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Vol. 5. Issue 3 ■ Jul - Sep 2012



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- No bitterness and no melting required.
- Anti-infective, anti-inflammatory, anti-periodic, immunomodulator, mild laxative.

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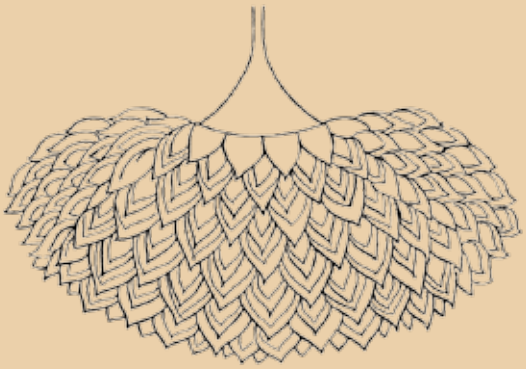
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न पीडयेदिन्द्रियाणि न चैतान्यतिलालयेत्।

(A.H.Soo.2.30)

Please do not hurt the faculties and also do not pet them in excess.

Sense faculties are receptors of external stimuli. Motor faculties are meant for action. Both of them are very vital lively units of the living system. Over taxing the faculties will cause damage to the living body. For example, eye is for seeing. If we over tax the eyes by viewing on to the monitor for hours together, viewing television continuously or directly looking at the solar eclipse, the eye will become weak and diseased. On the other hand if we are over protecting the eyes, the eye may develop disuse atrophy. Hence over taxing as well as over protecting the faculties will reduce their acuity and efficiency. So please use the faculties optimally.

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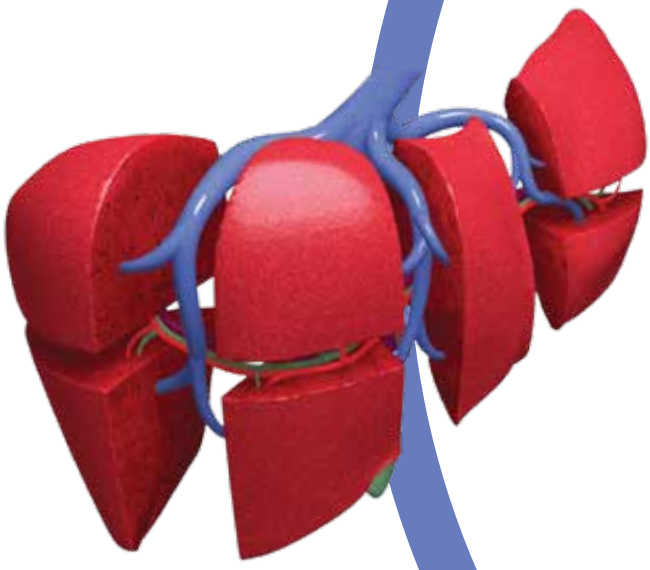
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Liver Transplantation
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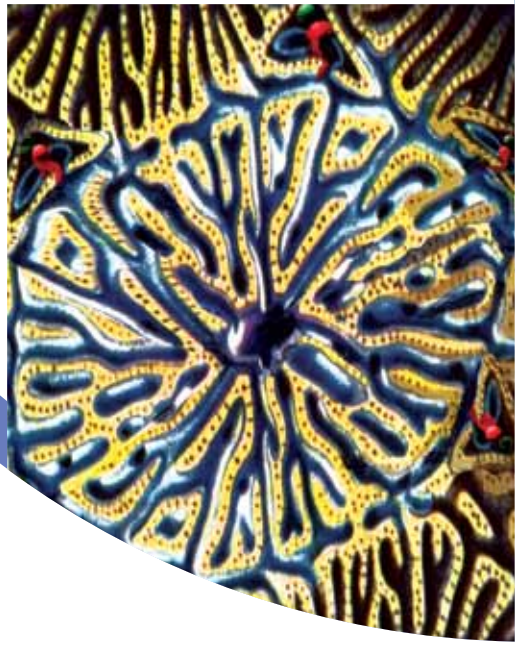


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Liver transplantation is the replacement of a diseased liver with a healthy liver. It is nowadays a well accepted treatment option for end-stage liver disease and acute liver failure.

The first human liver transplant was performed in 1963 in the U.S. First short-term success was achieved in 1967 with the first one-year survival post transplantation. It remained experimental through the 1970s, with one year patient survival of 25%. The introduction of cyclosporine markedly improved patient outcomes, and the 1980s saw recognition of liver transplantation as standard clinical treatment in appropriate indications. One-year patient survival is 80–85%, and outcomes continue to improve, although liver transplantation remains a





Liver transplantation is unique in that the risk of chronic rejection also decreases over time, although the great majority of recipients need to take immunosuppressive medication for the rest of their lives.

formidable procedure with frequent complications. However, the supply of organs from non-living donors is far short of the number of potential recipients, a reality that has spurred the development of living donor transplant.

Indications

Liver transplantation is potentially applicable to any acute or chronic condition resulting in irreversible liver dysfunction, provided that the recipient does not have other conditions that will preclude a successful transplant. Uncontrolled metastatic cancer outside liver, active drug or alcohol abuse and active septic infections are absolute contraindications. Advanced age and serious heart, pulmonary or other disease may also prevent transplantation. Most liver transplants are performed for chronic liver diseases that lead to irreversible scarring of the liver.

In liver transplantation the diseased liver is removed and the new liver is placed in the same anatomic location. The operation is done through a large incision in the upper abdomen.

Implantation involves anastomoses (connections) of the inferior vena cava, portal vein, and hepatic artery. After blood flow is restored to the new liver, the biliary (bile duct) anastomosis is constructed, either to the recipient's own bile duct or to the small intestine. The surgery usually takes between five and six hours, but may be longer or shorter depending on the difficulty of the operation and experience of the surgeon.

A large majority of liver transplants use the entire liver from a non-living donor for the transplant, particularly for adult recipients. A major advance in pediatric liver transplantation was the development of reduced size liver transplantation, in which a portion of an adult liver is used for an infant or small child. Further developments in this area included split liver transplantation, in which one liver is used for transplants for two recipients, and living donor liver transplantation, in which a portion of a healthy person's liver is removed and used as the allograft. Further advance in liver transplant involves only resection of the lobe of the liver involved in tumors and the tumor-free lobe remains within the recipient. This speeds up the recovery and the patient stay in the hospital quickly shortens to within 5–7 days.

Immunosuppressive management

Like most other allografts, a liver transplant will be rejected by the recipient unless immunosuppressive drugs are used.



The donor's liver will regenerate approaching 100% function within 4 to 6 weeks, and will almost reach full volumetric size with recapitulation of the normal structure soon thereafter. It may be possible to remove up to 70% of the liver from a healthy living donor without harm in most cases.

If the patient has a comorbidity such as active hepatitis-B, high doses of hepatitis-B immunoglobulins are administrated in liver transplant patients. Liver transplantation is unique in that the risk of chronic rejection also decreases over time, although the great majority of recipients need to take immunosuppressive medication for the rest of their lives. It is possible to be slowly taken off anti rejection medication but only in certain cases.

Graft rejection

After a liver transplantation, there are three types of graft rejection that may occur. They include hyper acute rejection, acute rejection and chronic rejection. Hyper acute rejection is caused by preformed anti-donor antibodies. It is characterized by the binding of these antibodies to antigens on vascular endothelial cells. Compliment activation is involved and the effect is usually profound. Hyper acute rejection happens within minutes to hours after the transplant procedure. Unlike hyper acute rejection, which is B-cell mediated, acute rejection is mediated by T-cells. It involves direct cytotoxicity and cytokine mediated pathways. Acute rejection is the most common and the primary target of immunosuppressive agents. Acute rejection is usually seen within days or weeks of the transplant. Chronic rejection is the presence of any sign and symptom of rejection after 1 year. The cause of chronic rejection is still unknown but an acute rejection is a strong predictor of chronic rejections. Liver rejection may happen anytime after the transplant. Lab findings of a liver rejection include abnormal Aspartate amino Transferace (AST/ SGOT), Alanine amino Transferace (ALT/ SGPT), Gamma-Glutamyl Transferase (GGT) and liver function values such as prothrombin time, ammonia level, bilirubin level, albumin concentration, and blood glucose. Physical findings include encephalopathy, jaundice, bruising and bleeding tendency. Other nonspecific presentations are malaise, anorexia, muscle ache, low fever and slight increase in white blood count.





Results

Prognosis is quite good. Patients undergoing transplantation without serious comorbidities have a 58% chance of surviving 15 years. Failure of the new liver occurs in 10% to 15% of all cases.

Living donor transplantation

Living Donor Liver Transplantation (LDLT) has emerged in recent decades as a critical surgical option for patients with end stage liver disease, such as cirrhosis and/or hepato-cellular carcinoma often attributable to one or more of the following: long-term alcohol abuse, long-term untreated Hepatitis C infection and long-term untreated Hepatitis B infection.

The concept of LDLT is based on:

1. The remarkable regenerative capacities of the human liver.

2. The widespread shortage of cadaveric livers for patients awaiting transplant.

In LDLT, a piece of healthy liver is surgically removed from a living person and transplanted into a recipient, immediately after the recipient's diseased liver has been entirely removed.

Historically, LDLT began as a means for parents of children with severe liver disease to donate a portion of their healthy liver to replace their child's entire damaged liver. The first report of successful LDLT was in November 1989, when two-year-old Alyssa Smith received a portion of her mother's liver. Surgeons eventually realized that adult-to-adult LDLT was also possible, and now the practice is common in a few reputable medical institutes. It is considered more technically demanding than even standard, cadaveric donor liver transplantation, and also poses the ethical problems underlying the indication of a major surgical operation hemihepatectomy or related procedure on a healthy human being. In various case series, the risk of complications in the donor is around 10%, and very occasionally a second operation is needed.

In a typical adult recipient LDLT, 55 to 70% of the liver (the right lobe) is removed from a healthy living donor. The donor's liver will regenerate approaching 100% function within 4 to 6 weeks, and will almost reach full volumetric size with recapitulation of the normal structure soon thereafter. It may be possible to remove up to 70% of the liver from a healthy living donor without harm in most cases. The transplanted portion will reach full function and the appropriate size in the recipient as well, although it will take longer than for the donor.

Living donors are faced with risks and/or complications after the surgery. Blood clots and biliary problems have the possibility of arising in the donor Post-Op, but these issues are remedied fairly easily. Although death is a risk that a living donor must be willing to accept prior to the surgery, the mortality rate of living donors in the United States is low. The LDLT donor's immune system does diminish as a result of the liver regenerating, so certain foods which would normally cause an upset stomach could cause serious illness.

Though there is no substitute for liver transplantation we, as ayurvedic doctors should bear in mind the possibilities of ayurvedic formulations to help such patients to recover from illnesses that are likely to progress to liver dysfunctions leading to failure.

Donor requirements

Any member of the family, parent, sibling, child, spouse or a volunteer can donate their liver. The criteria for a liver donation include:

The donor should be in good health having a blood type that matches or is compatible with that of the recipient's, having a charitable desire of donation without financial motivation and between 18 and 60 years of age.

The donor must undergo screening to ensure that the individual is physically fit.

Risks to the donor

All potential donors should know there is a 0.5 to 1.0 percent chance of death. Other risks of donating a liver include bleeding, infection, painful incision, possibility of blood clots and a prolonged recovery. The vast majority of donors enjoy complete and full recovery within 2–3 months.

Retrospection

You had an image of liver transplantation of the present time, which was only dreamt about in the medical circles when the writer was a kid of two years of age but fancied about by many when it was read in the Indian epics. The first reasonable account is of the Indian surgeon Suṣruta in the 2nd century BC, who used auto-grafted skin transplantation in nose reconstruction (Rhinoplasty). Success or failure of these procedures is not well documented. Centuries later, an Italian surgeon performed successful skin autografts; he also failed consistently with allografts, offering the first suggestion of rejection, centuries before that mechanism could possibly be understood.

In ayurvedic texts there are references of symptoms where liver is implicated as the malfunctioning organ. Liver failure is described under the entity *udara* which means enlarged abdomen mainly due to ascites. All the symptoms described under that entity matches with that of end stage liver disease. *Udara* itself is classified as a major disease (*mahaa-roga*) which is untreatable or as a terminal illness.

As we know, Ayurveda is more of a science enhancing longevity than instant cures. That is why all the texts begin with lifestyle regimen rather than just herbal formulations to cure manifest diseases.

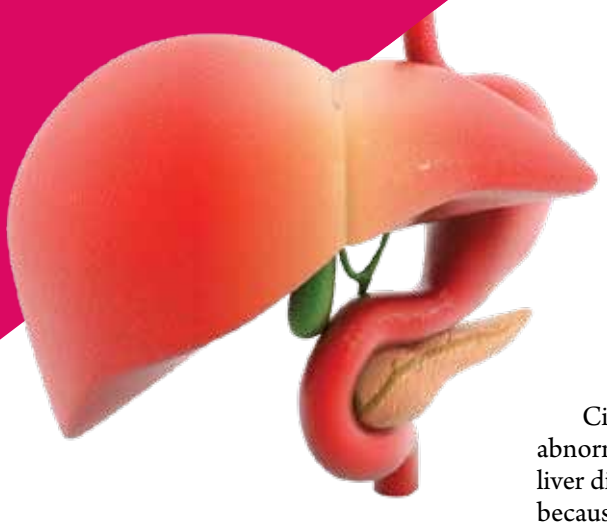
When it comes to rejuvenation treatment which is the 8th branch or specialty of health care, liver is targeted as the vital organ and many formulations are there to revitalize the liver.

Picrorhiza kurroa (kaṭukee), Phyllanthus niruri (taamalakee) and *Piper nigrum (pippalee)* are some of the herbs blessed with hepato-protective properties as identified by the saints of Vedic age. Many modern day studies have proved this to be right.

Though there is no substitute for liver transplantation we, as ayurvedic doctors should bear in mind the possibilities of ayurvedic formulations to help such patients to recover from illnesses that are likely to progress to liver dysfunctions leading to failure. It is also imperative that there are herbs that are known to be hepato-toxic like those in the Aristolochia family and those alleged to be hepato-toxic like *Psoralia corylifolia (baakooci)* used in vitiligo.

More over, the allegation that herbal medicines are likely to be contaminated with heavy metals by their presence in the raw herbs procured from contaminated soils and by their entry into the end product during the process of bulk manufacture, should make us more responsible and vigilant before we put our pen to paper. This is especially so when we treat patients with predisposing illnesses like diagnosed alpha antitrypsin deficiency, Wilson's disease, Hemochromatosis, patients with history of viral hepatitis A, B and C, autoimmune diseases and in alcoholics. It is also important to discourage long term use (self administration) of *arishṭa* and *aasava* by adults and to limit the prescription of such preparations to less than one week in kids and children, warning parents about the risks involved in continuing them taking them to be innocuous. ■

Liver Cirrhosis





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Disease genesis according to Ayurveda is a complex and multi-factorial mechanism. There exist multifarious pathological factors which behave differently in various clinical states of the same disease. In most of the situations one can't predict the future events of pathology *(sampraapti)* in a precise level due to the interactions of humors *(dosha)* -pollutables *(dooshya)* - channels *(srotas)* and bio-fire *(agni)* factors based on the etiological diversity. When it comes to hepatic pathologies, liver, being the principal seat of pitta, is damaged by multiple lifestyle factors leading to a good range of diseases. Alcoholic liver diseases need special concern as a challenging health issue in the current society. Evaluation of liver cirrhosis and its management in Ayurveda should be strictly based on the thorough understanding of treatment times *(kriyaakaala)* occurring in the pathology of liver diseases.

Cirrhosis is a complication, characterized by abnormal structure and function of the liver, in many liver diseases. The diseases that lead to cirrhosis do so because they injure and kill liver cells. The inflammation and repair that is associated with the dying liver cells cause scar tissue formation. The liver cells that do not die, multiply in an attempt to replace the cells that have perished. This results in clusters of newly-formed liver cells (regenerative nodules) within the scar tissue. There are many causes of cirrhosis. They include chemicals (such as alcohol, fat, and certain medications), viruses, toxic metals (such as iron and copper that accumulate in the liver as a result of genetic diseases), and autoimmune liver disease in which the body's immune system attacks the liver.

