiruvananthapuram city to raise it to the level befitting to a capital city. A special scheme has been chalked out for this and it is now under implementation.

The government is committed to the welfare of the adivasis in the state and this is evident from the fact that it could start the process of rehabilitating the tribal people with in six months of its inception into power itself. A memorandum of understanding was signed between the state and central Governments to purchase 7612 acres of land at Aralam farm for this purpose.

Special attention has



Releasing of CD on Modernising Government Programme.



Inauguration of GIM at Kochi, January 2003.

File Pictures



Inauguration of the AKSHAYA Project.

been given to the welfare of the police personnel too. They have been given more quarters. The Police camps have been provided with additional facilities. A head quarter was built for the police battalion at Adoor. A police academy was also started at Thrissur. In order to ensure sufficient participation of women, 1200 posts of women police constable have been created anew. For the first time in the history of Kerala, steps have been taken to modernise the fire force and a sum of 150 million has been expended .

The labour front of the state is experiencing a peaceful time now. The situation of the problem-ridden plantation sector has improved considerably. As many as 80 new revenue villages has also been brought under the ESI scheme. The newly enacted Loading and unloading (Amendment) Act has now been come into force. The efforts of the government to make the investors aware that Kerala is an investor-friendly state have



Inauguration of State level IT Education Mela 2002 at Kasargode



Inauguration of JBIC aided water supply project at Kozhikode



Launching of a house boat of State Tourism Dept. at Alappuzha



Valedictory function of Campaign on Kerala Development Programme in Tholikkode at Thiruvananthapuram



Releasing of Souvenir on good governance at Kottayam

also yielded good result. GIM, the first meaningful step towards this goal, was a grand success. As a result, industries with an investment of Rs. 5000 crores are being established in the

state. Projects involving crores of rupees as investment is still on the anvil.

The I.T and Biotech industries will pave way for a new chapter in the development history of Kerala. The KSIDC has completed 58 projects worth 290 crores since the inception of this Government. Twenty new companies, including the Infosys, one of the leading companies in the IT sector, have started their centres at Techno Park in Thiruvananthapuram.

No serious attempt has been made till recently to address the problems of the Non Resident Keralites, whose hard earned money contribute much to the State's economy. The Non-Resident Keralites' Affairs department, established for their welfare has formulated a number of programmes under this government.

The Pravasi Swasraya Project for providing pension and other benefits to the non-residents, implemented as a joint venture with LIC, is a big boon to the Pravasis. The newly opened centre at Thiruvanan-

thapuram for the prompt attestation of Certificates proved to be a great help for them.

The education department is implementing various programmes with the objective of taking our younger generation to new heights so that they can compete with the students of any other part in the world. Most modern educational facilities have been provided in every nook and corner of the state. The firm resolve of the government to achieve self-reliance in the higher education sector provides a ray of hope for the state. For the past 36 months the government has been able to provide a peaceful and smooth learning atmosphere to the students of the state. Adequate number of Engineering, Medical and Nursing colleges has been started so that our students have no more to rush to other states to fulfil their professional ambitions.

The prices of agricultural products including coconut and rubber improved much. The application of biotechnology has paved the way for a fruitful change in the agricultural front. This will help increase the production and productivity in our state.

The condition of our roads has improved much in our state to a level which the state has never achieved before. Not only national highways and state highways, but even small village roads also are testimonials to this fact.

Even though the journey of KSRTC is through a path of thorns and stones, it has succeeded in reducing the travel hardships of common man by putting minibuses on the road. During the years KSRTC has performed vital functions in critical areas and introduced several economic measures to reduce total expenditure and to improve the revenue collection. 295 new buses were put on road in addition to the hundred mini buses. These measures have brought the corporation from a state of heavy loss to a situation of no loss no profit. In the water transport sector, insurance coverage has been implemented for the boat passengers. The barge transport has been started between Kochi and Alappuzha, which can carry 350 tonnes of cargo thrice

in a week.

The government is committed for the upliftment of the tribal people. Steps many are being taken under the Scheduled Caste and Scheduled Tribes Department and Revenue Department for providing free land and houses for the them. A number of incentives have also been provided for those who are studying in the self-financing institutions. The housing grant to the tribal people has been enhanced to Rs. 75000. The housing loan has been doubled. 13500 new houses have been built. For the welfare of adivasis, the tribal mission was formed. Thousands of acres forestland have been distributed to them.

The Revenue Department was able to act timely when natural calamities occurred in our state. The Stamp Act has been amended. The stamp duty and surcharge has been reduced.

Amidst the financial crunch, the Health Department tried hard to push forward its efforts to provide improved treatment facilities to the common man. Adequate supply of medicines has been ensured even in rural PHCs.

The three-tier Panchayathiraj system, which is bringing in a revolution in development, is our pride. The infrastructure development in sectors like labour, industry, tourism and IT has been accomplished. Total poverty eradication, the rehabilitation of destitutes etc also have been fulfilled. The model created by the Kudumbashree in networking BPL families for eradicating poverty is extended to all panchayaths in the state.

Tourism is one of the core sectors that can provide a lot of employment. For tapping the potential of this sector the coordinated effort of all other departments is needed.

The government aims at developing its official web portal as an information gateway so that people can have their doubts cleared and queries answered through it. The freedom of information bill, which ensures the peoples' right to know, is ready for enactment.

The UDF government was able to start a number of projects in areas of irrigation and water supply with a long-

term vision. Within this short span, the government could complete as many as 105 water supply schemes.

The government has been able to contain the price hike too by its judicious market intervention and by strengthening the public distribution system. The Anthyodaya and Annapoorna schemes have exceeded their targets. Maveli stores have been opened newly in 75 Panchayaths too.

The transmission and distribution loss has been reduced to 5 percent of generation. 10 lakh new connections were given within this period. Now a consumer would get connection within three months since he made the payment for connection.

The cooperative sector is now in a strong position. A sum of rupees 15 crores has been earmarked for helping the weaker sections in this sector. Government's efforts made it possible to obtain permanent approval for the Pariyaram Medical College. A cooperative heart centre was started for cardio vascular surgery.

It was through prompt tax collection and enhanced non-tax revenue that the government could improve the financial situation. Record achievement has been



Inauguration of Sabarigiri Powerhouse renovation project.



Inauguration of Kissan Kerala scheme



Inauguration of the Grama Vanam Project in Aralam Panchayat at Kannur



Laying of Foundation Stone for Transport tower in Thiruvananthapuram



Laying of Foundation Stone for Transport tower in Thiruvananthapuram



Inauguration of Regional Attestation Centre at Thiruvananthapuram

made in the plan implementation by expending 9500 crores within three year. Nine thousand new posts of plus two teachers were sanctioned. All the pension benefits of the employees have been distributed.

The government's performance in the fisheries sector is also praiseworthy. Wireless connectivity has been established from Kasargod to Ernakulam in order to strengthen the marine protection activities. Fish cultivation was extended to 511 hectares too. A new scheme with an estimate of 27 crores is being formulated for the comprehensive development of the traditional fishing sector. The houses of fisher folk were provided with water supply and sanitary facilities.

The government will not turn a blind eye upon the production and sale of illicit liquor. The Excise Department has been provided with modern facilities to deal with such incidents.