Patients with cirrhosis may have few or no symptoms and signs of liver disease. Some of the symptoms may be non-specific, that is, they don't suggest that the liver is their cause. Some of the more common symptoms and signs of cirrhosis include:

- Yellowing of the skin (jaundice) due to the accumulation of bilirubin in the blood.
- Fatigue
- Weakness
- Loss of appetite



- Itching
- Delayed healing of bruises due to decreased production of blood clotting factors by the diseased liver.

What are the common complications of cirrhosis?

1. Edema and ascites

As cirrhosis of the liver becomes severe, signals are sent to the kidneys to retain salt and water in the body. The excess salt and water first accumulates in the tissue beneath the skin of the ankles and legs when standing or sitting, because of the effect of gravity leading to pitting edema. The swelling often is worse at the end of the day after standing or sitting and may lessen overnight as a result of the loss of the effects of gravity when lying down. As cirrhosis worsens and more salt and water are retained, fluid also may accumulate in the abdominal cavity between the abdominal wall and the abdominal organs. This accumulation of fluid, called ascites, causes swelling of the abdomen, abdominal discomfort, and increased weight.

Liver cirrhosis is basically a disease of tissue destruction *(dhaatu-paaka)* and tissue depletion *(dhaatu-kshaya)* in liver. Since, the strength of the bio-fire is severely reduced in cirrhosis, the digestion of rawness *(aama)* and thereby detoxification is deeply affected.

2. Spontaneous bacterial peritonitis (SBP)

Normally, the abdominal cavity contains a very small amount of fluid that is able to resist infection well, and bacteria that enter the abdomen (usually from the intestine) are killed or find their way into the portal vein and to the liver where they are killed. In cirrhosis, the fluid that collects in the abdomen is unable to resist infection normally. In addition, more bacteria find their way from the intestine into the ascites. Therefore, infection within the abdomen and the ascites, referred to as spontaneous bacterial peritonitis or SBP, is likely to occur. SBP is a life threatening complication. Some patients with SBP have no symptoms, while others have fever, chills, abdominal pain and tenderness, diarrhea, and worsening ascites.

3. Bleeding from esophageal varices

In the cirrhotic liver, the scar tissue blocks the flow of blood returning to the heart from the intestines and raises the pressure in the portal vein (portal hypertension). When pressure in the portal vein becomes high enough, it causes blood to flow around the liver through veins with lower pressure to reach the heart. The most common veins through which blood bypasses the liver are the veins lining the lower part of the esophagus and the upper part of the stomach. As a result of the increased flow of blood and the resulting increase in pressure, these veins expand and are referred to as esophageal and gastric varices. The higher the portal pressure, the larger are the varices. Then it is more likely that the patient bleeds from the varices into the esophagus or stomach. Bleeding from varices usually is severe and, if immediate treatment is not provided, can be fatal. Symptoms of bleeding from varices include:

- Vomiting of blood
- Melena (passing of black and tarry stools due to changes occurring in blood as it passes through the intestine)
- Orthostatic hypotension (characterized by dizziness or fainting caused by a drop in blood pressure especially when standing up from a lying position).

4. Hepatic encephalopathy

Some of the protein in food that escapes digestion and absorption is used by bacteria that are normally present in the intestine. While using the protein for their own purposes, the bacteria make substances that are released into the intestine. These substances then can be absorbed into the body. Some of these substances, for example, ammonia, can have toxic effects on the brain. Ordinarily, these toxic substances are carried from the intestine in the portal vein to the liver where they are removed from the blood and detoxified. As previously discussed, when cirrhosis is present, liver cells cannot function normally either because they are damaged or because they have lost their normal

relationship with the blood. In addition, some of the blood in the portal vein bypasses the liver through other veins. The result of these abnormalities is that toxic substances cannot be removed by the liver cells, and, instead, the toxic substances accumulate in the blood. When the toxic substances accumulate sufficiently in the blood, the function of the brain is impaired. A condition called hepatic encephalopathy is developed. Sleeping during the day rather than at night (reversal of the normal sleep pattern) is among the earliest symptoms of hepatic encephalopathy. Other symptoms include irritability, inability to concentrate or perform calculations, loss of memory, confusion, or depressed levels of consciousness. Ultimately, severe hepatic encephalopathy causes coma and death.

5. Liver cancer (Hepatocellular carcinoma)

Cirrhosis due to any cause increases the risk of primary liver cancer (hepatocellular carcinoma). Primary refers to the fact that the tumor originates in the liver. A secondary liver cancer is one that originates elsewhere in the body and spreads (metastasizes) to the liver. The most common symptoms and signs of primary liver cancer are abdominal pain and swelling, an enlarged liver, weight loss, and fever. In addition, liver cancers can produce and release a number of substances, including those that cause an increased red blood cell count (erythrocytosis), low blood sugar (hypoglycemia), and high blood calcium (hypercalcemia).

Cirrhosis - Ayurvedic Understanding

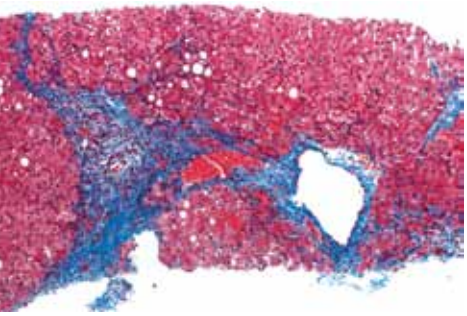
Liver, being the seat of channels of blood, is chiefly affected by substances causing burning sensation during digestion *(vidaahi)* and incompatible *(viruddha)* food. As we discussed earlier, the principal cause of the liver pathologies start from excessive alcoholism. Alcohol has the properties opposite to that of the immunity factor *(ojas)*. Liver is the principal site of bio-fire, which itself is the root of innate body strength *(sareera bala)*. The primary understanding of cirrhosis spins around the axis of patho-dynamics of *kaamalaa*. With the continuation of anti-hepatic etiological factors *(yakrt-viruddha nidaana)*, *kaamalaa* progresses and the chances of tissue destruction *(dhaatu paaka)* in liver steadily increases. Functionally active hepatocytes are destroyed resulting in the decline of liver functions. Fatty liver is initiated by a pathology related with kapha and fat *(medas)*.

The primary understanding of cirrhosis spins around the axis of patho-dynamics of ***kaamalaa***. With the continuation of anti-hepatic etiological factors ***(yakrt-viruddha nidaana)***, ***kaamalaa*** progresses and the chances of tissue destruction ***(dhaatu paaka)*** in liver steadily increases. Functionally active hepatocytes are destroyed resulting in the decline of liver functions. Fatty liver is initiated by a pathology related with kapha and fat ***(medas)***.

Due the changes in lifestyle and dietary habits, fatty liver has now become a common issue in urban and rural population. It is very important to note that in fatty liver there is increase of fat in liver, which is a seat of pitta and a root of blood channels *(raktavaha srotas)* making it very difficult to be addressed by medicines. Treatments to reduce fat mostly include drugs with hot potency and treatments to normalize pitta and blood are done using drugs of cold potency. As these treatment principles naturally contradict, treatment will be difficult.

Along with fatty liver, the inflammation dominant in pitta and the degeneration occurring in liver as part of the hepatitis are also to be taken into account. When the fatty liver causes channel obstruction (due to kapha and fat) and hypo-functioning of bio-fire, the inflammation and degeneration lead to tissue destruction. Hence before coming to the pathology of liver cirrhosis, these two aspects are to be properly analyzed. When the patient develops scar tissues and regenerating nodules, the disease becomes a vaata dominant state. Here the dry nature of vaata causes shrinkage *(soshana)* of liver with remarkable functional compromise. But the major pathological issues related with liver cirrhosis are





not limited to the liver as a pathological target. On close analysis we can see that as the disease progresses, there is multisystem involvement. Pathophysiologies of bleeding diseases *(rakta-pitta)*, edema *(sopha)*, internal inflammations *(antarvidradhi)* and ascites *(udara)* are also relevant in the secondary stages of liver cirrhosis.

Hence it can be concluded that liver cirrhosis is basically a disease of tissue destruction *(dhaatu-paaka)* and tissue depletion *(dhaatu-kshaya)* in liver. Since, the strength of the bio-fire is severely reduced in cirrhosis, the digestion of rawness *(aama)* and thereby detoxification is deeply affected. There develops the possibility of accumulation of toxins *(mala-sanjcaya)* which in turn leads to pathologies such as ascites. Due to the accumulation of toxins because of liver failure, there arise features of encephalopathy. Excessive action *(atipravrtti)* of channels of blood *(rakta-vaha srotas)* results in esophageal varices leading to bleeding through the upper orifices *(oordhvaga rakta-pitta)*. It is quite relevant to note that the place of origin *(prabhava sthaana)* of bleeding diseases *(rakta-pitta)* itself is liver.

The management protocol of liver cirrhosis is completely based on clinical stages. In primary state, the treatment of jaundice based on the GI Tract *(koshtaasrita kaamalaa)* is the option. The main objective is to prevent the pitta related tissue destruction in liver. Along with this, the bio-fire has also to be enhanced. Mild purgation and drugs purifying pitta and blood *(rakta prasaadana)* are to be judiciously prescribed in this state. Decoctions like *Vasaa-guloocyaadi, Patola-katurohinyaadi, Nimbatvagaadi* and powders like *Naaraayana coorna* may be given. Powder of turpeth *(trivrt coorna)* in the decoction of three myrobalans *(triphalaa kashaaya)* or juice of grapes *(draakshaa svarasa)* or thyme-leaved bacopa *(brahmi svarasa)* or *Avipatti coorna* may be given as purgative *(virecana)* drug. If fatty liver is present, treatment to combat kapha and fat suitable for the site of pitta may be administered. *Varanaadi* decoction, *Nimbaadi* decoction, *Shaddharana coorna* etc may be given at this state. *Saardoola coorna, Roheetakaarishta, Abhayaarishta, Dantyaarishta* etc may also be supplemented. Proper application of treatment for internal inflammation *(antarvidradhi)* is also important as liver is one of the principal sites of internal inflammation with tissue destruction. *Traayantyaadi* decoction, *Sukumaram* decoction, *Guloocyaadi* decoction, *Sataavaryadi* decoction etc are the options at this stage.

As the disease progresses, mineral pitch *(silaajatu)* may be given with proper adjuvant like *Triphalaa* decoction. The therapeutic application of mineral pitch is useful in the stage of fatty liver. Moreover, it is a rejuvenating treatment *(rasaayana)* which may help the hepatic regeneration. 'Pepparization' *(vardhamaana pippalee)* by giving increased doses of long pepper to a maximum amount and subsequently tapering it off, is another option of rejuvenating treatment. Care has to be taken to prevent the onset of symptoms related with vaata because once such pathologies develop the disease may become difficult to treat *(krichrasaadhya)*. Administration of ghee is of controversy in liver pathologies. But the ghee formulations mentioned in *haleemaka* may be given if the patient has comparatively good bio-fire. *Daadimaadi ghrta, Sukumaara ghrta, Patolaadi ghrta* etc are the drugs of choice. *Mahaa-tiktaka ghrta* is also very unique because it is specially indicated in pitta dominant vaata associated pathologies, including hepatic conditions. *Pathyaa ghrta* mentioned in the treatment of anemia *(paandu)* has got special therapeutic relevance because it is mainly prepared with chebulic myrobalan *(hareetakee)* which is the best laxative *(anulomana)* drug with vaata-kapha mitigating property. Moreover, chebulic myrobalan is a good rejuvenative drug in diseases of the gut and tissues *(koshtha and saakha)*. *Draakshaa leham* is strengthening *(balya)*and is useful in reducing pitta. *Dantee-hareetakee, gomootra-hareetakee* and *Dasamoola-hareetakee* are also important to effect evacuation of stools and flatus *(mala-vaata anulomana)* and to attain patency of channels *(sroto-suddhi)*. *Yaapana vasti* may also be given to purify the reservoir of the digested *(pakvaasaya suddhi)* and achieve good nutritional status *(dhaatu-poshana)*.

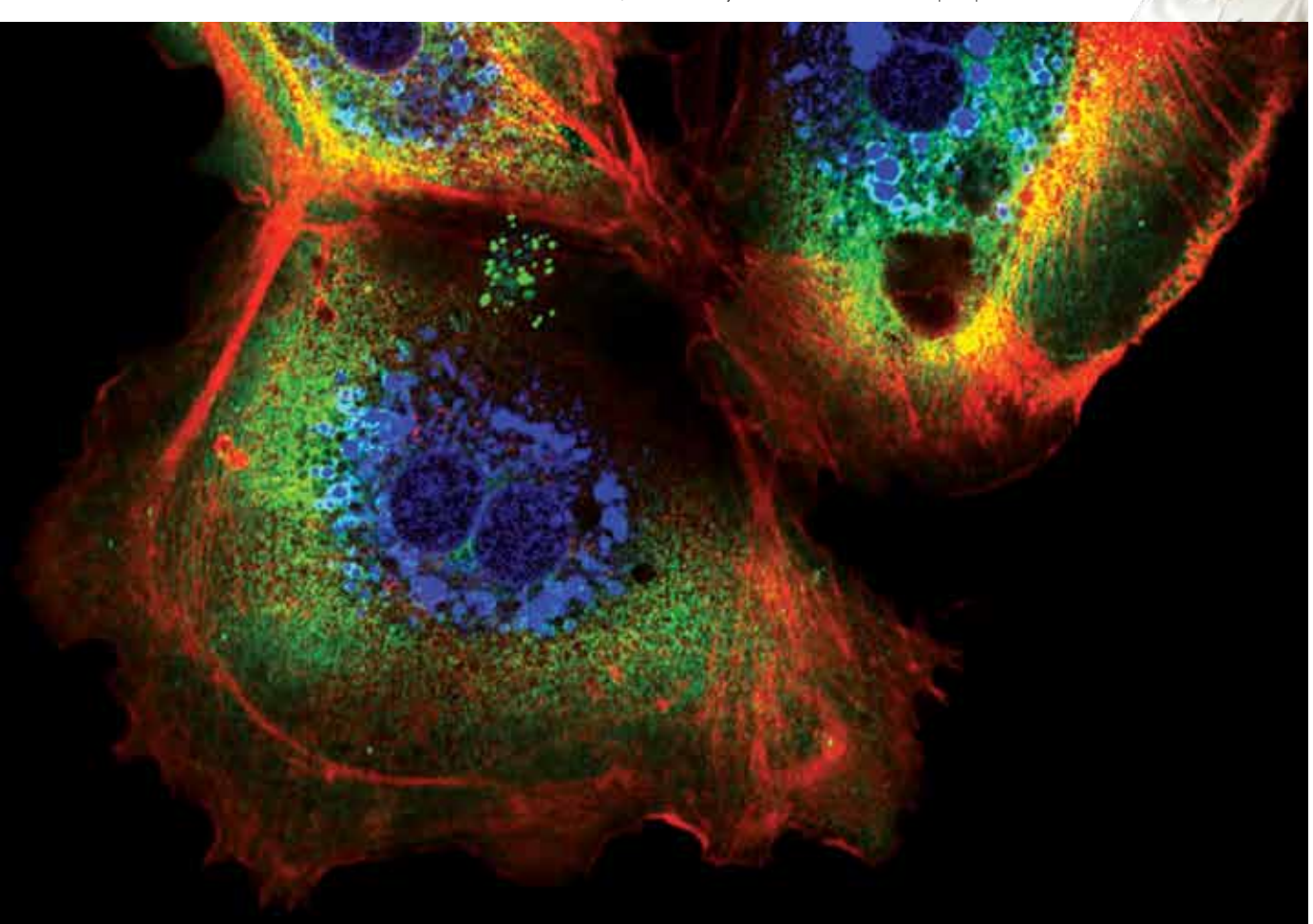
The diet should be free from excessive fat. Heavy and food that enhances secretions *(abhishyandi)* are to be avoided. Bye bye to alcohol is the first step. Medicated buttermilk and milk may also be given in specific states. If there is more protein loss, medicated vegetable soups *(yoosha)* made with horse-gram and beans may be given. Medicated gruel *(peya)* and thick gruel *(vilepi)* with the five spices *(panjca-kola)* is ideal for patency of channels. In short it is very important to make certain life style modifications related with diet and drinks in cirrhosis patients. Let us propagate the slogan of LFLS – Liver Friendly Life Style – through Ayurveda. ■







Saastra-mathanam (churning of science) is a discussion program conducted at Kerala Ayurveda Hospital, Aluva on 1st, 2nd and 4th Tuesday afternoons, every month. **Padmasree Dr. K. Rajagopalan MBBS, DAM, FAIM** is leading the discussions. Doctors of KAH, doctors of nearby KAL outlets and scientists of KAL participate in the discussion.



Hepatopathy

Introduction

Liver and blood complements each other. The blood has a fluid part (plasma) and a solid part (formed elements). Any toxic material entering the body first deranges the blood (A.Hr. U.35. 9-10). This subsequently vitiates even the abodes of humors. Blood is a seat of the humor pitta and liver is the seat of blood. Pitta has two forms, subtle and gross. Bile can be considered as a gross representative of pitta. Bile pigments, an important constituent of bile, are formed from blood and Vaagbhaṭa's mentioning (A.Hr.Ni.3.3) that pitta is derived from *rakta* probably denotes this relation.

For the ayurvedic fraternity, it would be best to figure out the abnormalities in relation to liver in various conditions mentioned in the texts rather than reverse analyzing modern disease classifications.

Ayurveda identifies viruses as ***bhoota***. According to the description in Atharva Veda, ***bhoota*** means microbes and parasites in the body, causing troubles to humans (Su.U. 44.11. footnote). It includes viruses and bacteria.

The following are the main conditions in Ayurveda which are fervently associated with liver:

1. Bleeding diseases – *Rakta-pitta* (Ca. Ci. 4.10)
2. Inflammations – *Vidradhi* (A.Hr.Ni.11.5)
3. Fecal and urinary block inducing reverse peristalsis – *Udaavarta* (A.Hr. Ni. 7.48)
4. Phantom tumor – *Gulma* (A.Hr.Ni.11.53)
5. Anemia – *Paandu* (A.Hr.Ni.13)
6. Jaundice – *Kaamalaa* (A.Hr.Ni.13. 15)

Liver is where most of the medications are metabolized. So overuse of drugs can also invariably cause an overload on the organ. You see, alcohol is not the only culprit for many liver diseases.

Certain inflammatory condition of liver exhibits bleeding disorders as liver is a seat of the disease *rakta-pitta*. [The liver produces six clotting factors: I (fibrinogen), II (Prothrombin), IV, V, VI, and VII.]

Pathogens are a major cause of inflammation too. Amoebic abscess which is uncommon these days, used to be an issue wherein which amoeba enters the portal circulation and reaches liver and lead to abscess formation. It is an amusing fact that Haareeta has described a microbe by the name *Sooceemughi*, the features of which is strikingly similar to that of amoeba (Ha.Sam. Trteeya sthaana 5.10-15). The amoebic abscess in liver can result in permanent damage of liver tissue *(yakrdvaa bhakshyantyanye..)*

Jaundice can present as a symptom in many liver diseases. Jaundice can also occur without the incidence of anemia (A.Hr.Ni.13.17). Vaagbhata has stated that the causative factors like dry, cold, heavy and sweet food and absence of exercise causes increase vaata and kapha, leading to the expulsion of pitta into external disease tract (A.Hr.Ci.16.45). As the external tract comprises the tissues like blood and skin, yellowish coloration is seen on these parts and the stools are either whitish or clay colored.

Udaavarta is also stated as a cause of *rakta-pitta*. This is indicative of the involvement of liver in *udaavarta*. Some liver diseases like hepatic encephalitis (known earlier as hepatic coma) can present with psychological derangements. This is also mentioned in the context of *udaavarta*. (A.Hr. Ni. 7.50).

Apart from these factors, *udaavarta* that can contribute to liver diseases can also happen due to the derangement of vaata in the alimentary canal (A.Hr.Ni.7.52). Deglutition, initiated by *praana vaayu*, continues as peristaltic movements of the GIT by the influence of vaata at various levels. This can be closely associated with the actions of enteric nervous system.

The symptoms of *paanakee* are fever, diarrhea, pressure pain on the body and internal organs, anemia and eye disease.

The symptoms of *laagharaka* (also called alasa) are fever, pressure pain all over the body, dizziness, inability, coma and emaciation.

Gulma is another disease which troubles the liver. This can be understood from the symptoms of pitta *gulma* (A.Hr.Ni.11.53). it is worth noting that phantom tumor is associated with *udaavarta*.

Most of the tumors should be studied by keeping kapha-*gulma* in mind. Pancreatic tumor is a cause for obstructive jaundice. Here in a formulation mentioned in *gulma*, *Dantee-hareetakee* (A.Hr.Ci.14.91-96), one of the diseases mentioned among its indications is *paandu*. So, while treating obstructive jaundice, management of kapha-*gulma* also can come in handy. Also remember that while treating *gulma*, all procedure bear fruit only if it is done after doing proper unction and sudation. Too much of drying therapies may counteract (A.Hr.Ci.14.83). For unctioning, *Misraka sneha* or *Sukumaaram ghrta* or any ghee formulation mentioned in *udara cikitsaa* can be given. All these ghee formulations have anti-tumor activity. This should be coupled with mainline treatments of tumor which will include medicines like *Rasagandhi mezhuku* or *Rasa sindoora* or extracts of *arushkara*, *sahadevee* and *gomootra*. Any hepatitis caused by tumor obstruction can be managed by this method. It is important to relieve obstruction as early as possible.

The next consideration in liver diseases is anemia *(paandu)*. Susruta-samhitaa has given elaborate description of *paandu* and states that it is of eight types.

1. Hepatitis

The word hepatitis literally implies just inflammation of liver. To understand inflammations better, one need to decipher the concepts of *vidradhi*. The suffix '*itis*' generally pertains to *vidradhi*. Liver is listed among the sites in which *vidradhi* can occur (A.Hr.Ni.11.5).

In this perspective, it can occur due to a multitude of reasons. It is now classified under the names

Ingredients of *Vyoshaadi* decoction

Dry ginger, Black pepper, Long pepper, Ajowan seeds, Hog weed, Sugarcane, iron filings, Chebulic myrobalan, Sida roots, leaf stalk of Tamarind, Iron waste (puraana-kittam), Ripe lemon, Turmeric, Bone setter (Vitis quadrangularis) and Desmodium triflorum.

The drugs are crushed and kept overnight in buttermilk. In the morning it is filtered and the liquid part is consumed. Now-a-day the drugs are made into a decoction and buttermilk is added at the time of consuming.

Hepatitis-A, B, C, D and E.

The differentiation of hepatitis A, B, C etc. are not in Ayurveda. There is no marked difference in treatment according to strain of virus. A disease may manifest from different causes and a cause may effect many diseases. Hence there need not be astonishment that different viruses cause jaundice.

Research should be conducted to evaluate the treatments in specific viruses. Ayurveda identifies viruses as *bhoota*. According to the description in Atharva Veda, *bhoota* means microbes and parasites in the body, causing troubles to humans (Su.U. 44.11. footnote). It includes viruses and bacteria.

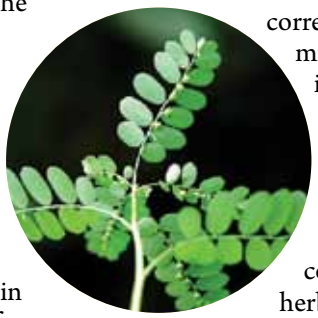
Jaundice *(kaamalaa)*is commonly seen in hepatitis and majority of symptoms exhibited by it and its varieties like *paanakee* and *laagharaka*, mentioned exclusively by Susruta, resembles to that of hepatitis.

In olden days, even allopathic doctors used to refer hepatitis patients directly to ayurvedic physicians. There was a special decoction too called *Vyoshaadi [Karimbirumbaadi (Mal.)]*. *Draakshaadi* and *Vaasaagudoocyaadi* decoctions were also used.

Among the varieties of hepatitis, A and E were believed to be comparatively less harmful than their more aggressive counterparts, B, C and D. But these conventional believes are fast changing now. Recently, we had seen that hepatitis A had spread in epidemic proportions.

In infective hepatitis which is persistent, a good remedy is to give the juice of pomegranate mixed with the three acrids. It is simple nevertheless effective. (A.Hr.Ci.16.50)

Here is another simple medicine mentioned by Vaagbhata that is equally effective in both kinds of jaundice. After purification therapy (mild purgation with *Avipatti coorna* will suffice), give fine powder of chebulic myrobalan with ghee and honey. Note that destruction of microbes is one among the benefits of the drug mentioned in Caraka-samhitaa (Ca.Ci.1.21-37).



There is a wonderful formulation for microbial attacks including viral hepatitis. It works well in nullifying the effects of antigen antibody reaction in the body. A practical application based on the text is as follows:

- The powder of three myrobalans *(triphalaa)* is triturated in the juice of tinospora *(gudooci)*. To this, powders of tree turmeric *(darvee)* and neem *(nimba)* are added. This combination is mixed with honey and taken as first thing in the morning.

Though the above combination is mentioned in the context of jaundice, it can be given in other infective conditions too as all these herbs are having *rasaayana* property.

The application of chebulic myrobalan in ghee and honey, mentioned earlier, is found to be beneficial in all kinds of blood disorders too.

Alterations in the form of administration of formulations are allowed. In fact it can sometimes improve efficacy or ease administration. For example, Bhaavamisra was the first to mention about Syphilis by the name *Phiranga*. He had advised mercury and Smilax china for its treatment. It is experienced that *Rasa sindoora* and *Madhusnuhee rasaayana* render the test results negative in syphilis within three months. [At that time VDRL (Venereal Disease Research Laboratory) test was not introduced. W.R and Kahn test was done].

When *Phyllanthus amarus (taamalaki)* is given as a single drug remedy in jaundice, it is found that only fresh extracts given with milk are potent since it will work only if the delivery system is correct. It is to be given as a milk decoction. The herb is made into a paste, bound in a pouch and boiled in cow's milk and reduced to get the desired formulation. It can also be given in coconut milk. Another herb used similarly is the leaf buds of castor. *Gandeera* mixed in buttermilk is also taken.

To prevent the spread of hepatitis in a region and to increase their resistance to hepatitis virus, pitta mitigating medicines like *Draakshaadi* decoction is best. It is hepato-protective as well.

The theoretical aspects of hepatitis or any liver disease for that matter is scattered in contexts of the above mentioned conditions and each has to be diligently considered while handling hepatitis. This is a stark contrast from the idea of viral involvement alone in hepatitis. ■

(To be continued)

Liver the Mother



If the body is a home, liver is the kitchen of the body. The functions of liver in our body are comparable to those of the mother in kitchen. It is the mother who serves food to the members of the family. Each member is provided with the exact quality and quantity of food according to his or her requirements and preferences by the loving mother. Similarly liver sees that each organ gets the appropriate share of nutrition that it wants. All members of the home do not require the same food. A loving mother in kitchen caters differently to each member. A baby may require milk and an elder child may require mutton fry. The mother provides them what they want. So is the liver.

In a home there may be times of depression and food may be stringent. In the body, there may be times of lack of nutrition. But the liver sees that things are managed in the proper order that the organs can survive to their level best by making adjustments in the distribution of nutrients. Like the mother who reserves the available milk to the small baby and curtails it to the grown ups, liver too makes discriminative arrangements so that the available nutrition is judiciously supplied to each organ.

It is the mother who serves food to the members of the family. Each member is provided with the exact quality and quantity of food according to his or her requirements and preferences by the loving mother. Similarly liver sees that each organ gets the appropriate share of nutrition that it wants.





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For example, when glucose is not sufficient in the blood, liver sees that glucose supply to the muscles is minimized. Whatever available glucose is packed and distributed in such a way that only the nervous system, especially the brain gets its fair share of glucose. Muscle can function even without glucose. It can utilize fat or even proteins for energy purposes. But the poor brain! It depends solely on glucose for its energy requirements. If glucose is not available for the brain, the brain will cease to function. It will ultimately shut down. It is state of shock. All the organs will also shut down for want of the regulatory control of the brain and ultimately death occurs. Hence though an apparent partiality, the efforts of liver to tag the available glucose in such a way that it can be used only by the brain is a lifesaving venture. Only the brain is having the key to decode and decipher the cryptogram presented by the liver so that the chemically coded and locked glucose can be utilized. See the brain-work of liver!

Liver is not a mere cuisine to cater for the body. It is the port to the body. Anything absorbed from the gut, except the chylomicrons, first go to the migration office of liver. Remember, the blood vascular system of the liver is aptly termed portal system. Chylomicrons are tiny microscopic fat globules containing neutral fat. They are absorbed from the gut through the lacteals of the villi of the small intestine and travel to the heart mixed with lymph. In a way they have a V. I. P. green channel to enter the systemic blood circulation. The lymph enters the blood circulation through thoracic duct which joins the inferior vena cava, as it enters the heart. As the proverb says, the way to the heart is the stomach (or the alimentary canal), at least for fat. This bypassing of liver by fat is a real problem maker. Liver cannot handle bulky loads of fat especially in the form of neutral fat, which is an ester of glycerol (better known as glycerin), an alcohol, and the fatty acids. An ester is what you get on adding alcohol and acid. When you squeeze lemon into your drink you are rendering the alcohol into ester by adding citric acid. With all its enormous ability to combat toxins, which are uninvited chemicals that enter the body without a proper visa, liver cannot handle neutral fat in bulk. If you are loading your blood with lots of fat, however vigilant the liver is, it cannot handle the crisis. All that liver can do is to shelf the problem. It can keep it aside for future attempt of detoxification. This eventually makes the liver a warehouse of fat and the condition

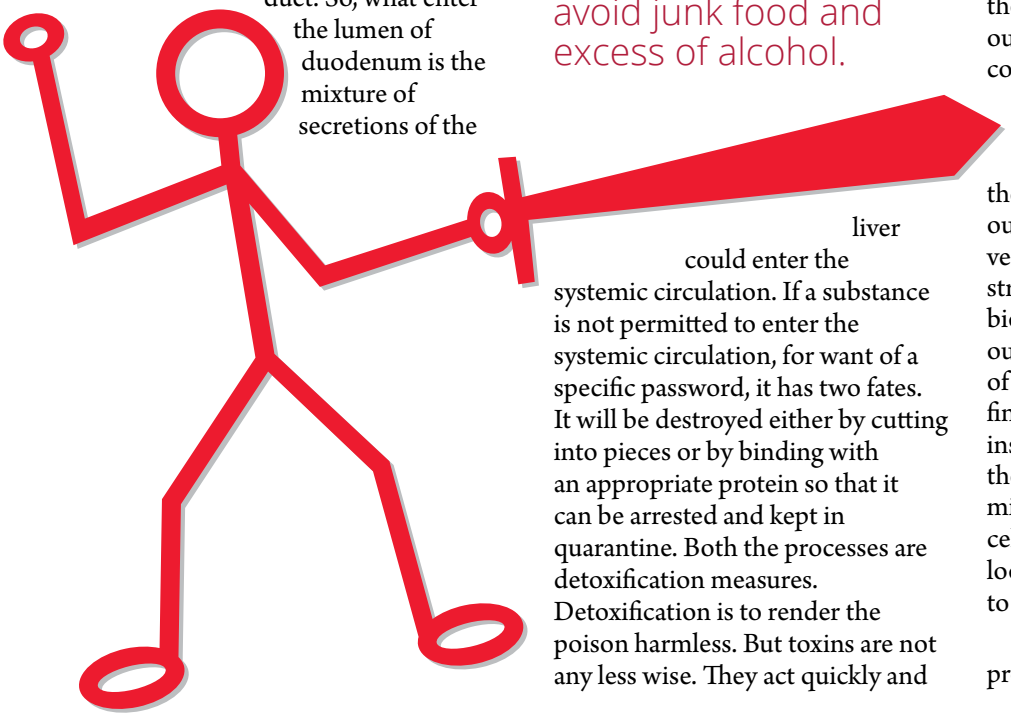
is termed fatty liver. With today's life style, any one can scan the liver and get a result that he or she is the proud owner of a fatty liver. The case is too common. Anyhow you can pull on with a fatty liver for years together if the remaining part of the liver works hard.