The advancement the government could make so far alone is enough to redefine the established concepts of development. The proud achievements will definitely inspire the government to surge further ahead along the development path and to rededicate to the cause of the people. ■



Inauguration of the Capital Regional Development Programme



PHOTO FEATURE



First Prize: Sali Palode
Title:
Camera: Nikon90x
Lens: 70-300
Film: Kodak 200

Wild

THE annual...
conducted...
a luring sub...
The outcom...
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movements...
Joshy Manj...
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Have a look

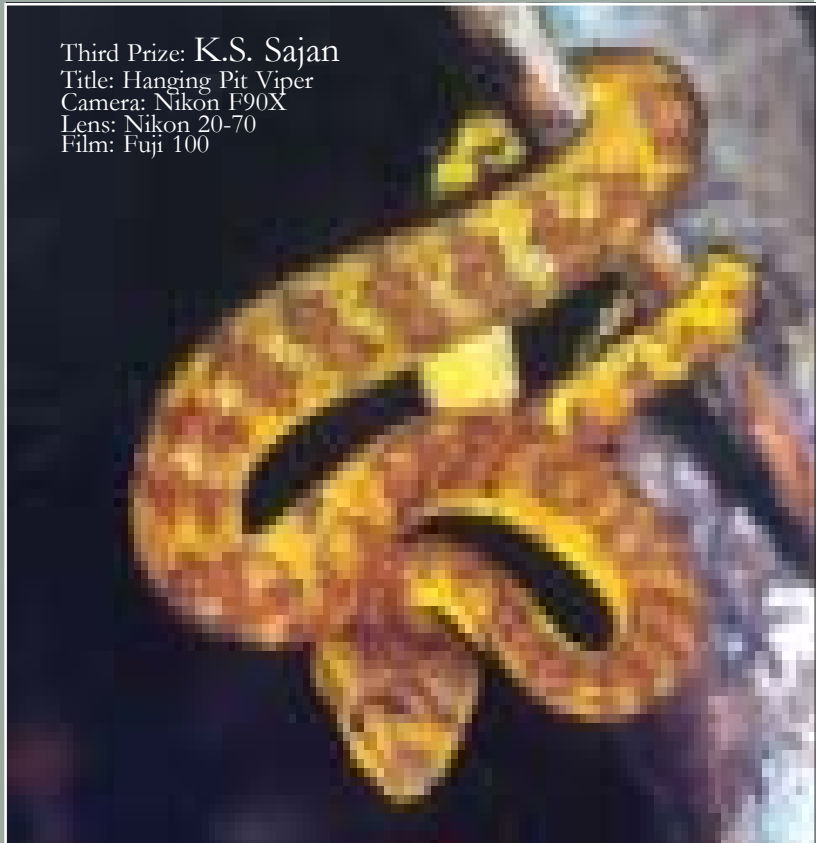


Second Prize: Joshi Manjummel
Title: Saantham (Calm)
Camera: Nikon FM2
Lens: Nikon 70-210
Film: Fuji 800

Wild Moments

The annual photography competition conducted by Department of Forests is a subject to many a nature lover. The outcome of 2003 competition was an exciting one. Sali Palode, a teacher by profession, more in obsession with Nature's bounty and her moments, won the first prize leaving Joshi Manjummel and K.S. Sajan in second and third places respectively. Here is a look at their winning shots.

Third Prize: K.S. Sajan
Title: Hanging Pit Viper
Camera: Nikon F90X
Lens: Nikon 20-70
Film: Fuji 100



Most of the E-Governance projects which have gained currency today, by and large give attention to front end processes only. Among these projects a majority emphasise on information access and transparency. There are some projects which concentrate on faster and efficient public transactions as well. Even in the few projects which undertake computerisation of the backend, the focus

few software applications addressing various facets of governance in local self government institutions, creating content for training the stakeholders in operationalising these applications and in drawing up a set of best practices for replicable and improvisable implementation through intensively planned pilots. The pilots of the mission have gone off the beaten path in addressing issues of administrative

registration process with community level identification systems, wiping out corruption in the process etc., which are wider social objects of civil registration are quite often overlooked. All these aspects assume central stage in the mission's civil registration restructuring programme.

The mission had been for the last three years running pilot projects for computerising birth, death and marriage registrations in five Grama Panchayats and four Municipal Corporations. Data entry of past records had been underway in three Municipal Corporations, three Municipalities and five Grama Panchayats. Around twenty one lakh records of registration have been so far handled by "Sevana", the prestigious application of the Mission which has won the distinction of being the most coveted application for popular IT usage from the Computer Society of India (CSI_TCS Award 2001). District level pilots to handle another forty two lakh records have been initiated recently in Kasargod, Malappuram and Thiruvananthapuram Districts. Public access counters viz. "Janasevanakendrams" handling computerised issue of certificates had been in operation since January 2003 onwards in the four Corporations. In Malappuram District Akshaya kiosks are being tailored to facilitate this role.

The application has meanwhile gone through substantial revisions and a comprehensive "Sevana" product suite comprising six different applications has emerged. The applications handled by the suite comprise the Past Data entry module, Hospital Kiosk module, Local body Kiosk module, Local Self Government workflow module, District Registrar's Office workflow module and the State Registrar's Office workflow module. These applications cover all the ninety two odd different business processes relating to civil registration including periodical reports to the Registrar General of Births and Deaths unlike several other applications developed by various other Total Solution Providers and agencies in the country which at the best cover only nine.

A set of best practices for pre-

 NEXT MOVE

Birth Certificates in 24 Hours

P.V. Unnikrishnan

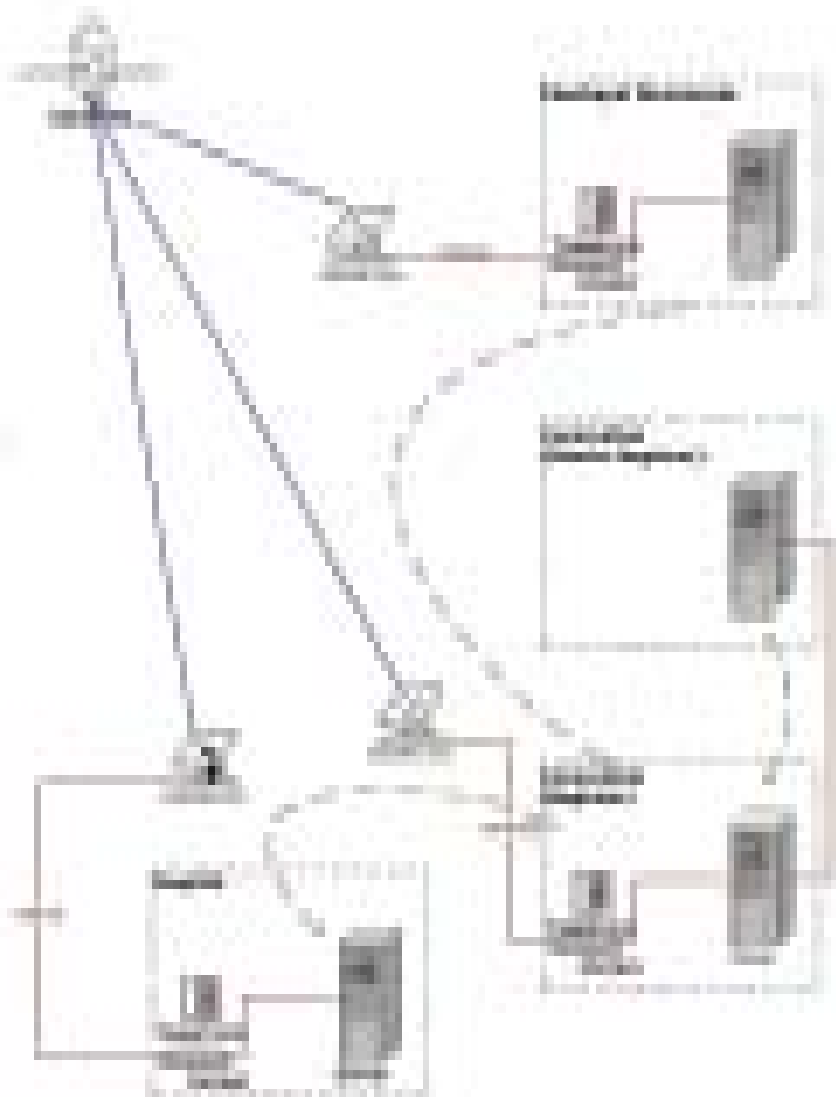
Information Kerala Mission has mooted a programme for linking 40 government hospitals and 142 private hospitals in the five corporation areas with respective Janasevanakendrams. The aim is to make available birth and death certificates within a day of registration through hospitals.

is in general on automation of processes in government as they exist. Re-designing of business processes and creating knowledge bases for decision making are far beyond the scope of contemporary e-governance projects. The Information Kerala Mission programme for computerisation of Local Self Government Institutions is a striking deviation from this almost universal paradigm.