Fatty liver is a degenerative condition. When a living cell is converted into a store of something, the cell no more could have its normal function. When liver cells are being converted to fat depots, the functions of liver are at stake. Liver gradually turns into a poor cook and bearer.

Liver is usually described as a part of the digestive system. True, it produces bile which contains bile salts to emulsify the dietary fat. An emulsion is a fine mixture of fat and water. In emulsion of water and neutral fat, fat is distributed as minute particles in the water medium. The emulsion is milk like and called the chyle. There ends the role of liver in digestion. But as the bile duct passes through the pancreas, it receives tributaries from the gland to receive the digestive juice manufactured by pancreas and gets baptized as the common bile duct. So, what enter the lumen of duodenum is the mixture of secretions of the liver and pancreas and it constitutes the major task force in the effort of digestion.

Digestion is the initial process of converting food into body. The majority of substances produced by digestion and entering circulation are channeled through liver. Liver has an efficient check system. In this migration office, nothing that does not pass the strict scrutiny of the liver could enter the systemic circulation. If a substance is not permitted to enter the systemic circulation, for want of a specific password, it has two fates. It will be destroyed either by cutting into pieces or by binding with an appropriate protein so that it can be arrested and kept in quarantine. Both the processes are detoxification measures. Detoxification is to render the poison harmless. But toxins are not any less wise. They act quickly and effect maximum damage to the system in the short period of their freedom. Since they have reached the liver and liver is trying to handle them, the first target of attack of these toxins happens to be the liver. This is the professional hazard. In combating with the rogues, the militia often gets hurt. Thus, the liver in its earnest efforts to save the body with precious life will have to get hurt or even surrender to defeat. So please do not overload the loving liver with toxins. We are living in a toxic world. It is almost impossible to avoid them completely. But intentional intoxication can be avoided. Just avoid junk food and excess of alcohol.

In combating with the rogues, the militia often gets hurt. Thus, the liver in its earnest efforts to save the body with precious life will have to get hurt or even surrender to defeat. So please do not overload the loving liver with toxins. We are living in a toxic world. It is almost impossible to avoid them completely. But intentional intoxication can be avoided. Just avoid junk food and excess of alcohol.

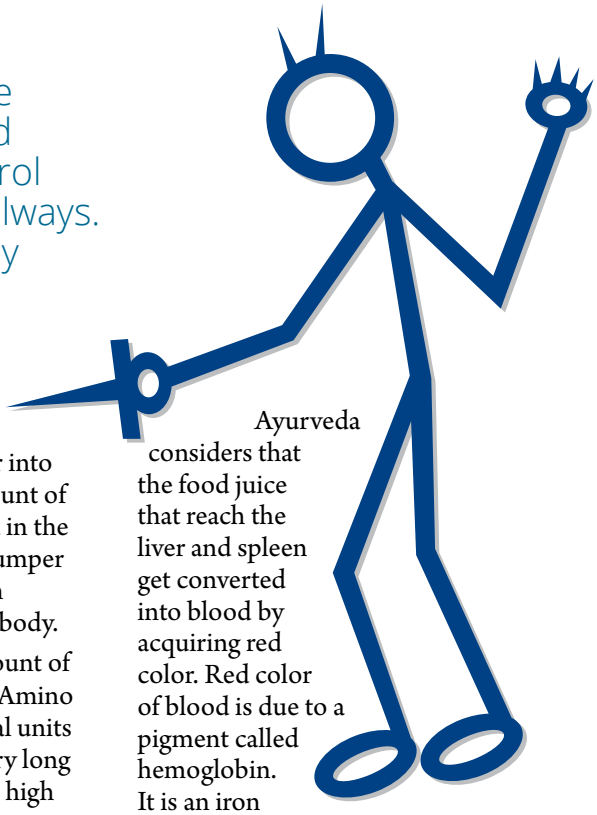


Excess of alcohol? Yes. Liver can very well tolerate and detoxify a sober drink. But if you are drowning your liver in alcohol, liver will be helpless. It has no other go than dying.

Above all what we have considered till now, liver is a very large chemical factory. It produces umpteen number of varied chemicals needed for the normal functioning of the body. All these chemicals are manufactured by the liver utilizing biochemical means of analysis and synthesis. Thus, to the liver it is possible to carry out chemical reactions at a comparatively lower temperature (body temperature) and near neutral hydrogen ion concentration (pH). To execute the very same chemical reactions out side the body we may require very high temperature, use of strong acids and alkalis etc. This biochemical mystery is carried out utilizing the enzyme systems of the liver. For very sophisticated fine work, you require very special instruments. Exactly the same is the case of liver. Liver cells have a milliard of such tools. When liver cells are damaged one by one we are loosing valuable instrumentation to handle special tasks.

In spite of all the attempts of problem shooting and rising up to

Regarding the manufacture of fats, it is to be noted that cholesterol is one of the branded products of liver. People think that cholesterol is something hazardous. It need not be so always. If liver fails to manufacture cholesterol, many hormonal activities cannot simply occur.



the occasion, liver is a silent worker. It usually does not complain, just complies. It will be patient till the end. It will suffer a lot and try to cope up. But patience has a limit. Once the liver gives up, practically nothing can be done to convince it to take up charge again. Once the liver cells are damaged, they are damaged. No one can repair them. All the high claims of curing the liver are just claims. There is a limit for medical treatment in the case of liver. If you attempt some oral medicine it should go through the portal system. A sick liver will not be able to handle the medicine. Then how can the medicine work?

You can bypass the liver by using some parenteral route of drug administration. But it is a futile task. If the drug is bypassing the liver, how can it act on liver? That is why when liver is dysfunctional; the only available option now is to supply a fresh quantum of liver cells by transplantation with the hope that the body will accept this foreign body. We will have to cheat the body immunologically so that the body will say yes to the fresh supply of liver.

The liver has a say in every metabolism. The major metabolisms are carbohydrate metabolism, protein metabolism and fat metabolism. The liver has its major part to play in all these three metabolisms. Liver converts glucose into animal starch. The animal starch is known as glycogen. There are two stores of glycogen in the body. One is liver. The other one is the muscle. The glycogen in muscle is called muscle glycogen and that in the liver is called liver glycogen. Liver synthesizes the blood sugar into liver glycogen. But the amount of glycogen that can be stored in the liver is meager. It is not a bumper stock to meet the long term requirements of glucose in body.

Liver regulates the amount of amino acids in circulation. Amino acids are the basic structural units of proteins. Proteins are very long chained compounds with a high molecular weight. It is inconvenient to handle very long chained compounds. Hence proteins are kept handy by turning them in to coiled coils. Proteins are very important in the maintenance of biological functions. Some plasma proteins are manufactured by liver. If this function is not properly done, functions of blood will be at stake.

Regarding the manufacture of fats, it is to be noted that cholesterol is one of the branded products of liver. People think that cholesterol is something hazardous. It need not be so always. Now people know that there is good cholesterol and bad cholesterol. Good cholesterol is essential for the manufacture of hormones with steroid structure. Sex hormones and many other important hormones have steroid structure. They manage many physiological functions of the body. If liver fails to manufacture cholesterol, many hormonal activities cannot simply occur. Without hormonal functions, life is impossible. Not only cholesterol, many other proteins are also manufactured by liver, mainly to capture and carry fat.

Ayurveda considers that the food juice that reach the liver and spleen get converted into blood by acquiring red color. Red color of blood is due to a pigment called hemoglobin. It is an iron containing protein. The protein part is called globulin and the iron containing part is called heme. Liver is a good warehouse of iron. Liver supplies iron to produce the hemoglobin. When liver is not functioning properly, hemoglobin is not produced sufficiently. This leads to anemia. Hemoglobin is closely related with bilirubin. It is a bile pigment. Bile is manufacture by liver. Bilirubin is yellow in color. In fact, hemoglobin also is yellow in color. It is not red as we believe. It is because of the mass effect of the pigment that blood appears red in color. (Note that there is a 'rubin' in bilirubin too. Rubin here means red.)

Liver is also involved in regulating blood clotting - another attempt in life saving. If blood will not clot, trivial wounds will cause bleeding to death. If clotting is inadvertent, as in intra vascular clotting, it will lead to serious blocks in the coronary arteries or vessels of the brain, both causing infarction. Clotting is not a matter of joke.

As part of detoxifying the poisons that enter the body, it is

the liver that detoxifies all the drugs consumed by the mankind. We know that ton loads of drugs are manufactured everyday. The pesticides in our food, the preservatives, coloring agents and flavoring agents used as food additives etc. are handled by liver. Ammonia is a poisonous gas. Liver takes pain to convert it into urea to be duly expelled by the kidney in urine.

Liver also resists infections and plays its humble part in fighting against invaders. Thus it has an immunological role to play.

Do you still believe that you can irresponsibly damage the liver with junk food, drugs and alcohol? Then it is your fate. Don't attempt to hurt the mother – liver the mother. The reward for such an immoral idiotism will be grave. You may not even get a chance to repent or correct yourselves. ■

Green Tea in..Skin Cancer out!

Naturally effective but hard to pronounce Epigallocatechin gallate (EGCG), the most abundant catechin in tea leaves is a known anti-cancer compound. But it is often forgotten that the catechins are converted to theaflavins and thearubigins in high temperatures. So, in order to reap the full benefits of EGCG, one has to take green tea and not any other forms of it, including black tea.



Now, scientists has come up with another study validating its efficacy, this time specifically in skin cancer. They have evidences to believe that extract from green tea is effective at shrinking skin cancer tumors. The results have been published in the journal Nanomedicine.

A team of researches of The University of Strathclyde made 40 per cent of human skin cancer tumors disappear and shrank an additional 30 percent by using EGCG, in a laboratory study.

Previous attempts to capitalise on its cancer-fighting properties have failed because scientists used intravenous drips, which failed to deliver enough of the extract to the tumors themselves.

So, the Strathclyde team devised a "targeted delivery system", piggy-backing the extract on proteins that carry iron molecules, which cancer tumors suck up.

According to Dr Christine Dufes, a senior lecturer at the Strathclyde Institute of Pharmacy and Biomedical Sciences, who led the research, when the extract is administered intravenously, it goes everywhere in the body, so when it gets to the tumors it's too diluted. With the targeted delivery system, it's taken straight to the tumors without any effect on normal tissue.

"These are very encouraging results which we hope could pave the way for new and effective cancer treatments which is still one of the biggest killer diseases in many countries," said Dr Christine Dufes. ■

Double Jubilation: KAA-US Scores Prestigious AAPNA Awards yet again!



Dr. Jayarajan receiving award from Dr. LeRoy Perry, DC, C.Ped, President, International Sportscience™ Institute (ISI), Los Angeles, CA, USA in presence of Dr. Shekhar Annambhotla MD (Ay) LMT, ERYT, BCIM, RAS, Founder & President of AAPNA, USA

When the 4th AAPNA (Association of Ayurvedic Professionals of North America) Awards for the year 2012 were announced, it was a moment of double jubilation for the Kerala Ayurveda Academy (KAA) as it grabbed two major awards in the ceremony.

Dr. K. Jayarajan, Academy Director of Kerala Ayurveda (USA) received the 2012 Vagbhata Award for Excellence in Ayurvedic Teaching in North America.

Ms. Anjula Bhandari, AWP (Ayurvedic Wellness Practitioner) Student of Kerala Ayurveda Academy, Los Angeles, received the 2012 Jeevaka Award for Excellence in Ayurvedic Studies in North America.

The awards were presented during the 4th International Conference held from September 14th to 15th at Los Angeles. A congregation of ayurvedic professionals of North America, the event also played host to several CMEs, presentations, promotional programs and seminars.

Established in the year 2006, Kerala Ayurveda Academy has spread its wings across North America through the in-class intensive institutes at Seattle, Los Angeles, San Fransisco and Boston, delivering pristine and inimitable education in Ayurveda. The state-of –the art e-learning system of KAA has played a key role in the academy's global presence. Students from various walks of life including modern medical professionals, paramedics, acupuncturists, naturopaths, yoga practitioners, nutritionists, physical therapists and massage therapists from around the world including Europe, Singapore, Russia, India, South America, Canada and so on have benefitted from the e-learning platform. Over these years, the Academy has gained reputation as one of the best institutes in North America. The academy had also received the 2011 Nalanda Award for excellence in Ayurvedic Education in North America issued by AAPNA.

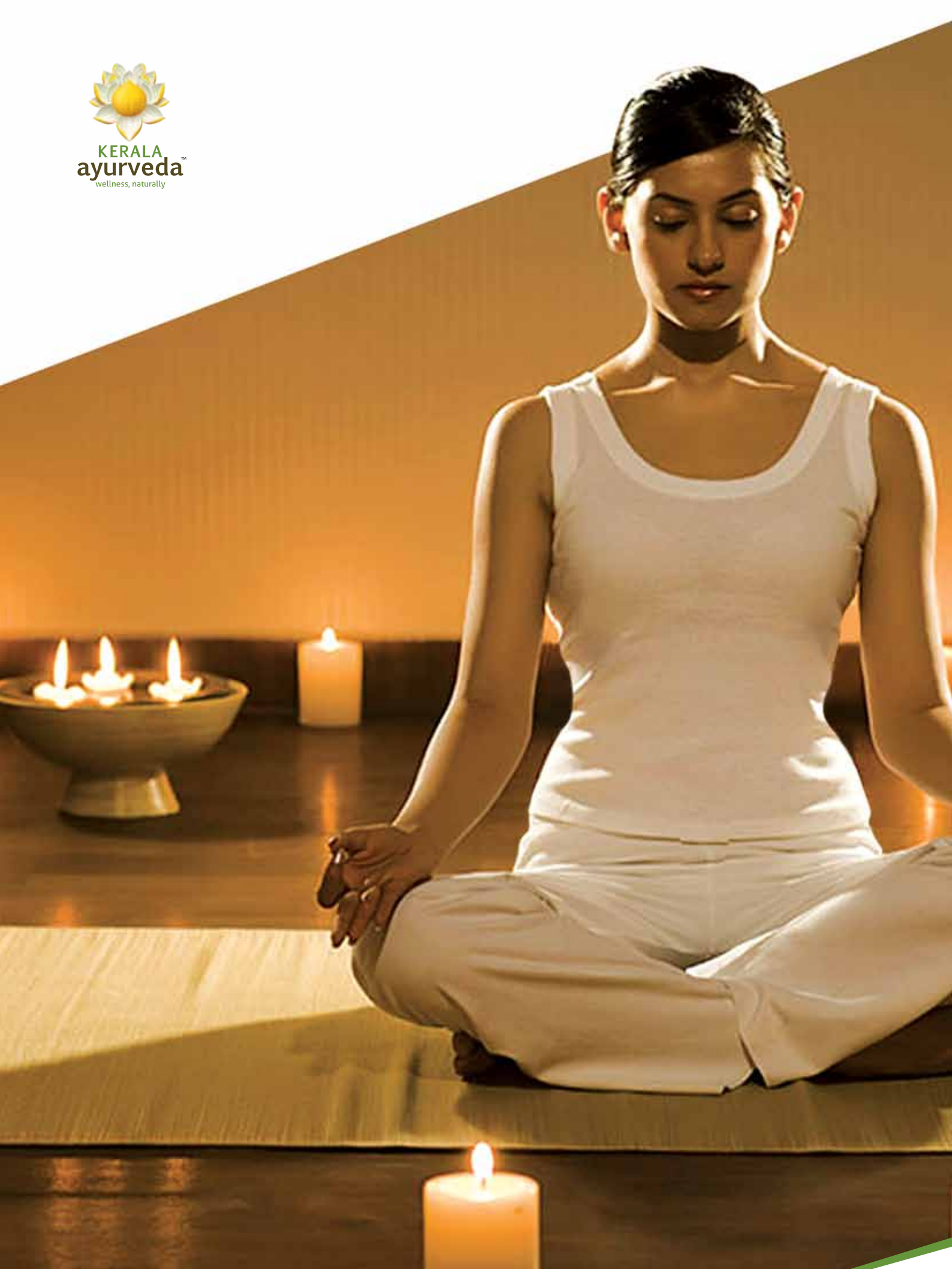


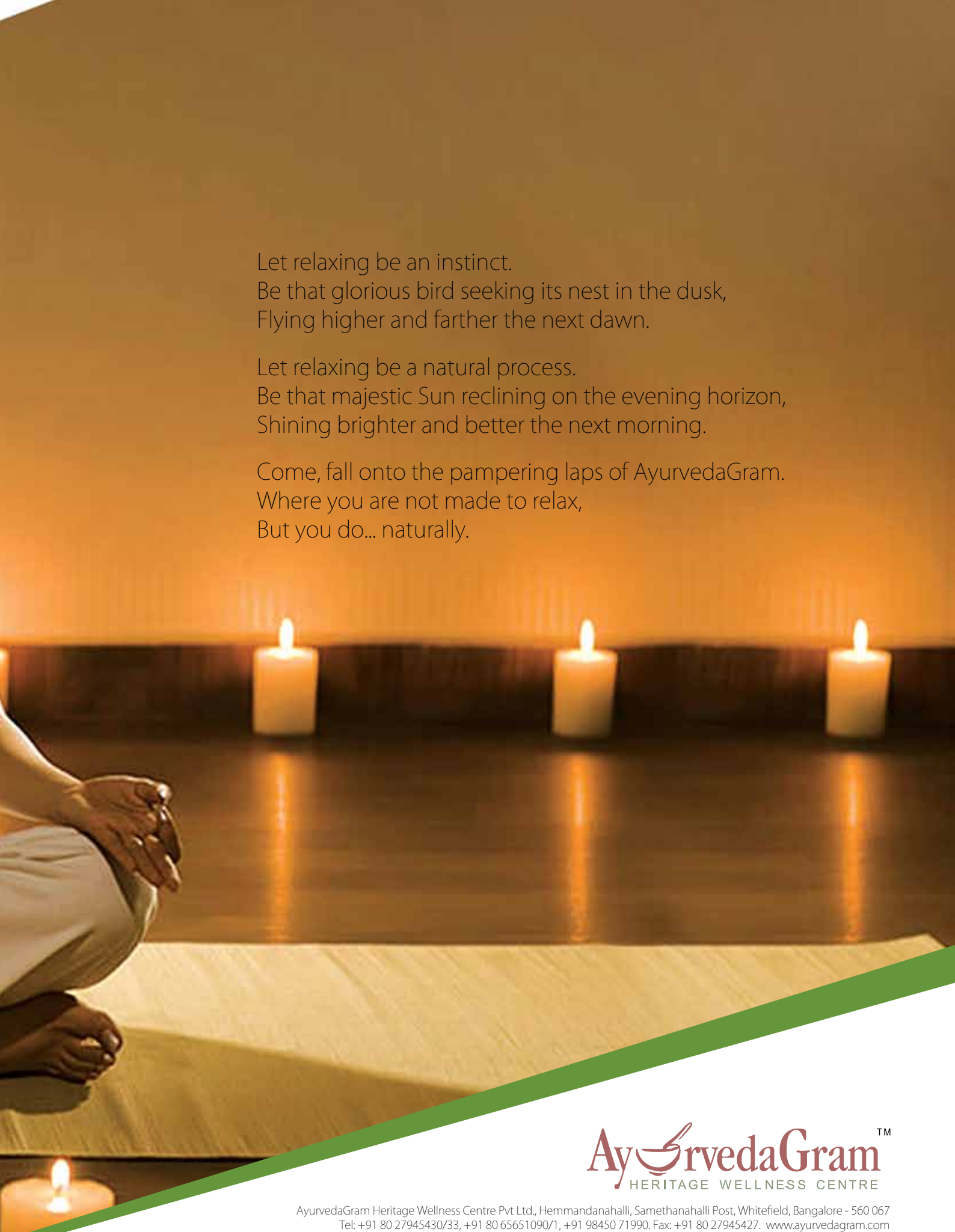
Ms. Anjula receiving award from Dr. LeRoy Perry, DC, C.Ped, President, Internation Sportscience™ Institute (ISI), Los Angeles, CA, USA.

KAA-US also has the strong backing from its foster company in India, Kerala Ayurveda Limited, a pioneer in ayurvedic medicine manufacturing, exports, hospitals, clinics, academies and research. Today, the academy has the strength of over 1000 alumni and about 100 students had visited India as part of their 20-day internship to have hands-on experience on practical Ayurveda including *panjca-karma* at Kerala Ayurveda Hospital, Kerala and AyurvedaGram Wellness Resort, Bangalore. In this current academic year, 25 students have enlisted for their India internship.

Dr. Jayarajan has been the vanguard of the Academy since 2010 and is renowned for his pedagogic skills and presentation of ayurvedic wisdom attuned to the needs and methods of the west. ■

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Kerala Ayurveda Clinic, Kalamassery renovated





Having a track record of over three decades, the Kerala Ayurveda Clinic at Kalamassery relocates to an ample and easily accessible area near LIC office at Eloor Road. The renovated clinic was inaugurated on 26th September by Dr.Anil Kumar, Executive Director, Kerala Ayurveda Limited. Dr. C. P. Sushama is the physician and manager of the clinic.

New Kerala Ayurveda Clinic, Shoranur





Shoranur, a town in Palakkad district, renowned for its rich ayurvedic heritage gets a new Kerala Ayurveda Clinic at Post Office road. The clinic was inaugurated on 10th September by Smt. K.S. Saleekha, Hon. M.L.A,Shoranur. Dr. Sreejith Ayappath is the consulting physician and manager.



Students of Kerala Ayurveda Academy (US) with doctors of Kerala Ayurveda Hospital, Aluva

'Swarnamukhi' Face Cream An Overview

(Standardization, Antibacterial Activity, Antioxidant Potential and Clinical Evaluation)

Manu Somanath, Remya K.R, Bose R.C., Sarala Samuel & Jolly C.I
R&D Division, Kerala Ayurveda Ltd.

INTRODUCTION

"Looking forever young is not an act. It is a practical science"

The desire for beautification made cosmetics an integral part of individual quest for pleasure and novelty. Recipes for home remedies and beauty enhancements have long history, dating back to Greeks and Romans.

The use of facial masks and mud baths dates to antiquity when mud was credited with tremendous healing powers. The mystique and folklore of 'wet earth' treatments is incorporated into many currently available skin and hair care products. The warmth that results from their application is the stimulating sensation of a rejuvenated face. Epidermal debris and black heads are removed when the treatment is washed off the face or body. The user interprets this as invigorated skin and the result is usually a noticeably improved complexion.



Skin care products commonly are emulsions or clear or translucent preparations and their texture vary from fluids to solids. Despite the extraordinary wide variety of skin care products on the market, consumers prefer emulsified preparations for skin care.

Creams are emulsions consisting of two immiscible liquids, for example water and oil with one of this forming the dispersed phase and the other continuous medium. Creams are semisolids, the classic type of skin care cosmetics because of their wide range of stability. But there is no one all-purpose cream for the young and old. The effectiveness of a cream depends on the condition that it is meant to correct.

Collagen and elastin are proteins found in skin which gives strength and firmness to skin. Unfortunately as we age, collagen breaks down, free radicals attack the cells and the skin gets considerably damaged due to over exposure to the sun, pollution etc. Subsequently lines and wrinkles appear and skin begins to sag. The ideal skin revitalizer stimulates production of both collagen and elastin.

'Swarnamukhi Face Cream' (SFC) from Kerala Ayurveda is a poly herbal preparation mainly used to improve face complexion. It is an antioxidant, reduces wrinkles, fine lines and nourishes the skin with vitamins which accelerates the formation of new skin cells. It is prepared using the herbs which are mentioned in Caraka-saṃhitaa meant for improving the complexion *(varṇya)*. The materials and formulation discussed in this text are generally those that have been widely used in ayurvedic formulations for a long period of time and are still highly valued.

'Swarnamukhi' contains herbs which are rich in flavonoids and alkaloids that contribute the antioxidant and antibacterial property. *Kanaka taila* is one of the main ingredients of SFC, which is used as the dispersed phase and the raw materials used in the preparation of face cream are notable medicinal plant extracts designed for skin care products. The combined solvent action of

water and oil can clean the skin surface very effectively. Cleansing is achieved without completely removing the skin's natural lipid film. Natural antioxidants present in SFC improve micro-circulation in the skin and protects tissues against damage by free radicals, promotes a healthy tone and appearance and offers comprehensive protection of face. The R&D of Kerala Ayurveda Limited has evaluated and presented a paper at a national conference and the detailed narration is presented here.

In the present study the 'Swarnamukhi Face Cream' (SFC) was studied for Physical parameters, phytochemical evaluation, antioxidant potential, microbial assay and clinical evaluation.

Ingredients used in the cream

1. *Lodhra (Symplocos racemosa)*
2. *Priyangu (Callicarpa macrophylla)*
3. *Kumkuma (Crocus sativum)*
4. *Godhoomam (Triticum aestivum)*
5. *Kanaka taila,* consisting of:
   a. *Yashṯhimadhu (Glycyrrhiza glabra)*
   b. *Naagakeasara (Mesua ferrea)*
   c. *Kamala (Nelumbo nucifera)*
   d. *Manjishṯha (Rubia cordifolia)*
   e. *Candana (Santalum album)*
   f. *Tila taila (Sesamum indicum)*
6. Necessary excipients for preparing cream base. The entire formulation is standardized as per WHO parameters.

Standardization

Standardization of herbal drugs is not an easy task as numerous factors influence the bio-efficacy and reproducible therapeutic effect. In order to obtain quality oriented herbal products, care should be taken right from the proper identification of plants, season and area of collection and their extraction and purification process and rationalizing the combination in case of polyherbal drugs.

Physical Parameters & Rheological Properties

This evaluation procedure provides the simplest and quickest means to establish the identity and purity and thereby ensure quality of a particular sample. If it is found to be devoid of or significantly different from the specified sensory characters like color, consistency, odor etc., it is considered as not fulfilling the requirements.

However, judgment based on the sensory characteristics like odor, taste etc., may vary from person to person and time to time based on the nature of each individual. So the description of these features are very difficult so that often the characteristics like odor and taste can only be described as 'characteristic' and reference made to the analyst's memory.

The application and acceptance of pharmaceuticals and cosmetics are also dependent on the rheological properties of the final product like viscosity and spread-ability. Therefore, rheological measurements can assist scientists in both formulating the optimal pharmaceutical and cosmetic products and improving processing efficiency. Quality attributes such as color and consistency are extremely important to the acceptance of semisolid products by the end-user or consumer.

The organoleptic characters of the face cream was standardized to be creamy white in color with pleasant odor .Viscosity was checked by using Brookfield Viscometer and spread-ability was checked by using Fisher brand filter papers. They comply with the Pharmacopoeial parameters of a cream.

Table 1

PARAMETERS	RESULT
Colour	Creamy white
Odor	Pleasant
Consistency	Semi solid
Viscosity	6000-7000 Cps
Spreadability	50-60%/wt.

Phytochemical Evaluation

Phytochemical methods are applied in routine herbal medicine standardization as well as modern drug discovery researches. In a narrower sense the terms are often used to describe the large number of secondary metabolic compounds found in plants.

Many of these are known to provide protection against insect attacks and plant diseases. They also exhibit a number of protective functions. It is important to use the phytochemical methods to screen and analyze bio-active components, not only for the quality control of crude drugs, but also for the elucidation of their therapeutic mechanisms.

SFC was subjected to qualitative chemical investigation for the identification of the phyto-constituents and found the presence of flavonoids and alkaloids. Subsequently the extracts in the cream was accessed for quantitative assessment of flavonoids and alkaloids and the results indicated that the extracts of SFC contains 2.08% of flavonoids and 0.25% of alkaloids.

Plant flavonoids are powerful antioxidants and free radical scavengers for the protection of skin.

Thin Layer Chromatographic Studies (TLC)

TLC is considered basically for qualitative identification, separation and preparation of organic compounds that are in the cream.

TLC was done to visualize the presence of actives in the formulation. Methanolic extract of the powdered drug was used for the TLC analysis.

Table 2				
ACTIVES	Solvent system	Spray reagent	Rf VALUES	
Flavanoids	Toluene: Ethyl acetate: Formic acid (5:3:0.4)	NP/PEG reagent	0.71,0.77,0.83 & 0.95	
Alkaloids	Toluene: Ethyl acetate: Diethyl amine (7:2:1)	Dragendorff reagent	0.42, 0.52,0.61& 0.66	

Microbiological Assay

Herbal ingredients of high quality should be free from insects, animal matter and excreta. It is usually not possible to remove all contaminants completely. Hence specifications should be set in order to limit them. Aerobic bacteria and fungi are normally present in plant material and may increase due to faulty growing, harvesting, storage or processing. Herbal ingredients, particularly those with high starch content, may be prone to increased microbial growth. Pathogenic organisms including Enterobacter, Enterococcus, Clostridium, Pseudomonas, Shigella and Streptococcus have been shown to contaminate herbal ingredients.

The microbial standards were determined as per the WHO norms.

1) Total Bacterial count
2) Total Yeast and mold count
3) Detection of specific organism
   - E.coli
   - Salmonella typhimurium
   - Staphylococcus aureus

The results along with standards are given in Table – 3. From the results we can infer that the formulation 'Swarnamukhi Face Cream' passes WHO standards with respect to microbial count.

Table 3		
Parameters	Standard	Results
Total bacterial count	10^5 cfu/g	Less than 10cfu/g
Detection of specific organisms		
Staphylococcus aureus	Nil	Nil
E.coli	Nil	Nil
Salmonella typhimurium	Nil	Nil
Total yeast and mold count	103cfu/g	Less than 10cfu/g

Antibacterial Activity of The Formulation

Secondary bacterial infection in skin lesions is a common problem. Many wound and skin infections that complicate skin lesions are caused by mixed bacterial flora. Aerobic and anaerobic, gram-negative and gram-positive organisms, whose origins are the endogenous oral, gastro-intestinal and skin flora may be present in such infections, where they exist synergically. Staphylococci ('staph') are a common type of bacteria that live on the skin and mucous membranes (eg. in nose) of humans. Staphylococcus aureus is the most important of these bacteria in human diseases. About 15-40 per cent of healthy humans are carriers of S. aureus, that is, they have the bacteria on their skin without any active infection or disease (colonization). Despite being harmless in most individuals, S. aureus is capable of causing various infections of the skin and other organs. S. aureus infections are common in people with frequent skin injury, particularly if the skin is dry. Staphylococci are becoming increasingly resistant to many commonly used antibiotics including penicillins, macrolides such as erythromycin, tetracyclines and aminoglycosides.

SFC was evaluated for antimicrobial activity against Staphylococcus aureus and Bacillus subtilis. For the study standard (pure) Microbial Type Culture Collection (MTCC) microbial strains were procured from Institute of Microbial Technology (IMTECH), Chandigarh.

Bacterial cultures used

– Staphylococcus aureus (MTCC 3160)

– Bacillus subtilis (MTCC 3053)

Procedure

Agar well diffusion assay was used for the determination of antibacterial activity. 18hrs incubated bacterial cultures were swabbed evenly on the Mueller Hinton agar plates using sterile swabs. Wells (0.7cm diameter) were made in the agar using sterile cork borer. Around 150µl of water extract of the formulation was added to the well using micropipette and sterile tips. Gentamycin (10mcg/dsc) was placed as the positive control. The plates were undisturbed for 2hrs for proper diffusion of the extract. Then the plates were incubated at 37C for 24hrs. After 24hrs, the zone of inhibition was checked by using Hi media Zone size checking scale and compared the result with Gentamycin zone. The method was repeated twice and the average zone size was calculated.

Table 4				
Organism	Face cream Water extract		Gentamycin (+ve control)	
	Zone size	Inference	Zone size	Inference
Staphylococcus aureus	16mm	Sensitive	21mm	Sensitive
Bacillus subtilis	16mm	Sensitive	20mm	Sensitive

The tested bacterial strains were multi drug resistant (MDR) in nature. From the results (Table – 4) it indicates that 'Swarnamukhi Face Cream' works as a potent anti bacterial agent against pimples-causing bacteria and other secondary bacterial skin infections.

Antioxidant activity of the Formulation

Antioxidants are used in cosmetics on the skin surface to eliminate or at least to minimize the undesirable reactions resulting from oxidation.