The Information Kerala Mission established in June 1999 as a sequel to the decentralised plan campaign has gone a long way in building and customising a

reforms and change management.

An outstanding input to the e-governance methodology from the mission had been the programme for reforming the civil registration system which has been shaped by drawing substantial contributions from best practices world over. E-governance programmes for computerising birth, death and marriage tried out so far in the country, to all intents and purposes, give attention to improving the speedier delivery of the certificates of registration. Improving the quality of statistical information on vital events, linking the



Linking Janasevanakendrams to hospitals- An illustration

processing of legacy records, data entry, verification and correction have been established based on an all-inclusive framework for quality control while effecting a transition from a manual system of book keeping to an electronic one. Apart from ensuring a faithful transition the application covers standardisation of data by adopting a series of standard codes for classifying statistical information. For instance the application facilitates classification of 'Cause of Death' using World Health Organisation's standards for International Classification of Diseases (ICD-10). The best practices

also cover criteria for acceptance of the electronic database, quality control for day to day counter operations and data audit processes for detecting fraudulent practices.

A very interesting strategy evolved in the best practices is an approach towards capturing data at the source for better control over data quality. Improvement of data quality not only perfects the civil registration and associated community databases but also avoids a large number of uncalled for correction transactions arising out of initial data capture. This in

turn makes the public transactions simple, clear-cut and transparent, naturally reducing the chances for shady operations and corrupt practices. This is sought by linking the "Janasevanakendrams" with hospitals over the Internet. A programme for linking forty government hospitals and one hundred and forty two private hospitals in the five Corporation areas with the respective "Janasevanakendrams" has been mooted. The objective shall be to make available birth and death certificates to the informants within twenty four hours of registration through the hospitals reporting the event. The Corporations have taken the lead and have held preliminary consultations with the various hospitals and a partnership is steadily emerging. In order to clear the way for this momentous occasion in streamlining service delivery in Local Self Government Institutions a campaign for wiping out backlog in issue of certificates for registrations done during the last ten years has been also planned.

Last but not the least another unique aspect of the project is the linkages with a programme for a community identity card linking Electoral ID data, Ration card data, Below Poverty Line data etc. This could later on be linked to the National Multipurpose Identity Card project as well. This aspect, very important from the point of view of building up a community database at the Local Self Government Institution level places the civil registration reform initiatives in Kerala on par with similar programmes in United States, Canada and the United Kingdom.

Maintaining programmes and institutions is more challenging than creating them. The mission looks forward to the model of citizen vigil and stakeholder participation that has stayed on with the decentralisation programme as the mainstay for sustainability. Resources for maintenance are quite often ignored and not built into the project, but this aspect also has been taken care of through beneficiary involvement.

■ The Writer is the Executive Mission Director, Information Kerala Mission, A-23, Jawahar Nagar, Thiruvananthapuram.

It's study time for elected representatives

Dr.P.P.Balan

With the inception of decentralised planning the role of local governments have considerably changed. The increasing emphasis on local government; as the focal point of local economic development and the changing roles of these governments in fulfilling that growing mandate, puts a heavy burden on the elected representatives and the staff. The elected representatives and officials are to be capable enough to fulfill their duties and carry out a wide variety of development programmes at the grass root level. For this, they are to develop new skills, attitudes and vision.

As shown by the results of training needs assessment conducted by the United Nations Centre for Human Settlements (UNHABIT) training needs of elected representatives or local politicians appear to be the most urgent world-wide need. To respond to these needs they have developed a series of handbooks in which they highlight eleven roles of elected representatives which enable them to provide civic leadership and develop, professional and management skills in local governance. Those roles are summarized here:

An elected representative has to perform many roles and the task is really difficult and challenging especially in highly complex political environments. As policy maker one has to examine alternatives indetermining strategies that

KILA, the agency for training and research has recently introduced a long term training programme for elected representatives. The purpose is to equip the key functionaries for effective decentralisation.

accuracy and understanding. The role of facilitator is to encourage collective effort which helps others solve problems. As enabler one can make things possible, practical and easier for others who are not quite prepared to do things for themselves. The role of negotiator helps others reach an agreeable solution when they have different interests and needs. As financier one has to make decision about raising, allocating and expending public funds. Overseer is the role to ensure that the other functionaries are doing the right things in a time bound manner. In the role of power broker an elected representative



The participants of certificate course attending a class at SIRD, Madhyapradesh, during their study tour.

will guide present and future actions to benefit the community.

Decision making is the role mostly associated with the management process. The elected representatives in the role of Communicator has to give and receive information ideas and feelings with

uses his or her own personal sources of power as well as official position to get things done. As institution builder, the elected representative must see that the local bodies develop into institutions of Local Self Governance. The prominent role is that of a leader who helps to bring

about positive and significant changes in the total community .All these eleven roles are to be given due consideration in the subject of capacity building which is the need of the time.

When functions, functionaries and finances were devolved to the localbodies in Kerala, training aspect also got a prominent place. During the People's Campaign for IX Plan massive training programmes were organised through out the length and breadth of the state in which elected representatives, officials and non-officials took part. Even if these training programmes were of short term duration it could build up an environment in favour of decentralisation. One of the glaring defects of these training programmes is that they are of short in duration and insufficient to go into details. Experience shows that intensive and indepth training is the only substitute for this. The functionaries, need to be knowledgeable about an increasingly complex set of inter-related issues of decentralised governance.They must also develop new skills and attitudes in response to the changing nature of their roles. In a highly politicized state like Kerala, a vision above party politics is the panacea for all ills at the local level.

Taking all these into consideration, KILA, the nodal agency for training, research and consultancy for decentralisation has recently introduced a long term training programme for elected representatives namely 'Certificate Course in Decentralised Governance'. Usually KILA offers short term training programmes which fall far short of meeting the needs of the participants. The accumulated wisdom and experiences of other countries reveal that equipping the very key functionaries sufficiently in advance is a pre-requisite for effective decentralisation. It is now being increasingly realised that the creation of a panel of resource persons capable enough in developing long term perspective is inevitable to translate the mandate of strengthening democratic decentralisation into a reality.

The elected representatives of Local Self Governments in Kerala are the target group of this course. To begin with, KILA started with 60 participants. There is reservation for representatives belonging to SC / ST and for women. The structure of the course is designed in a way to enable the trainees to discharge their official responsibility without much interruption. They must be in KILA for a week every month and the duration is ten months. Based on the tutorials and shared experience during their stay in the institute the trainees have to conduct fieldwork and are to prepare a project report. The curriculum is designed by integrating theoretical, philosophical and ethical aspects covering areas, like planning and development, administration and law, social theories and good governance. By the end of every two months they have to appear for a written test. There will be theory and practical examinations. The successful candidates will be the master trainers of KILA in the training programmes on decentralisation. Moreover they have been inducted as members in the Technical Advisory Committee at the district level.

■ The writer is the Director of KILA

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The worth reading
reaches far beyond.

KERALA CALLING

The worth reading reaches far beyond.

In spite of the commendable position occupied by Kerala in Human Development Index (HDI) it does not figure anywhere on the list of economically prosperous states. The state is tormented by persistent poverty because of several reasons, the main being unemployment and under employment. There are many people who have not benefited from the “Kerala Model” of development and they remain very poor and deserve special support. They are tribals, traditional fishermen, scheduled castes and people employed in traditional industries like coir, cashew, handloom etc. Poverty among these groups is rampant. Today, Kerala has approximately 44 lakh registered unemployed people, a resource that remains largely unutilized. According to several studies unemployment in Kerala is about three times that of the all India average.

It is a paradox and a riddle that a state which stands first in literacy rate with a socially vibrant environment and a high quality of life and many other fields is also the state with a high suicide rate. According to one study three malayalis end their life every day. It is generally believed that poverty and debt-trap are the prime reasons behind most of the suicides.

Kerala has an excellent banking infrastructure. As on 31st March 2003 there were 50 Commercial banks (with 3351 branches), 2 Regional Rural Banks (with 340 branches), 44 Primary Co-operative Agricultural and Rural development Banks, 14 District Co-operative Banks and One State Co-operative Bank. In addition there are also 1593 Primary Agriculture Credit Societies in the State. The average population covered by a bank comes to 5402 as against the national average of 15,000. The Commercial Bank branches in Kerala represent 5 per cent of the total branches in the country. In Kerala most of the branches are in urban and semi urban areas, the rural areas having only 10.7 per cent of the branches.

The CD ratio of the commercial banks in the State, which was 65.8 per cent in 1969, declined to 45.5 per cent in March 2003. The CD ratio of Kerala is

Development of Kerala: Commercial Banks turn back on their role?

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still very low which is 13.9 per cent less than the credit deposit ratio at the all India level. The CD ratio shows a sharp decline of 28.5 point during the period 1984 - 2004. The southern States except Kerala had recorded high credit deposit ratios testifying to a higher degree of diversified economic activity involving industry, agriculture, trade and other sectors. Kerala's CD ratio is far below the CD ratio (June 2002) of Maharashtra (95%), Tamil Nadu (75%), Andhra Pradesh (65%) and Karnataka (60%). The sharp decline in the CD Ratio in the State may be attributed mainly to two reasons. (1) Burgeoning Bank Deposits and (2) the Industrial Backwardness.

The State has an enviable bank deposit rate compared to the other states. Total deposit of the commercial banking system in the state in September 2003 came to Rs.61,119 crores and the advances amounted to Rs. 28,535 crores. It is estimated that about 5 per cent of the total deposits in the country are mobilized by the commercial banks of Kerala. However

the credit deposit ratio of the commercial banks is only around 45 per cent. It is also noted that the Co-operative Banks and Regional Rural Banks have relatively high CD ratios. The CD ratio of private banks in Kerala is 38 per cent. The rural credit deposit ratio in many districts (lowest in Pathanamthitta 15.2%) and of many nationalised banks is 40 per cent or less. Studies conducted by the officials of the RBI found that commercial banks in Kerala were more successful in deposit mobilization than credit disbursal.

During 1990 the per capita bank deposit in Kerala was Rs. 1,442 which was higher than the national level by 5.95% (Rs. 1,361). In 2003 the per capita deposit increased to Rs. 18,679 which was higher than the national level by 50 per cent (Rs. 12450). The per capita deposit of Kerala is higher than the other South Indian States. The increase in per capita deposit is mainly due to remittances from the non-residents, of which a significant amount from the Gulf regions. Higher proportion of non-resident deposits to total deposits

The credit deposit ratio of Kerala is 13.9% less than the CD ratio at the all India level. Burgeoning deposits and industrial backwardness are major reasons. In 2003 the per capita deposits in Kerala is Rs.18,679, fifty per cent higher than the national figure.

may not be a significant factor responsible for the lower CD ratio in the state. Because 62 per cent of the Non-Resident Deposits are mobilized by 4 commercial banks. The CD ratio of these banks are above the state average.

According to Government sources the commercial banks in Kerala are following a tradition bound 'lazy banking system'. "Commercial banks which mobilised huge deposits from Kerala, were neither beneficial to the State Government nor to the development of the state". "They mobilised deposits only to lend it elsewhere". But the banks are of the view that it is a baseless political allegation against the banks in the State.

One of the problems pointed out by the bankers for the low CD ratio is the dearth of bankable projects. Big projects requiring bulk investments are hard to come by in the state. Contrary to this, there is a general reluctance and apprehension on the part of the banking institutions to advance credit in rural areas, because it is assumed that it will be used in high-risk, high-cost ventures. Various projects including that of local government that come before the banks for credit are reported to be non-viable. Though there are clear norms for credit linkage of projects, they are not usually adhered to.

Most important reason for low CD ratio is the lack of credit absorption capacity of the economy due to its industrial backwardness. The structure and pattern of lending by commercial banks clearly reveals that during 2002 loans to industrial sector was only 22.3 per cent of the total lending in Kerala, whereas the national average was 46.5 per cent. The corresponding proportion in Tamil Nadu was 51.07 per cent, in Karnataka and Andhra Pradesh more than 42 per cent.

It is a well known fact that since 1970, the industrial performance in Kerala remained dismal when compared to other South Indian States. The growth of both big and small scale industries in terms of number of units, investment and employment, investment by Government of India in industries etc. are far from impressive. The number of industries registered in Kerala during (1991-2002)

period represent only 1.06 per cent of the total industries registered in India and its investments was less than 1 per cent of the all India total. During this period the share of new industries registered in Tamil Nadu, Andhra Pradesh and Karnataka represent 9.43, 6.95 and 4.03 per cent and their investment 6.4, 10.9 and 5.6 per cent respectively of the all India level.

Kerala's low credit deposit ratio has been primarily due to the inertia and lack of initiative on the part of entrepreneurs for ventures and channeling of lendable resources towards relatively developed states leaving the industrially backward states like Kerala high and dry. For Kerala to become economically and industrially prosperous a suitable climate for investment in Kerala is urgently required.

About 62 per cent of the Non-Resident Deposits are mobilized by 4 commercial banks. These deposits are neither beneficial to the State Government nor to the development of the state.

It is also imperative that there is an attitudinal change on the part of our political parties and people. A state generally acclaimed for its high literacy and other accomplishments still remains a haven for hartals, strikes and intimidatory labour practices which adversely affect all its future investment prospects. Keraliats waste more time on frivolous political debates than on more rewarding and productive debates on the developments of the state. The Government and other opposition parties have to function as facilitators for the State's development. A change in the mind set of the people of Kerala is the need of the hour. It is an irony that despite developments in the field of education, the Keraliats are lacking

in confidence to take entrepreneurial risks. Keraliats are generally reputed for easily assimilating technological development, hard work, dependability and their "can do attitude". The people of Kerala have to transform themselves from "job seekers" to "job providers".

Keraliats are generally considered as conspicuous consumers of consumer products like mobile phones, cosmetics, toiletries, automobiles, TVs etc. The State provides to the producers infrastructure, required raw materials and skilled labour thereby ensuring to them a high cost efficiency. We further need to attract higher investments and up our rate of production. A paradigm shift from a consumption economy to an investor friendly economy is what is needed at present. Important sectors like Tourism, IT, hotels etc. with promising credit absorption capacity requires targeted promotional measures and appropriate policy decisions.

Sustainable development of the state could be achieved only by large scale employment generation in the agricultural sector. Investment in agricultural sector is far below the other states and needs particular attention. Food processing is another promising and attractive area for the entrepreneurs to enter into commercialized fishing activities like fresh water fish farming and ornamental fishing offers great potential for sustainable growth. Yet another industry with a great scope for development are floriculture and bio-technology.

The banks can play a far more meaningful and catalytic role in the economic development of the state if they are willing to follow innovative methods and schemes to finance viable ventures and for building up of infrastructure in the State. The challenge for banks now lies in increasing the rate of growth of advances and the flow of credit commensurate with the increased deposit mobilisation. This can ensure economic development of the state to a very great extent.