The biological constituents from the raw materials acts as antioxidant for this face cream. For broad spectrum antioxidant activity DPPH assay was used for the evaluation.

Procedure

The DPPH reagent was prepared in methanol (2mg/ml). Ascorbic acid was used as the standard. To a set of clean and dry test tubes containing 3ml of methanol, 50µl of DPPH reagent was added and mixed thoroughly. The initial absorbance of each test tube was measured at 516nm. To these test tubes, the solution of face cream was added in increasing concentrations. The solution was mixed, allowed to stand for 20 minutes in dark at room temperature and the final absorbance was measured at 516 nm. The % reduction in absorbance was calculated from the initial and final absorbance at each level. Concentration of test solution required for producing 50% reduction in absorbance (EC50) was calculated by plotting the linear regression calibration curve of log of concentration of test solution on X-axis against % reduction in absorbance on Y-axis.

The antioxidant activity was compared with standard pure compound ascorbic acid. The result indicated that the antioxidant activity of SFC was found to be 124.5µg/ml. So it can be ascertained that SFC has got good antioxidant potential.

Clinical Evaluation

To ascertain the efficacy of the formulation SFC, our R&D has collected a clinical data also through 'Kerala Ayurveda Clinics'. An adequate and well-controlled Clinical evaluation was conducted involving a total of 32 evaluable patients treated with 'Swarnamukhi' on the face for 24 weeks with a comprehensive skin care and sun avoidance program, to assess the effects on fine and coarse wrinkling, milled hyper pigmentation, tactile skin roughness, and laxity. Patients were evaluated at baseline on a 10 unit scale and 'quality of life' questionnaire. The efficacy is evaluated based on the changes from that of baseline rating were categorized as:

Worsening: Increase of 1 unit or more.
No improvement: No change.
Minimal improvement: Reduction of 1 unit.
Mild improvement: Reduction of 2 units.
Moderate improvement: Reduction of 3 units.
Good improvement: Reduction of 4 units and more.

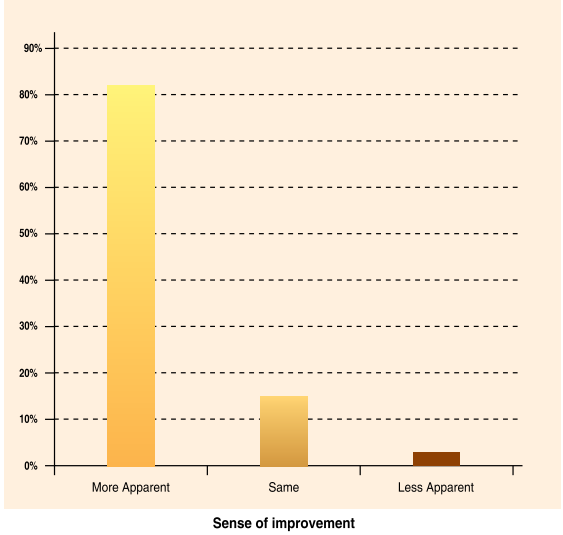
Table 5 (i)

Improvement Scale	Subjects used Swarnamukhi (N=32)
No Change	2%
Minimal Improvement	3%
Mild Improvement	15%
Moderate Improvement	30%
Good improvement	50%

Table-5 (ii)

	Mean Reduction
Wrinkling	49%
Hyper pigmentation	67%
Tactile roughness	74%
Laxity	34%

Patient's Self-assessment after 24 weeks of treatment with Swarnamukhi



Finally patient's self assessment is made.

The clinical evaluation of the cream was conducted on volunteers and the inference observed are mentioned The clinical evaluation showed that, 80% of the patients had good to moderate improvement. Reductions of wrinkles, hyper pigmentation, tactile roughness, laxity were 49%, 67%, 74% and 34% respectively. Using PSAS (Patients self assessment score) after 24 weeks of SFC application showed 83% of patient had good improvement, 15% remained same and 2% were found to be less apparent. The data showed that SFC can be effectively used against wrinkles, hyper pigmentation and roughness of the skin.

Conclusion

Physical and rheological parameters like color, odor, consistency, viscosity and spreadability of the poly herbal formulation has been standardized. Qualitative analysis showed the presence of flavonoids and alkaloid in the formulation and Quantitative analysis revealed the quantity of the same in the face cream. Microbial analysis showed that all the tested parameters were found to be within the limit.

Antibacterial activity of the formulation revealed that the tested Gram positive bacterial strains Staphylococcus aureus and Bacillus subtilis were found to be sensitive to the 'Swarnamukhi' water extract. Antioxidant studies showed that the formulation has reasonable antioxidant activity when compared to the standard ascorbic acid. The study provided adequate demonstration of efficacy for mitigation of facial fine and coarse wrinkling, mild hyper pigmentation, tactile skin roughness, and laxity.

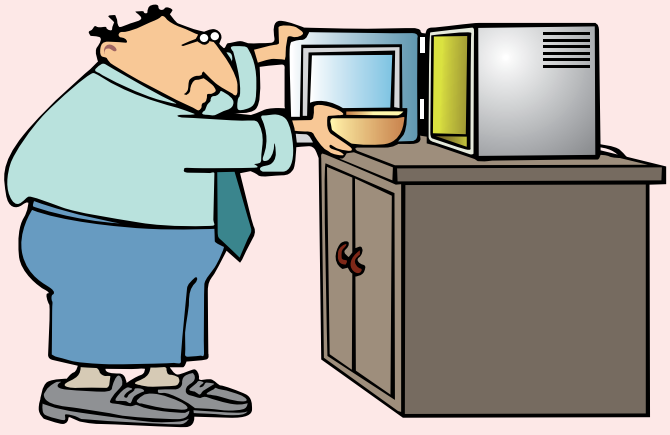
There was significant reduction in wrinkles, hyper pigmentation and roughness by using the 'Swarnamukhi' cream. Since it is prepared by using an ayurvedic classical formulation *Kanaka taila*

which is used for centuries, the cream has excellent potential.

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Gained weight? Became diabetic?
Now blame your microwave too!



The ayurvedic fraternity advocates that food kept overnight or reheated are unwholesome and best avoided. Consumption of such foods *(paryooshita bhojanam)* is listed among the main causes for inflammations *(vidradhi)* in various viscera including pancreas which increases the risk of becoming diabetic. They are also considered as taamasic and hence the chances of unhealthy gain of weight are also higher for persons with a habit of using reheated food. Unaware of this ancient wisdom, the calorie conscious and fitness freak modern world, was in a desperate search for that culprit who made us overweight (especially around abdomen) and diabetic.

This time around, a research team, led by Helen Vlassara, MD, Professor and Director of the Division of Experimental Diabetes and Aging at Mount Sinai School of Medicine, has identified a toxic byproduct called methyl-glyoxal (MG) a type of advanced glycation end product (AGEs), which is produced when food is cooked with dry heat. MG could lead to abdominal obesity, insulin resistance and type 2 diabetes. AGEs have been found to lower the body's protective mechanisms that control inflammation.

In the study, the researchers fed one group of mice, a diet high in MG over four generations, while the control group was fed a diet without MG. Both diets had normal calories and fat. They have found that, over four generations, mice with sustained exposure to the compound, methyl-glyoxal (MG), deveoped significant abdominal weight gain, early insulin resistance, and type 2 diabetes, whereas the control group did not have either of these conditions. The researchers found that MG caused a marked deficiency in protective mechanisms, such as the survival factor SIRT1 that is present in fat and controls inflammation, while enhancing the metabolism of glucose and insulin. The ingestion of MG also adversely affected the activity of an important anti-AGE receptor called AGER1, which protects SIRT1 and fights insulin resistance.

"This was a prolonged but rewarding study showing that a specific AGE compound abundant in foods, within only a few generations in mouse terms, contributes to the increase in weight gain, insulin resistance, and, diabetes, reproducing the pattern seen increasingly in humans over the last decades ," said Dr. Vlassara. "These key findings should inform how we understand and prevent the human epidemic of obesity and diabetes." "The study demonstrates how the prolonged ingestion of seemingly innocuous substances common in human food, such as MG, can reduce defenses and compromise native resistance to metabolic and other diseases," said Dr. Vlassara.

"For more than 30 years we have been studying the potential of eliminating harmful AGEs from the body, and now from food, as one way to curb the diabetes epidemic," said Dr. Vlassara. "Thus far, our findings reflect the need for a dramatic departure from standard clinical recommendations, which should now include a reduction in the amount of dry heat and processed foods in the diet."

The research team recommends that clinical guidelines be revised to eliminate foods cooked using dry heat and replace them with methods that use lower heat or lots of moisture (water) as in stewing, poaching or steaming. Examples from the AGE-less diet include stewed beef, chicken and fish instead of grilled meats. ■

Taila seka
(pizhiccil)



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Unction and sudation, generally considered as pre-operative procedures, can also be done as main procedure as part of mitigation treatment. According to Caraka-samhitaa, sudation *(svedana)* procedures are classified into 13 types, pouch fomentation *(sankara-sveda)*, mat fomentation *(prastara-sveda)*, tube fomentation *(nadee-sveda)*, irrigation *(parisheka-sveda)*, and immersion fomentation *(avagaaha-sveda)*, to name a few. Body irrigation *(kaaya-seka* or *dhaara)* is a form of irrigation. *Pizhiccil* is a modified form of warm body irrigation developed by physicians of Kerala. It is considered as the "King of Traditional Therapies" and is extensively practiced. The therapy has been used since ancient times and was a favorite of royals. Hence, the treatment is also called 'treatment for aristocrats'.


Current method

The Sanskrit word *kaaya* denotes body and *seka* or *dhaara* denotes pouring of liquid. Body irrigation *(kaaya seka)* is a type of sudation using liquids *(drava sveda)*. The liquids that are commonly used include warm medicated oils, decoctions, milk and other liquids like acetic liquid *(dhaanyaamla)*.

The meaning of the Malayalam word *pizhiccil* is 'to squeeze'. This procedure gets this name as it involves squeezing of cloth pieces soaked in warm medicated oil all over the body. The cloth pieces are periodically dipped into warm oil contained in vessels. As part of making the treatment more beneficial, the oil was traditionally poured from sprouted vessels *(galayandika* [Sanskrit.]; *kindi* [Malayalam]) instead of the procedure of dipping the cloth in oil and squeezing. This helps in avoiding breakage of the flow *(dhaara)* during pouring.


Traditional method

Body irrigation can be done as a rejuvenation therapy or as a curative therapy, i.e. it can be done on a healthy person or a diseased person. This procedure can be done as local irrigation *(ekaangga-dhaara)* or full body irrigation *(sarvaangga-dhaara)*.

Benefits

Body irrigation acts as a unique and effective treatment modality. It is even effective in certain acute conditions like severe pain, inflammations etc. as the patient gets the benefit of both the unction effect of the oil used as well as the sudation effect of the procedure involved, at the same time. *Pizhiccil* is an excellent remedy for optimum relaxation in Ayurveda. It also acts as a rejuvenation *(rasaayana)* therapy. It helps in providing stability of tissues *(dhaatu-sthirataa)*, nourishment of tissues *(dhaatu-poshana)*, stabilizes *ojas*, corrects metabolism, delays ageing etc.

Indications

Pizhiccil is mainly indicated in vaata and vaata

associated diseases. It is also effective in traumatic disorders, post traumatic conditions, fracture of bones, post fracture stiffness of joints, contusive wounds, dislocations of joints, other diseases like lumbago *(kaṯee-graha)*, sciatica *(grdhrasee)*, hemiplegia *(pakshaaghaata)* and a wide range of neuro-muscular disorders, degenerative diseases, peripheral neuropathy, rheumatological problems like rheumatoid arthritis with deformities etc.

Contraindications

Pizhiccil is generally contraindicated in any disease involving metabolic toxins *(aama)*. It is also contraindicated in fever *(jvara)*, rhinitis *(peenasa)*, indigestion *(ajeerṉa)*, diarrhea *(atisaara)*, sprue *(grahaṉee)*, chronic diabetes *(madhu-meha)*, jaundice *(kaamalaa)*, chronic hypertension *(cira-rakta-atimarda)* etc and in weak patients. In case of local treatment, all the above are not absolute contraindications.

Materials and Equipments

1. Suitable oils (eg – *Dhanvantaram taila, Sahacaraadi taila* etc) – 6-7 liters.
2. Medicated oil for vertex application *(taḻam)* (eg – *Ksheerabala taila* or *maasha taila*) – 5ml
3. *Rasnaadi coorṉa* – 1-2gms
4. Spouted vessel (capacity- ½ - 1 litre) – 2 nos
5. T-Bandage
6. Massage table– 1
7. Utensils for collecting and warming the oil – 2
8. Hot water bath
9. Stove
10. Materials for bath (if bath is indicated)
11. Medicated water for bath (if bath is indicated)
12. Ear plugs
13. Soft towels -2
14. Masseurs – 2
15. Attendant - 1

Usage of oil

The minimum quantity of oil required is 2.5 liters for the 1st day (till the 3rd day) and added more if necessary. Each day the oil is reheated and filtered after the treatment in order to remove the moisture contents and stored after removing the sediments. Small quantity of fresh oil is added daily to maintain the quality. On the 4th day the current oil is changed and fresh oil is taken and is used for the next two more days. On the 7th day, both the batches of oils are mixed together and used. If desirable, oil can be changed daily.

Duration

Full-body irrigation is generally done for a maximum of 45 minutes. In case of local irrigation, the treatment may be done for 20-30minutes

Time of procedure

The most preferable time for doing pizhiccil is during morning hours, either between 6am and 10am. For local irrigation, any time can be chosen.

Course

Full-body irrigation is usually done for 7 days and it can be increased further depending on physician's discretion but not generally advised for long terms as it is a strong treatment and can cause physical exhaustion. In case of local irrigation, the number of days can be much more than full-body irrigation.

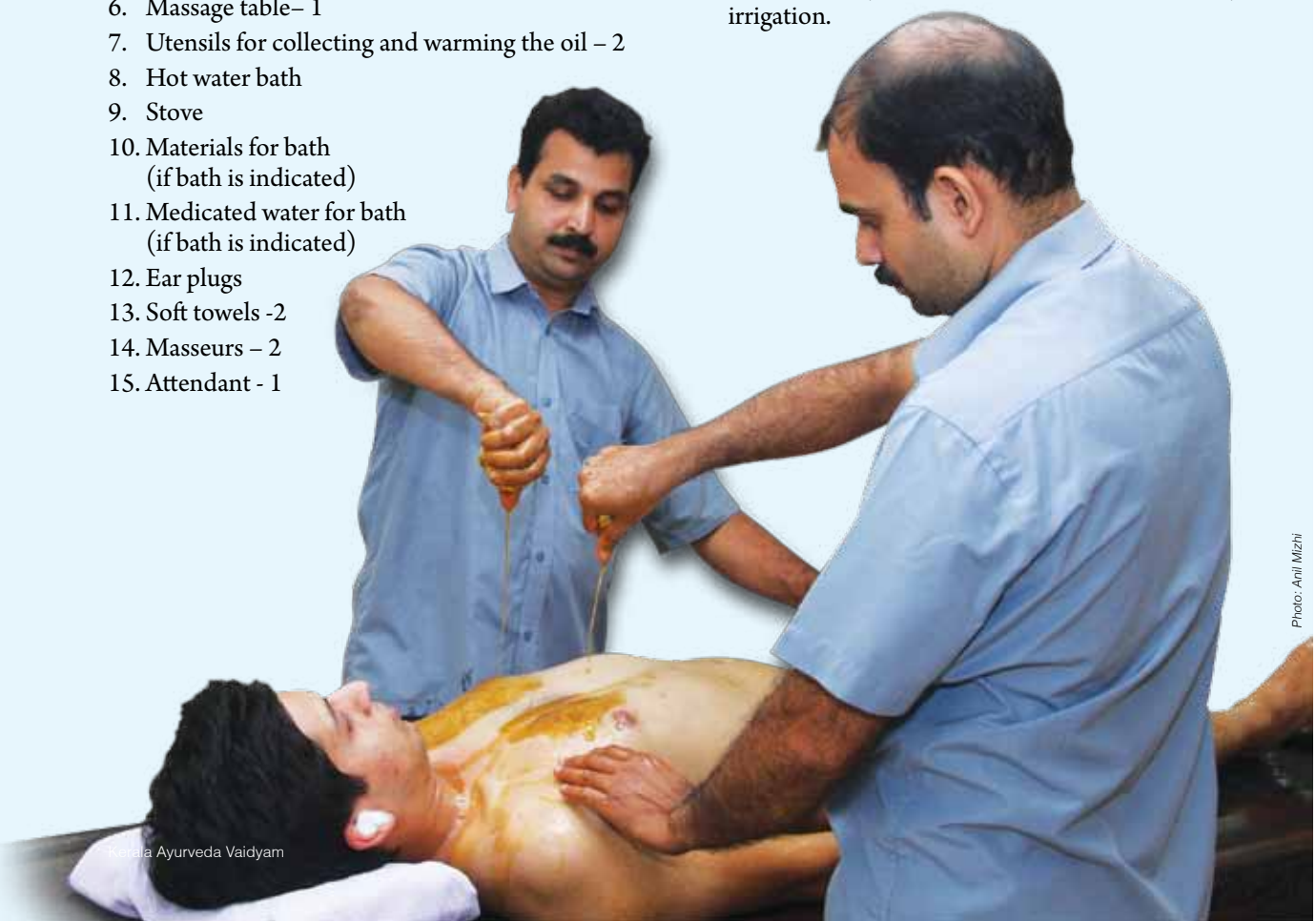


Photo: Anil Mizhi

Procedure

Preparation of the patient

- Confirm that the patient is fit for the therapy.
- Make sure that the patient has voided their natural urges.
- Ensure that the patient in not in full stomach or very hungry or very thirsty.