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Pineapple is one of the prominent fruit crops in the horticulture sector. Thailand is the largest producer of pineapple in the world. India ranked fifth with a share of 8.2 % of the world production of pineapples (FAO-1999). The total area under pineapple cultivation in India is 75,500 hectares (CMIE, 2001). 'Kew' and 'Mauritius' are the two varieties of pineapple grown in India. The major pineapple producing states in India are Assam, Karnataka, Kerala, Meghalaya and West Bengal.

In Kerala pineapple is cultivated in an area of 9080 hectares with a production

(less than 5 hectares, medium farmers (5-10 hectares) and large farmers (above 10 hectares). From 1989-90 to 1999- 2000 Ernakulam district was ranked first having a share of 54.93 per cent of the total production in 1999- 2000 (Directorate of Economics and Statistics 2000)

Methods of planting

In preparing land for pineapple, the soil should be dug out to a depth of 20-30 cms, free of weeds and grass and it should be mixed thoroughly with well-decomposed manure or other organic residues before the beds are laid out. The

system of planting pineapple may vary depending on the land and rainfall. There are four planting systems namely flatbed planting, furrow planting, contour planting and trench planting.

Flat bed planting

It is commonly followed in plains where there is no problem of soil erosion. Planting of suckers is done in pits of 15-20 cms depth. Provision is made to drain off excess water in high rainfall areas.

Furrow planting

It is commonly seen in coastal plains of Kerala and the crop is grown without

The sweet behind the thorns

of 55837 tonnes (Directorate of Economics and Statistics 1999). The congenial humid climate has favoured the cultivation of pineapple. The finest quality 'Mauritius Pineapple' comes from Kerala. The produce of Kerala is very much in demand as a fresh fruit throughout India and also in foreign countries because it is considered the best in quality, sweetness and has good flavour. Although pineapple cultivation is practised in almost all districts, the extend and trends of cultivation differ widely among Kerala's districts.

The major pineapple producing district of Kerala, Ernakulam accounts for more than 54 percent of the area under pineapple cultivation (Agricultural Statistics of Kerala), was selected for a detailed study. In Ernakulam district pineapple cultivation is more concentrated in certain areas of Vazhakkulam. Pineapple cultivators are defined as those who cultivate pineapple for commercial purpose. Primary data were collected from a sample of 400 pineapple cultivators, by grouping them into three strata, on the basis of area of holding, like small farmers

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The pineapple cultivation is becoming lucrative as the produce of Kerala is very much in demand as a fresh fruit throughout India. Kerala's pineapple is considered the best in quality, sweetness and has good flavour.



irrigation. Planting is done in 30-45 cms deep furrows altering with 1.2-1.5 m broad ridges.

Contour planting

It is common in sloppy areas and hillside plantations where rainfall is high and the soil is subject to erosion. Planting is done in terraces cut by digging contour trenches, which catch run off along with silt and these trenches serve as drainage channels.

Trench planting

In this method the field is laid out in to trenches altering with mounts. The trenches always made across the slope. In uplands, trenches of 1 m width and 30 cms depth are prepared at 1.5 m apart. In each trench two shallow furrows about 10 -15 cms deep and 15 cms inside from the edge of the trench are made and suckers are planted.

Forms of cultivation

The pineapple is grown both as a pure crop on converted paddy fields and on upland and as an intercrop on young rubber plantations, Distribution of pineapple cultivators based on the form



of cultivation is given in Table 2. It shows that 52.5 per cent of the sample cultivators in the study area were cultivating it as an intercrop on new or young rubber plantations and coconut gardens. Category wise analysis reveals that the majority of the small scale cultivators (63%) grow the pineapple as monocrop while the majority of the medium (74%) and large (77%) scale cultivators grow the pineapple as an inter crop on new or young rubber plantations.

An enquiry into the reasons for the intercropping revealed that the most prominent reason for intercropping pineapple on rubber plantations is additional income from land under rubber cultivation either by leasing or by self cultivation. Positive effects of the application of fertilizers and irrigation on young rubber trees and the non-availability of converted paddy fields or uplands are the other reasons cited. High productivity of pineapple cultivation in converted paddy fields is the most influential factor that led to the conversion of paddy fields into pineapple fields. Non-profitability of paddy cultivation and high cost of paddy workers are the other reasons reported in this regard.

Manuring

Income from pineapple as a fruit crop can be increased by the adoption of scientific approach. The importance lies in the application of fertilizers at the right time in the right quantity. The pineapple is a shallow feeder with high nitrogen and potassium requirement. Since these materials are prone to heavy losses in the soil practices related to the time of application and the form of fertilizer determine their efficient usage. Kerala Agricultural University has issued guidelines in this regard. From the field survey it is observed that fertilizers were used in excess dose.

Induction of flowering

The pineapple crop is very responsive to the induction of flowering by plant growth regulators. Pineapple cultivation in Vazhakkulam area became very popular and commercially viable after the induction of the flower inducing chemical Ethephon in

this area by the beginning of the 1980s. All the cultivators of pineapple, surveyed in the study area, use Ethephon for uniform flowering. This had made it possible for farmers to schedule the flowering of the plant and harvest to synchronise with the season of high demand and price.

Harvesting

Pineapple is a perennial fruit crop and the returns continue, usually, for a period of 3 years in case of variety 'Mauritius' and 4 years in case of variety 'Kew'. With the application of Ethephon and fertilizers the first yield is obtained with in 10-12

Distribution of Pineapple Cultivators Based on the Form of Cultivation			
Category	Pure Crop	Inter Crop	Total
Small	149 (63)	88 (37)	237 (100)
Medium	27 (26)	76 (74)	103 (100)
Large	14 (23)	46 (77)	60 (100)
Total	190 (47.5)	210 (52.5)	400 (100)

Table 2

Source: Field Survey

months. Observing the colour change is the most common method of determining the maturity of fruits. When at least two or three rows of eyes at the base turn yellow, pineapple is ready for harvest. In the study area, harvesting is done by cutting the fruit stalk and placing the fruits in piles or on to the vehicles. Fruits for fresh fruit market are often marketed with crowns. Fault free fruits without injury and careful handling help getting more profits.

Production problems of pineapple cultivators

The pineapple cultivators of Kerala are facing several problems related to production. The information collected from the sample respondents by means of structured questionnaire regarding the

High cost of labour

The high cost of labour coupled with scarce availability ranks the third among the production problems. Pineapple cultivation is highly labour intensive. The increasing cost of cultivation of pineapple is mainly due to the yearly increase in the wage rates.

Inadequate availability of fertile land

Inadequate availability of fertile land was another major problem. The most suitable land is sandy, lomy and the supply laterites having good drainage. It is reported that practically all young rubber plantations and most suitable land were already put under Pineapple cultivation.

Lack of agricultural incentives like subsidy

The farmers in the study area reported that lack of agricultural incentives like subsidy was a serious constraint experienced in the production of pineapple. The majority of pineapple cultivators were small and medium scale farmers and they did not get the required incentives or credit.

Other problems

Lack of irrigation facilities, attack of rodents and pests and high susceptibility to diseases were the other production problems, though on a limited scale, reported by the pineapple cultivators in the study area.

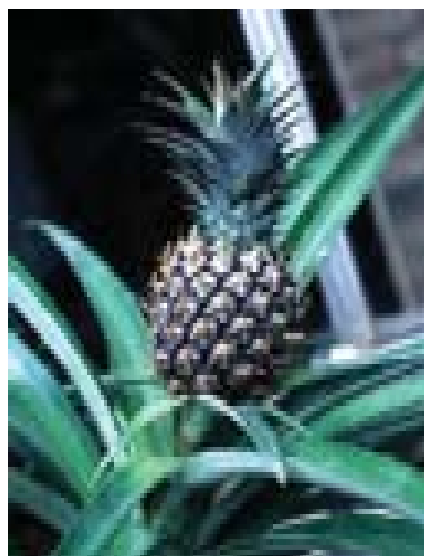
Problems	Small		Medium		Large		Aggregate	
	Aggregate Weighted Score	Rank	Aggregate Weighted Score	Rank	Aggregate Weighted Score	Rank	Aggregate Weighted Score	Rank
High cost chemical and bio-fertilizers	1,036	1	456	1	277	1	1,726	1
Lack of financial assistance	993	2	427	2	257	2	1,720	2
High labour cost	712	3	286	3	180	3	1,178	3
Non -availability of fertile land	497	4	216	4	123	4	836	4
Lack of agricultural incentives like subsidy	230	5	96	5	55	5	381	5
Lack of irrigation facilities	46	6	26	6	4	6	54	6
Attack of rodents and pest	15	7	8	7	0	7	45	7
High susceptibility to disease	3	8	8	8	0	8	11	8
Grand Total	3,532	-	1,523	-	896	-	5,951	-

Source: Field Survey

production problems ranked in the order of severity are presented in Table 3 High cost of chemical and bio- fertilizers was pointed out as the most serious production problem experienced by all the categories of pineapple cultivators in the study area. The pineapple is a crop that requires heavy dosage of manures and fertilizers.

Lack of financial assistance

The non- availability of adequate finance at reasonable cost was another serious problem faced by the pineapple cultivators in the study area. pineapple cultivation is quite capital intensive especially if the land needed was taken on lease. Poor cultivators had problems to get formal bank loans since they could not provide collaterals.



Conclusion

The present study carried out reveals the fact that pineapple cultivators of Kerala are facing several problems, related production like high cost of chemicals and bio-fertilizers, lack of financial assistance, high cost of labour, inadequacy of fertile lands etc. The growers need to be better educated to avoid excess and unbalanced application of fertilizers. Emphasis should be given to increase the productivity by modern technology. Promotional measures taken for the production and marketing of pineapple will no doubt add revenue to the state's as well as nation's exchequer.

■ Dr. S. Rasia Beegam is Reader in Department of Commerce, University of Kerala. Dr. T. S. Padmini is Lecturer in SNM College, Maliankara.

Blessed with Nature's bounty and spiced by myths and legends, Kerala is the homestead of a host of art forms, earthy as well as ethereal. It has a rich repertory of song and dance dating back to centuries. Ranging from the classical and conventional to the folksy and ritualistic, the performing arts enjoy pride and place in Kerala's cultural heritage.

As an adage goes, not a single day passes on in this land of fairs and festivals without the drums beating, cymbals clashing and the Gods descending from Heaven to sing and dance in gay abandon in the enchanted company of artistes for whom each moment is a vibrant occasion for festive celebration. In spite of such a rich legacy not much has been written on Kerala's significant role and relevance in the spheres of art and culture.

Viewed against this scenario, Dr. S. Bhagyalekshmy's new title, *Contribution of Travancore to Karnatic Music*, deserves to be complimented. Brought out by the Information and Public Relations Department, Government of Kerala, it attempts to capture the feel and flavour of a bygone period when music has had its finest hours in the erstwhile princely state.

The seven-part volume starts with 'Temples as Centres of Music' and culminates in a fairly comprehensive study on modern composers, though the catalogue concludes with Mahakavi Kuttamathu (1880-1943). The earlier part traces the origin of 'Kerala music, springing as it did from the *Sopana Sangeeth*, rendered by devout singer-percussionists in front of the sanctum sanctorum of shrines. As elsewhere, it has ever been a constant process of absorption and evolution in music as well, with several trends and traits from other sources and milieu triggering a flux of change. It has in fact been a give and take, enriching both the donor and recipient, as music began to branch out and enlarge its scope, range and sweep.

As the title amply suggests, Bhagyalekshmy confines herself to the



A Commendable Handbook

Sreevarahom Balakrishnan

Contribution of Travancore to Karnatic Music
Dr. S. Bhagyalekshmy, I & PRD, Price: Rs. 135/-

Contribution of Travancore to Karnatic Music, the book brought out by IPRD, attempts to capture the feel and flavour of a bygone period when music has had its finest hours in the erstwhile princely state.

cardinal contribution of Travancore to Karnatic music, with the focal point quite appropriately on Swati Tirunal, the *musician-monarch* par excellence. Needless to say, Travancore royalty has always extended benevolent patronage to art of every sort, while Swati Tirunal was the finest of the lot as exemplified by the exceptional quality of his artistic pursuit and administrative acumen. The fourth,

fifth and sixth chapters harp on the mass and majesty of Swati's epochal era highlighting its far reaching impact.

True, the volume is a welcome addition to the meagre corpus on the subject. One however felt that some judicious pruning would have rendered the narrative much better and more reader-friendly. So also, the coffee-table format could have been avoided to advantage. ■

While Malayalam film industry is facing a crisis of a different kind, gathering clouds of controversies on its horizon – it is time for celebration too. The golden jubilee of *Neelakuyil*, which turned out to be landmark in the Malayalam film field, coincides with the 80th birthday of its mentor P.Bhaskaran.

Malayalam cinema hit the silver screen much later, when compared to other South Indian language films. The first talkie Balan by Modern Theaters' movie mughal T.R. Sundaram was a box-office hit. As a sentimental family melodrama, it was loud

who rescues, and nurtures an illegitimate baby born to a Harijan girl. The girl was cleverly seduced by the respectable school teacher. Finally the teacher confesses his sin to his childless wife and the foster father, accepts his child thereby breaking the age old man-made barrier viz caste.

This film in many ways has a novel touch. Primarily, it deals with the discrimination. Aloysius Vincent's poetic lens capture on the celluloid the lovely liting landscape of Kerala; K. Raghavan's music brimming with Keral touch and aroma, all contributed to the films success and thus itself became a milestone. Born

He made celluloid portrayal of *Randidangazhi* (by Thakazhi). It was a significant film of artistic merit. Another film *Irutinde Athmavu* a stark tale of a mentally retarded person, the film explored the tragedy of the twilight world of such unfortunates. We saw Nazir in the lead role not as a chocolate faced matinee idol but as a fine actor.

Mooladhanam, *Kattukurangu* and *Kallichellamma* added more golden feathers to P. Bhaskaran's cap. This brave pioneer, who made movies of some social significance and relevance, made



GOLDEN MEMORY: A re-constructed poster of *Neelakuyil* released in 1954.

CINEMA

In memory of golden times

Uma Maheswarys

P. Bhaskaran, the brave pioneer of Malayalam cinema is at his 80, when his landmark creation *Neelakuyil* embraces its 50 years. Looking back, spools of memories roll out, filling pride and pleasure of yesteryears.

and highly theatrical. Except for the fact that it spoke Malayalam the essence of later day Malayalam cinema was absent in this, and films that followed. Malayalam cinema acquired its acknowledged character only after film makers like P. Bhaskaran, Ramu Kariat and K.S.Sethu Madhavan, entered the scene.

The golden age dawned on the Malayalam filmdom with the release of *Neelakuyil* (1954). It owe much to the literary revolution of the forties. *Neelakuyil* produced by T.K.Pareekutti is based on Uroob's novel. It was directed by P. Bhaskaran and Ramu Kariat. The great actor Sathyan, Kumari and Prema (mother of Urvashi Sobha) played the lead roles. P. Bhaskaran too gave a brilliant performance as a kind hearted postman –

in 1924 at Kodungalloor P. Bhaskaran as a student was an active leftist. He has penned verses saturated with revolutionary ideas, boosting the morale of the leftists. His popular work *Vayalar Garjikunnu* is based on the Punnappa Vayalar revolt and was banned then in Travancore. After serving *Jayakeralam* as its editor for a brief period he joined AIR. Finding himself like a square peg in a round hole he quit the job. P. Bhaskaran entered the film world as a lyricist through *Chandrika*. His caliber as a director and actor were revealed through *Neelakuyil* which bagged all India certificate for the 2nd best film of the year 1954. Since then Malayalam film began getting rich doses of creativity, when P. Bhaskaran took to serious film making, *Neelakuyil*'s success made him confident.

commercial films as well. As a lyricist, he has more than 25000 songs to his credit.