Pre-procedure

- Patient should be made to sit comfortably on the massage table with legs extended.
- Suitable pad *(talam)* should be applied over the vertex.
- Prescribed oil should be applied on both ears and foot.
- A mild oil massage *(abhyangga)* should be done all over the body (the concerned part in case of local treatment) for 5-10 minutes.
- Oil for irrigation should be heated in a vessel kept in a hot water bath. Generally the good temperature of oil sufficient enough to produce perspiration in a person is between 42˚c-45˚c.

Main procedure

The two masseurs are positioned on either sides and the attendant heats the oil in water bath and fills in the vessels used for the pouring. Oil in the vessels is poured on the either sides of the patient by the two therapists. The oil is allowed to flow in a uniform stream from the vessel downwards from a height of 6-9 inches or as per the condition. A mild massage during the treatment is mandatory. The treatment is done in all the seven postures of oil massage. Sitting

1. Sitting
2. Supine
3. Right lateral
4. Supine or prone (if required)
5. Left lateral
6. Supine
7. Sitting

The oil flowing out shall be collected and used after reheating.

Post procedure

At the end of the treatment the person is given a gentle massage and the excess oil over the body is removed carefully and the person is allowed to take rest for a few minutes before the bath. If indicated the patient is asked to take in medicated warm water. Apply *Raasnadi coorna* on vertex. The patient is advised to take a light diet for the next meal.

Precautions

- Temperature should be maintained at the same level throughout the procedure.
- Stream should be uniform and continuous.
- The oil should never be heated directly over flame as there are chances for overheating or charring of oil which reduces the therapeutic effects
- Oil should be well heated before storing it for the next day.

Complications and its management

1. Burns - do cold therapy *(seetopacaara)* or apply medicines like *Satadhouta-ghrta.*
2. Fainting – stop the procedure and treat accordingly.
3. Skin rashes – opt for different oils.
4. Fever or common cold – stop treatment and treat accordingly.
5. Hypotension - stop treatment and administer salt solution.
6. Dehydration – stop treatment and administer electrolyte solution. ■

SOLICITED

Those who wish to publish their scientific articles in Kerala Ayurveda Vaidyam may please mail them to the following e-mail ID as an attachment in MS Word, using Times New Roman or Arial font. A signed hard copy also should be send to the Executive Editor. Any picture to go with the article should be windows compatible. Please include a PP size photograph of the author (JPEG format).

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Case of the tri-month

Amenorrhea *(lohita-kshaya)*



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Miss. Anuprabha (name masked) who was 29 years of age visited our KAL hospital at Kasargod, on 10th January 2012) complaining of total absence of menstruation since eight months. She also presented with general weakness, lower abdominal pain, darkness on face, burning sensation on whole body, sleeplessness and anxiety.

She had menarche at the age of 13 and had no history of thyroid diseases, ovarian lesions, pregnancy or consumption of oral contraceptives.

10/01/2012	
Body weight	45kg
BP	100/70mm Hg
Hematology	
Hemoglobin	9gm/dl (11.5-16.4)
ESR	12mm/hr (5-15)
WBC Total	6600/cumm (4000-11,000)
Neutrophils	60% (40-70)
Lymphocytes	35% (20-40)
Eosinophils	5% (1-6)
TSH	1.1
Urine R/E	
Albumin	F.Trace
Sugar	Absent
Bile salts	Absent
Bile Pigments	Absent
Epithelial cells	6-8/HPF (1 to 5 for females)
Pus cells	2-4/HPF
17/01/2012	
USG Scan for Abdomen & Pelvis	
Uterus anteverted, small in size (about 5.6x2.2cms). Endometrium: 4mm Both Ovaries are smaller in size about 20x12 mm Impression: Smaller sized uterus and ovaries (Probably inactive ovaries).	

Investigations: Diagnosis

'Lohithakshaya'(Arajaska)

Treatment plan

Medicines and procedures targeting reduction of vaata and pitta are charted while initiating the treatment. As the patient presents considerable weakness and reduced weight, nourishing treatments *(santarpa<u>n</u>am)* are also included.

Treatments given

1. *Virecana* with *Avipatti coor<u>n</u>a* 20 gm
2. *Gandharvahastaadi kvaatha* 15 ml + 60 ml hot water twice daily before food.
3. *Dhanvantaram* tablets 1-1-1
4. *Sukumaara ghr<u>t</u>a* 2 teaspoon at bed time. (*Jeevaneeya ghr<u>t</u>a* if available, can also be given.)
5. Evecare syrup (Himalaya) 2 teaspoon thrice daily.
6. Advised to prepare the following decoction:

20 gm of sesame seeds [*tila* (Sans.); *e<u>l</u>lu* (Mal)] and 10 gm of Clerodendrum serratum root [(*Bharngee (Sans.)ceruthekku* (Mal)] in 4 glasses of water and reduced to one glass. This is taken twice after adding 3gm of powder of three acrids *(tri-ka<u>t</u>u)*, 1tsp of ghee and half tsp of honey as adjuvant.

Dietary advice

Boiled Green gram one cup, one banana and one glass of milk to be taken daily

The above medicines were continued for 20 days.

Follow-Up

After 20 days, *Gandharvahastaadi kvaatha* was replaced with *Sukumaaram kvaatha.*

2 tsp of Iogen syrup twice daily was also prescribed.

After 20 days purgation with *Avipatti coor<u>n</u>a* was done.

Result

Menstruation reoccurred after 20 days of medication. She began to feel more energetic. Symptoms including lower abdominal pain, darkness on face, burning sensation on whole body sleeplessness disappeared completely.

The medicines, however, were continued for 4 months to regularize the menstrual cycle.

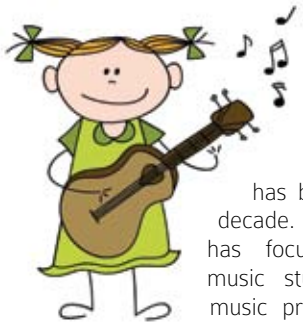
Body weight	50 kg
BP	110/80mm Hg
7/8/2012	
Hematology	
Hemoglobin	11.5gm/dl (11.5-16.4)
ESR	6 mm/hr (5-15)
WBC Total	7000/cumm (4000-11,000)
Neutrophils	62% (40-70)
Lymphocytes	35% (20-40)
Eosinophils	3% (1-6)
USG Scan for Abdomen & Pelvis	
Uterus 66*27* Normal Endometrial thickness Normal, 6mm Both Ovaries Normal Impression: Normal sonographic study	

From there on, medicine no.6 was advised only 10 days before menstrual date.

She was advised to take *Abhayaarish<u>t</u>a, Asvagandhaadi lehya* and Iogen for one month. ■

Practice some music, kid. You will become a genius!

'Practicing music for only a few years in childhood helps improve the adult brain', according to a research study published in the Journal of Neuroscience.



A little music training in childhood goes a long way in improving how the brain functions in adulthood when it comes to listening and the complex processing of sound, according to a new Northwestern University study.

The impact of music on the brain has been a hot topic in science in the past decade. But most neuro-scientific research has focused on the rare and exceptional music student who has continued an active music practice during college or on the rarer case of a professional musician who has spent a lifetime immersed in music.

Now Northwestern researchers for the first time have directly examined what happens after children stop playing a musical instrument after only a few years- a common childhood experience.

Compared to peers with no musical training, adults with one to five years of musical training as children had enhanced brain responses to complex sounds, making them more effective at speech and music perception, allowing recognition of sounds in complex and noisy auditory environments.

"Thus, musical training as children makes better listeners later in life. Based on what we already know about the ways that music helps shape the brain. The study suggests that short-term music lessons may enhance lifelong listening and learning" said Nina Kraus, the Hugh Knowles Professor of Neurobiology, Physiology and Communication Sciences at Northwestern.

"We help address a question on every parent's mind: 'Will my child benefit if she plays music for a short while but then quits training?'" Kraus said.

Many children engage in group or private music instruction, yet, few continue with formal music classes beyond middle or high school.

"Our research captures a much larger section of the population with implications for educational policy makers and the development of auditory training programs that can generate long-lasting positive outcomes," Kraus said.

For the study, young adults with varying amounts of past musical training were tested by measuring electrical signals from the auditory brainstem in response to eight complex sounds ranging in pitch. Because the brain signal is a faithful representation of the sound signal, researchers are able to observe how key elements of the sound are captured by the nervous system and how these elements might be weakened or strengthened in different people with different experiences and abilities.

Forty-five adults were grouped into three age- and IQ-matched groups based on histories of musical instruction. One group had no musical instruction; another had 1 to 5 years; and the other had to 6 to 11years. Both musically trained groups began instrumental practice around age 9 years, a common age for in-school musical instruction to begin. As predicted, musical training during childhood led to more robust neural processing of sounds later in life.

Prior research on highly trained musicians and early bilinguals revealed that enhanced brainstem responses to sound are associated with heightened auditory perception, executive function and auditory communication skills.

"From this earlier research, we infer that a few years of music lessons also confer advantages in how one perceives and attends to sounds in everyday communication situations, such as noisy restaurants or rides on the "L," Kraus said.

A running theme in Kraus' research is "your past shapes your present."

"The way you hear sound today is dictated by the experiences with sound you've had up until today," she said. "This new finding is a clear embodiment of this theme." ■



Kerala Ayurveda Vaidyam

Sports medicine and Ayurveda





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Introduction

In the present scenario, Sports medicine is playing a prime role owing to the increase in various sports competitions. Sports physicians have become most valuable personalities on demand. The importance of sports medicine has highly increased from the last two decades.

Sports medicine has developed as a super specialty branch of medical science that deals with the maintenance of health of the sports persons and management of their sports injuries. There is no universally accepted definition of Sports and Exercise Medicine (SEM). But according to the study of Gc Van Enst, sports medicine can be defined in different ways. In the Netherlands the definition of sports medicine, the field of work in sports medicine, and training in sports medicine have changed several times since specific sports medical activities began in the 1920s. Sports Medicine is that area of theoretical and practical medicine in which the influence of movement, training and sports as well as lack of movement in healthy and sick people of all ages is examined in order to make the findings useful for prevention, therapy, rehabilitation and to sports itself. Sports Medicine, like all other branches of Medicine, aims at the complete physical, mental and spiritual well being of a sports person.

Ayurveda is one of the oldest health systems in the world with fundamental principles and theory-based practices. This adherence to theoretical wisdom and centuries of practical application makes Ayurveda a comprehensive and practical medical science that receives acceptance and support of the public. However, due appreciation from the global scientific and medical community is still evolving. It is satisfying to note that the interest in research on basic principles of Ayurveda is increasing and of late, few studies on genomics have been published in international peer-reviewed journals and can be useful even to modern medicine.

Ayurvedic medicine aims to integrate and balance the body, mind, and spirit; thus, some view it as "holistic." This balance is believed to lead to happiness and health, and to help prevent illness. The chief aim of ayurvedic practices is to cleanse the body of substances that can cause disease, thus helping to reestablish harmony and balance which is also applicable to the sports person in maintaining the positive health.

Concept of Health

A healthy mind in a healthy body is a concept which is relevant in the context of sports medicine. Like in other branches of medicine, sports medicine also emphasizes on prevention rather than cure. The sports physician's primary duty is to make the best effort to maintain or restore health and functional ability of the sports person. Physicians having responsibility of a sports team are not only concerned with the health and well being of individual athletes but also with the overall health, hygiene and wellbeing of the entire team. Expert physicians in this field also play a pivotal role in assisting the sports persons to bring out their optimal best in their performance.

The branch of Ayurveda called *Salya-tantra* specifically deals with the classification, management and prevention of conditions like trauma, sprain, dislocation, fracture etc.

Physical Fitness

Physical fitness comprises of two related concepts: general fitness (a state of health and well-being) and specific fitness (a task-oriented definition based on the ability to perform specific aspects of sports or occupations). Physical fitness is generally achieved through exercise, correct nutrition and enough rest. It is an important part of life. The person should be examined with reference to the measurement of his bodily organs *(pramaana)*. This is determined by specific dimensions like height, weight etc. of the individual. The person having symmetrical body measurements *(sama pramaana)* is endowed with longevity, strength, energy, happiness, power, wealth and virtues. If the measurement is either on higher or lower side, individual will possess the qualities contrary to the above. A symmetrical individual is a quintessence for a classical sports person.



Biochemistry

As per the Ayurvedic science, the humors, tissues and wastes comprises the neurological, metabolic and structural entirety of the human body. The humors are the functional entities of the body, tissues are the structural units of the body and wastes are the by-products of metabolic processes which are to be thrown out of the body at appropriate time. Equilibrium of these three entities is decisive of one's athletic performance.

Psychology

Ayurveda contains a very deep knowledge of the psyche. In Ayurveda both body and mind is given equal importance. Thinking, considering, conjecture, concentration, firm decision, control over all senses and self control are the functions of mind. Caraka has beautifully described the relationship of body and mind as the body always follows mind and vice versa.

Physical strength of a sports person is very important. But, they should have a strong mind too. It is the mind that generates a winner. In Ayurveda, the psychological temperament of a person is described as the mental constitution. This is dictated by the predominance of a particular attribute in the admixture of the major attributes namely *sattva*, *rajas* and *tamas*. Mental strength provides efficiency to tackle circumstances of adversities and assists the person to attain prosperity. The persons predominant in the pure attribute *(sattva)* tolerate everything by his will power. Sportsman spirit is usually expressed by such people. One predominant with rajas tolerates after being supported by others while that predominant in *tamas* will be confused on confronting problems even if helped by others. Unlike the humoral constitution mental temperament is amenable to changes. By training and self control, one can attain better mental strength. Thus a person with predominance of the inert principle *(tamas)* can be gradually converted to pure temperament predominant in *sattva* through the intermediary dynamic temperament predominant in *rajas*. The tackling of mental problems is termed 'winning of mind' *(satvaavajaya cikitsaa)* in Ayurveda.