Thamasamenthe Varuvan.....

Pranasakhi Njan.....

Orupushpam Mathram.....

Karyunnu Puzha.....

Manjanipoonilavil.....

Nee Madhupakaru.....

Pathuweluppinu..... are a few of the endless list of ever time hits.

The State Government honoured him with the prestigious J.C. Daniel Award for his achievements in 1994. History and evolution of Malayalam cinema will be incomplete without acknowledging P. Bhaskaran's contribution as a lyricist, director, producer and actor. ■



A.R. DAVIS

"I can still write lyrics for Cinema"

The age of 80 cannot mar P. Bhaskaran's craze towards lyrics and poetry - its rhymes - music... He is still enthusiastic about *Neelakuyil*, the labour behind bringing it on the silver screen... Glittering memories waved on his face, and he sang one of his favourite songs without losing its charm: *nagaram, nagaram, mahasagaram... mahasagaram...*

Though age plays a trick on his memory, the octogenarian poet enjoys recollecting his childhood days at Kodungalloor, Kochi; education at Maharaja's College; involvement in political movements and all sorts of literary events. On the occasion of his 80th birthday, the maestro of Malayalam movie songs spoke to *Kerala Calling*. Excerpts from the interview.

How did you come to the world of lyrics and poetry?

My father Nandiyedeth Padmanabha Menon used to write poetry both in Malayalam and English. So poetry is there in my blood. I myself was a hero in college, writing songs for the friends for various programmes.

Your earlier experience in Cinema?

It was quite interesting. There were some strong supporters for me. The great star Satyan was one among them.

How many films have you directed?

Around thirty, if my memory is correct.

You were a lyricist, actor, director and producer. Which role do you like most?

I like all these roles. I am happy that I am blessed with a success in all these fields.

What about the crisis in today's Malayalam Cinema?

I don't know much about it. But Malayalam Cinema always gives a lot of importance to film stars than other technical hands or producers.

Would you like to write lyrics for a new movie?

I have always been happy to write lyrics for Cinema. I still can do it.

Are you satisfied in your profession?

Yes, I think I have done something for the film industry.

The royalty issue of film songs created much controversy. What's your opinion?

Royalty should not be enforced on newcomers who make a living by *Ganamelas* and all. But if one becomes popular and comes to the mainstream of music world, and becomes eligible he should pay royalty.

■ interviewed by
Ajitha Das & K.P. Saritha



SBT player Abdul Noushad (No.15) is challenged by Titanium team captain Usman during their NFL 2nd division football league match in Kochi.

By a Special Correspondent

The State Bank of Travancore football team is giving a ray of hope to Kerala football which has been in the doldrums lately. The Bankmen from Thiruvananthapuram are on the verge of qualifying for the National Football League first division, after a gap of 3 years.

SBT has made it to the final round of the second division NFL having become one of the two teams to have qualified from Group C (Phase 1) which got over in Kochi in the first week of May. The

final round (Phase 2) will be played in Bangalore from May 10 to 25.

Air-India, Punjab Police, Titanium (Thiruvananthapuram) and Fransa (Goa) were the other teams in Group C.

SBT, in all likelihood, will make the big league, given the performance of other teams in the fray. It will be the third time Kerala's own team, with only 'desi' players, is playing in the premier league. Kerala will thus have representation in the NFL after the relegation of SBT and FC Kochin a few seasons ago.

"The result was on expected lines. We are elated," said SBT coach N.M. Najeeb after SBT defeated Air-India 6-1 in their third match in Group C on May 3 to become eligible for the final round. "The final round is a bit tough, but we are confident of breaking the jinx this time after being on the brink of qualifying for the past couple of years. Ours is one of the best teams in the country. Our strength lies in the grooming and promoting of best local talents," said Najeeb.

A former international striker who



N.M. Najeeb, SBT football team coach

SBT one round away from NFL proper

Given the excellent performance of SBT, it is likely to make it big at the National Football League. SBT coach says his team is a 'team for the future'.

donned the India colours at the Aga Khan Gold Cup in Dhaka in 1977, Najeeb has played for Youth Sporting Club, Kozhikode, Premier Tyres, Mohammedan Sporting, East Bengal and Titanium. "No team is ready to take the risk of playing only with local players. We are sticking on to the policy of not playing with foreign players, and it is showing results. All the teams in the country are result-oriented. The saddest part is that Indian football hasn't benefitted from the presence of foreigners in the national league," opined Najeeb who won the GV Raja Award for the best player in Kerala in 1977. Najeeb has represented the State in the Santosh Trophy National Football Championship from 1974 to '77 and then in 1982.

The team has been getting good back up from the bank management. The recent recruitment of five players in the permanent employment of the bank in clerical cadre stands proof

for the active interest shown by bank's MD Amitabh Guha who is a football lover. Najeeb has been the coach of the side ever since its formation in 1993. Former internationals Jiju Jacob is presently the manager of the team, and V.P. Shaji assistant manager.

The side's bench strength has been improved considerably, and it may be recalled that poor bench strength was the bane of SBT when they played the National Football League in two seasons - 1999-2000 and 2000-'01. The first time they finished 9th and the second time they got relegated.

Midfielder Lanel Thomas led the side in place of injured skipper Shabbir Ali, brother of ace striker Asif Saheer. Shabbir is expected to recuperate before the final round kicks off in Bangalore. SBT's strike force comprises prolific scorer Sylvester Ignatius and Abdul Hakeem besides the diminutive Saheer. Ignatius had a good run, scoring a good number of goals during the NFL qualifiers. Abdul Hakeem was the hero in Kerala's Santosh Trophy title triumph in Mumbai in 2002. Hakeem had scored a hat-trick in the title round.

A.B.Kabeer, Abdul Noushad and Lanel Thomas form a strong midfield for SBT with Abdul Basheer, Paul Antony, Sivakumar and N.P. Pradeep manning the defence. Harshal Rahman is putting up a good display at the SBT goal. Harshal Rahman, Paul Antony, N.P. Pradeep, A.B. Kabeer and Abdul Basheer are the five new recruits in the team.

SBT are the current champions of the Kerala State football league which they have won four times in all. The team won the Mammen Mappilai trophy at Kottayam in 1997, Mayor's Trophy at Thiruvananthapuram in '97, Arlem Cup at Goa in 2002, ONGC Cup at Surat this year and the Bank Olympiad. This year, SBT lost to Kerala State Electricity Board in draw of lots at the Thiruvananthapuram district super division league after both teams ended up on same number of points.

SBT have contributed a large pool of players to the Indian team as well as various Indian camps. Joe Paul Ancheri honed his skills at SBT. Sunilkumar, goalkeeper Firoz Sherief, Jiju Jacob, V.P. Shaji, K. Ajayan, Abdul Hakeem, Asif Saheer, Sylvester Ignatius and N.P. Pradeep went on to represent the country from time to time.

The year 1999-2000 was the golden era in the team's history as they qualified to the main division of NFL.

The football lovers of Kerala may still cherish the memories of the team's many an exploit on the field. Particularly when they scored an upset 4-2 win over formidable Mohun Bagan of Kolkata at Thiruvananthapuram in the National league in 1999. The same year, they had beaten Salgaocar Sports Club of Goa in the NFL at Thiruvananthapuram, and then in the Federation Cup tournament in Mumbai.

As coach Najeeb put it: "This is a team for the future." ■



Embracing Swathi Puraskar

WHAT do Kalamandalam Neelakantan Nambesam, Kalamandalam Sivaraman Nair, Kavungal Madhava Panikker and Kalamandalam Gangadharan have in common? Answer: Sankaran Embranthiri happened to be the proud disciple of all of them. What do Sankaran Embranthiri and Chembai Vaidyanatha Bhagavathar have in common? Answer: Kalamandalam was pleased to honour Embranthiri with 'Suvarna Mudra'. Only Chembai Vaidyanatha Bhagavathar got the prestige

before him. These answers constitute on what elements the Kathakali musician is composed of. A performer, rather than a Kathakali music teacher, Embranthiri strongly stood by the classical tradition and created a vast constituency of his followers. Government of Kerala bestowed him with this year's Swathi Puraskar, honouring his longstanding contributions. The timely recognition reached him when he enters 60. ■

Cyber DySP speaking..

DIAL 2447620 or 2556179 in Thiruvananthapuram. Apart from the usual 'good morning' you will hear 'Cyber DySP Mohanan Nair speaking.' The first cyber police station started functioning at Pattom in the city. Kerala police is re-tailoring their apparel to suit and sit up to the situation as soon as some reports of cyber crimes came before them. The strength of the personnel in the special station has not yet been decided. The station comes under IG of Police, Paul Lesley. So far, six cyber crimes have been registered in the State. ■

Memory of a November Eve

THE evening of November 5, 2001, enthralled the dance-lovers of Thiruvananthapuram by a legendary dancer. His swirling body movements assuming epic amplitude, elevated the spirits of classical enthusiasts in the city. Now the memory of the November evening is a cherished one for good. The dancing legend is no more now. He passed away on April 07 leaving behind a legacy of his own.

Guru Kelucharan Mohapatra's sumptuous life of sufferings and glory ended at the age of 78. The greatest exponent of Odissi dance, dedicated his life for the codification and stylisation of the art form. Odissi entered on universal stage. Kelucharan grew from the life of a person fetching water for agriculture, to the reigning king of a culture. On the

stage, the greatest female epic characters reborn in him with their conspicuous femininity. Radha has enlivened in no other souls. Also he stole the minds of the art lovers with the celestial vibrancy of Natraja performance along with Lakshmipriya, his wife who portrayed Mohini.

He exemplified how grace and emotion could be at its finer break on the stage. The saga of his artistic experience is as eloquent as the cultural life of Orissa. Awards never hesitated to please him – Padma Sree in 1975, Kalidas Samman in 1987, Padma Bhusan in 1988 and Padma Vibhusan in 2000.

The memory of his electrifying performance will live long in the minds of his fanfare in Kerala. Kerala's requiem for the God's own performer. ■



CHERISHED MEMORIES: Guru Kalucharan Mohapatra



President APJ Abdul Kalam salutes navy cadets at Kochi

Inspiration unending

THE President's visits have usually been a major event in the State. The visits of the President APJ Abdul Kalam are also no exception. Also those events become great source of inspiration to the younger hearts. The story never proved to be different in any of his advents since he ascended the throne. On April 25, His Excellency flew in to Kochi to offer this welcoming salute to the INS Tharangini on its accomplished voyage. The voyage round the globe, crossing all major oceans and seas of the world, visiting more than 35 ports in 18 nations, covering a distance of 35,454 nautical miles, lasted for 15 months.

To their greatest joy and

inspiration, the sailors and cadets heard the rousing words from the Supreme Commander as "the combination of curiosity and enthusiasm results in elevated thinking and great actions. INS Tharangini is the combination of these phenomenon."

Later, talking to school children the president exhorted them to fly on the wings of dreams. The igniting inspiration went on insisting pupils to aim at a million and if miss, only by a unit.

Dreams are of course the stairs to achievements. It is on the dreams and goals of great Indians that we build our nationhood. ■

An Exhibition, flagged in

THIRUVANANTHAPURAM witnessed an inauguration of an unusual exhibition. As the beautifully adorned train having 12 compartments flagged in to the platform number five of the Central railway station, The Vigyan Rail – Science exhibition on wheels opened its info-packed interiors for the curious ones. The exhibition, journeying the state for a short span was inaugurated by Dr. B Ekbal, the then Vice Chancellor Kerala University. The specially designed train carrying

exhibits and activities depicting India's achievements in the fields of science and technology railing to different stations in India is the initiative of Ministry of Science and Technology, Government of India, aiming to make science known to everybody. Most of the ministries, departments and scientific councils participate in the exhibition. On April 30 the info-full was flagged off to Ernakulam for a halt of four days. ■

V. P. SASIDHARAN NAIR



LEARNING A LOT: A scene from the Exhibition on Wheels

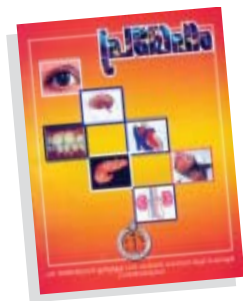
March in May

MARCHES make no news in Kerala. We can see a march at any place or time. Call Kerala a land of marches too! During mid-May, we see a strange kind of march – march for grabbing public exam results. In the past, the teachers of the tutorial colleges formed great marches to the vicinity of the Secretariat to get an earlier hold of the results. They used to spend eager days and dismal nights in newspaper beds before the Press Release wing of the I&PRD, waiting results delivery to the press. But this decade old practice has now stopped. A new kind of march for results has begun. Marching to web portals. Quiet easy. In 2003, the visitors to government web portal between May 15 to 18, was 16,32,000. This year the figure is expected to go up by 40%. This time, both the government portals, www.kerala.gov.in and www.prd.kerala.gov.in offer facility to register for results. The results of three students will be provided to the e-mail IDs of those who register with the portals. ■

Print Pills

PILLS and pokes are not enough. Prevention is better than cure is often a message that comes late.

Some ailments, better known as lifestyle diseases sneak into along with sick hurries of new life. Many of them are life-long afflictions. The treatment may also last long. Awareness can play as a control, if not cure. Sree Chitra Thirunal Institute of Medical Sciences and Technology, Thiruvananthapuram brought out a series of 'awareness



pills.' The latest booklet and the sixth among the Health Education series, titled 'Living with Diabetes' is released two weeks ago. Prof. K. Mohandas, the Director of SCTIMST says this booklet will play the role of a guide and a help to both the diabetics and the diabetes-prones. The booklet is funded by State Bank of Travancore. ■

Great teachers wither away?

I am appreciative of your Cover story on Grading System being implemented in schools. The articles hold key to the issue. But where are our great teachers? A tradition lit up by Dr. S. Radhakrishnan faded away?

In my native place, one of the last names I heard as a great teacher was V.A. Narayana Pillai, the headmaster in Government High School, Karunagapally. Now as it seems, due to sea changes that occurred, the role of teachers became marginal in education. Out of the two lakh teachers in Kerala, how many of them emerged as

sharp-edge practitioners of the profession?

In most of the schools, aided or government, we can see the role of a teacher is that of postman issuing tutorial periodicals to students and insisting them to learn its contents by heart. This is a great evil we refuse to acknowledge.

Teachers must have profound knowledge of a very high order. They must have powers of communication, both spoken and written.

Classrooms have also undergone many changes. The ethos of student community is regularly influenced by the electronic media. The new changes stand

out as a cultural force of its own. The teachers who swore by the text books are old fashioned for their pupils. Teachers are no more moulders of their destiny.

This situation requires new teaching skills creating platforms for partnership between the teacher and the learner. Another need is the reinforcement of interactive techniques of communication. This will encourage dialogue and debate. Teachers have to take the role of a "facilitator" instead of a "Mr. Know-Everything." To ignite, to inspire and not to let down should be the motto of teachers.

-N. P. Rajendran,
M. G. University, Kottayam

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