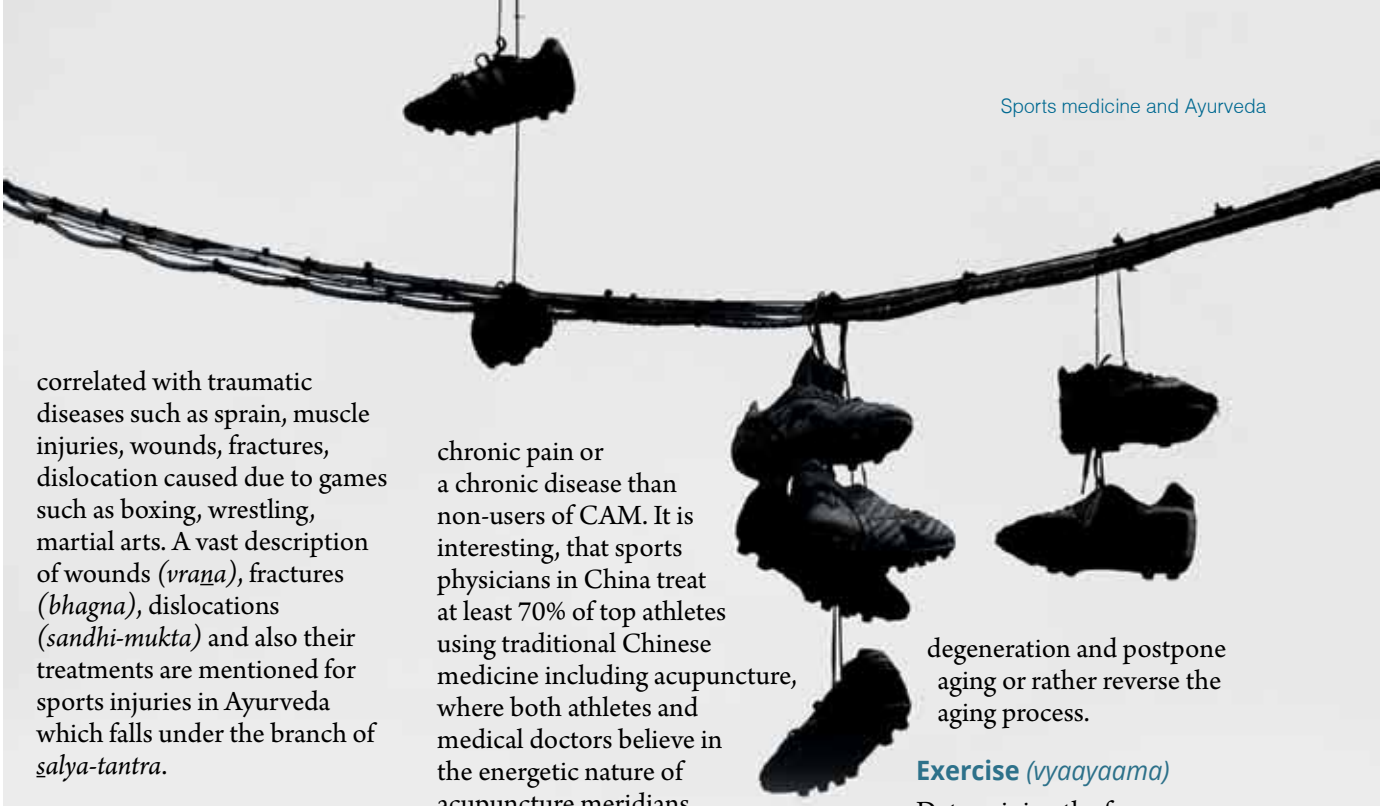
Sports Surgery and Orthopedics

It is widely believed by the modern world that the ancient science, Ayurveda does not have anything like surgery, but among the eight branches of Ayurveda, *salya-tantra* stands first in the order and is given more importance by Susruta, the propounder of surgical school of Ayurveda. He is considered as the father of surgery even by Modern medicine. In Ayurveda, a separate branch of Orthopedics is not available as it is included under the branch of *salya-tantra* itself. In *salya-tantra* or surgery, eight types of surgical and para-surgical procedures such as incision, excision, suturing, bandaging etc are explained for the immediate treatment of traumatic injuries. Sixty varieties of treatment procedures are explained for wound management. Fifteen types of procedures of extraction of foreign bodies, description of surgical instruments, and a vast description of fractures and dislocations with their etiology, signs, symptoms and treatment are available similar to the treatment followed in the present days.

Sports Injuries

Extreme competition and intense desire to win in any sports game leads to unbearable stress for a sports person. This is the main reason behind increasing incidence of sports injuries. Simultaneously increasing ratio of psychological and psychosomatic disorders are also the subjects of worry for the sports personalities and sports physicians. Musculoskeletal injuries are the most commonly encountered injuries in sports.

In Ayurveda also we find the references of sport injuries under exogenous diseases *(aagantuja rogas)* caused due to the contact of external factors like fire, poisonous substances and also due to trauma. In classifying diseases, Susruta-Samhitaa has included the category of diseases caused in the weak person due to fight with a stronger one *(sanghaata-bala-pravrtta-vyaadhi)*. This can be



correlated with traumatic diseases such as sprain, muscle injuries, wounds, fractures, dislocation caused due to games such as boxing, wrestling, martial arts. A vast description of wounds *(vraṇa)*, fractures *(bhagna)*, dislocations *(sandhi-mukta)* and also their treatments are mentioned for sports injuries in Ayurveda which falls under the branch of *śalya-tantra*.

Sports Management

Physiotherapy

Physiotherapy is the health profession concerned with the promotion of health, the prevention of disability, and the evaluation and rehabilitation of patients disabled by pain, disease or injury, and with treatment by physical therapeutic measures as opposed to medical, surgical or radiological measures. This branch of sports science is very important as it works on the rehabilitation programme of sports person and in restoring their ability of performance. Physiotherapy involves massage *(saṃvaahana)*, heat therapy *(svedana)*, cold therapy *(śeetopacaara)*, bathing *(snapana)* and exercise *(vyaayaama)* which are ayurvedic treatment modalities.

Ayurveda

Among western Complementary and Alternative Medicine (CAM) users, 95% use CAM in a complementary fashion or an addition to Western biomedicine. Studies reveal that CAM users in the US tend to be more educated, more affluent, more holistic in their view of wellness and more likely to have chronic pain or a chronic disease than non-users of CAM. It is interesting, that sports physicians in China treat at least 70% of top athletes using traditional Chinese medicine including acupuncture, where both athletes and medical doctors believe in the energetic nature of acupuncture meridians. Regarding the increasing popularity of CAM among western athletes 56% of athletes consume CAM in comparison with 36% of normal population, According to the 2007 National Health Interview Survey, which included a comprehensive survey of CAM use by Americans, more than 200,000 US adults had used ayurvedic medicine in the previous year. Ayurvedic medicine has proved its efficacy even in sports medicine as we have seen many celebrity sports person following ayurvedic principles in keeping them fit and consume *rasaayana* to be healthy. We can find many research studies that has been published on the same (Dave et al).

Maintenance and Prevention

Rejuvenation *(rasaayana)*

Supplementation with a multivitamin or antioxidant appears to be safe; however large doses may result in serious toxicities. Studies to date have not demonstrated a significant ergogenic effect from either vitamins or antioxidants. Ayurveda describes various rejuvenative therapies with help of special class of medicinal preparations called *rasaayana* that are believed to rebuild the body, mind, prevent degeneration and postpone aging or rather reverse the aging process.

Exercise *(vyaayaama)*

Determining the frequency, intensity and duration of exercise is important. Running is most commonly associated activity; however other aerobic activities (e.g. swimming) and team sports (e.g. basketball) also have the potential for exercise addiction. Ayurveda has special directions regarding exercise which are mentioned under the daily regimen *(dina-carya)* to keep fit and healthy.

Conclusion

The aim of a sports person is to maintain "the positive health to achieve goal in winning the game". Hence the sports persons need to resort to a specific type of diet, exercise etc. without which winning the goal will be impossible. Ayurveda maintains the health of the sports person by following the norms of daily regimen, seasonal regimen *(ṛtu-carya)* and good conduct *(sadvṛtta)*. Ayurveda also cures the sports injuries through its unique measures thereby serving both prevention and cure. ■

Curry-leaf Dry Chutney
(Veppilakatti)



Photo: Anil Mizhi

What good is a tasty meal without a spicy curry to tag with it? India is famous for her chutneys- simple and tangy delicacies that spice up the main meal. One can waste a lifetime counting the varieties of chutneys across this nation as there are so many of it. Though this diversity reflects the vivid contrast in India's culture and customs, it has a strong relation to the dietary habits and nature of food in each community. Most of these chutneys double up as something of high medical relevance. Let's prepare a chutney today and see how it tastes and how it helps our body.

Here is an age-old chutney preparation of South India. As curry leaves [*veppila* (Mal.); *Murraya koenigii* (Bot)] is the main ingredient and as it is a dry chutney made into thick boluses [*katti*(Mal.)], it is called *Veppilakatti* in Malayalam.

Ingredients	
Grated coconut	One kernel
Curry leaves	100 gm
Small onions (chopped)	100 gm
Ginger (scraped)	10 gm
Cumin seeds	5 gm
Red chillies (dried)	8 nos
Salt	15 gm
Tamarind pulp	20 gms

Method of preparation

Wash the curry leaves well, remove the leaf-stalks and keep aside for draining. Squeeze the grated coconut and remove the excess milk (Please don't remove all the milk). If excess milk is not removed from the coconut, the product may get rancid.

In a frying pan, fry the grated coconut (without adding oil) for two minutes so that it attains a golden brown color. Add the other ingredients, except salt and tamarind, and fry till it becomes crispy and dark brown. Take care not to char.

Add tamarind and salt and grind it in a blender or pound it using mortar and pestle.

The same can be prepared from fresh leaves of wild lemon *(Citrus maderaspatana)*. A small piece of asafetida roasted in ghee and powdered may also be added as an augmentation of this recipe.

For those who want it less pungent, the number of red chilies may be reduced.

It goes well with a variety of rice meals, curd rice in particular. Adding this chutney in buttermilk will give you a cool yet spicy drink.

Health Facts

Apart from being a scrumptious item among the cavalry of curries, this humble chutney can very well help in maintaining the health as well.

The main ingredient, the aromatic curry leaves is a powerful enhancer of digestion. It also neutralizes the toxins in food. Above all it will help to maintain normal cholesterol levels. These are the reasons why you can see curry leaves in a lot of preparations.

Tamarind *(Tamarindus indica)* is undoubtedly one of the sourest fruits. It enhances pitta. Sour taste according to Ayurveda, is carminative, digestive, relishing, appetizing, nourishing and facilitates easy bowels and flatus. All these goodness are imparted on this chutney also.

Coconut gratings form the bulk

of this chutney. Matured coconut meat is a good source of many nutrients. Besides, it's low in cholesterol and rich in fiber too. Moreover, it is kind of a religion for Keralites to include at least one coconut product in their dishes.

All the other ingredients in this chutney are either digestive or carminative or both.

Hypertensive patients may avoid salt from the chutney.

As a summation, *Veppilakatti* is a mouth-watering preparation that not only tingles the taste buds but also boosts the bio-fire thus satisfying the gourmets in us by both taste and health. ■

Coconut water

An Excellent Sports Drink

Kerala known as the land of coconuts can take pride in this new research finding. Coconut water is not only a popular drink in the tropics but also is acclaimed of its medicinal values. Ayurvedic texts enlist its properties as unctuous, sweet, aphrodisiac, having cold potency and light (absorbed instantly). It is a very good thirst quencher, carminative, cleanser of the urinary system and mitigates pitta and vaata.

'Coconut water deserves its popular reputation as Mother Nature's own sports drink!', claims a new scientific analysis headed by Dr. Chhandashri Bhattacharya, Ph.D, who is with Indiana University Southeast in New Albany.

"Coconut water is a natural drink that has everything your average sports drink has and more," said Bhattacharya. "It has five times more potassium than Gatorade or Powerade. Whenever you get cramps in your muscles, potassium will help you to get rid of the cramps. It's a healthy drink that replenishes the nutrients that your body has lost during a moderate workout", said Dr. Bhattacharya. Gatorade and Powerade are artificial sports drink manufactured by soft-drink companies.

The study hinted that the potassium in coconut water also may benefit other people who do not exercise. The typical diet is low in potassium and high in sodium, which is found in table salt. Other research has shown that such an imbalance is unhealthy. In one study, people who ate foods low in potassium and high in sodium had twice the risk of death from heart disease and a 50 percent higher risk of death from all causes. Other analyses indicate that a 12-ounce serving of coconut water has more potassium than a banana. Coconut water is high in healthful antioxidants as well.

Bhattacharya's team analyzed coconut water, Gatorade and Powerade and found that coconut water contained up to 1,500 mg/liter of potassium, compared to up to 300 mg/liter for Powerade and Gatorade. Coconut water, however, had 400 mg/liter of sodium compared to 600 for the other two drinks. It had comparable quantities of magnesium and carbohydrates as the other drinks.

Coconut water's lower sodium content is where it fails as a good sports drink for people who engage in strenuous exercise that produces a lot of sweating. Sweating makes people lose more sodium than potassium, and coconut water alone can't replace that lost sodium. So, people who engage in strenuous exercise that involves a lot of sweat might want to take it all with a grain of salt. ■



In this column Kerala Ayurveda Vaidyam is providing the readers with traditional formulations which are not met with in classical treatises. The wisdom of these formulations was passed down through generations orally. Some of these formulations are recorded in the last century in regional formularies.

Nisakathakadi Kwath

This is a decoction used in diabetes and is very popular among the physicians of Kerala. It is mentioned in Sahasra-yogam and is the first among decoctions for diabetes in that book. The book is a favorite ayurvedic formulary of Kerala and many of the formulations are in Malayalam verse. This formulation happens to be in Malayalam.

Ingredients

1. Turmeric – Curcuma longa Linn. ZINGIBERACEAE – haridraa (nisaa)
2. Clearing nut – Strychnos potatorum Linn.f. LOGANIACEAE - kataka
3. Embelic myrobalan - Fruit of Phyllanthus emblica Linn. = Emblica officinalis Gaertn. EUPHORBIACEAE – aamalakee
4. Sacred ixora root (jungle flame ixora) - Ixora coccinea Linn. RUBIACEAE. paarantee.
5. Aerva root (sacrificial weed) - Aerva lanata (Linn.) Juss. Ex Schultes AMARANTHACEAE. – bhadrikaa
6. Golden salacia root – Salacia reticulata Wight HIPPOCRATEACEAE. – saptaranggee
7. Vetiver (khus-khus root) – Vetiveria zizanioides (Linn.) Nash = Andropogon muricatus Retz. POACEAE.- useera

Preparation

Take the ingredients 7 g. each. Crush to a coarse powder. Add 800 ml water. Reduce to one fourth by boiling. Filter.

Dose

100 ml twice daily.



Indication

Diabetes *(prameha)*. [All the 20 varieties of polyuria.]

Additive

Honey may be added as additive to the decoction.

Action

The decoction is known to reduce and normalize blood glucose level. It is a mild antiseptic and removes the discoloration of urine. It is a refrigerant and reduces burning sensation during maturation. The sacrificial weed in the decoction (Aerva) is known as rock crusher *(paashaana bhedi)* and it cures urinary calculus. Clearing nut clears the sediments and abnormal color of urine. Golden salacia is noted for its hypoglycemic property. Ixora is an antiseptic and heals wounds. It reduces inflammation.

Note

A mild decoction of the formulation may be prescribed as medicated drinking water for diabetics.

The formulation contains the two best drugs for diabetes namely turmeric and embolic myrobalan. ■



Relax and Be Young

The term *rasaayana* therapy is in vogue today. The term usually is translated as rejuvenation therapy. Rejuvenation is only one aspect of *rasaayana* therapy. There are much more about it. This therapy and reproductive medicine *(vaajeekaraṇa)* are considered as energizing treatments. Energizing treatments are meant for increasing the energy level of healthy individuals as opposed to curative treatment that attempt to cure the sick.

Though meant for the healthy, *rasaayana* treatment can be employed for specific diseases. Similarly many formulations and procedures mentioned in curative medicine can be used as rejuvenating. Yet rejuvenation medicine is considered as a special branch because of its importance and its capability in modulating the immunological status of people.

According to Caraka-samhitaa and Ashtaangga-hṛdaya, the benefits of *rasaayana* therapy are long life, good memory, intellect, freedom from diseases, retardation of the ageing process, luster of the skin, good complexion, good voice, language mastery, sexual ability, attractiveness, increased physical strength and immunity, increased acuity of sense faculties and reverence by others.

All these benefits are covetable and are conducive to welfare and success in life. Hence more and more people want to undergo rejuvenation therapy. Those who are interested in this type of therapy should have some prior idea about it, lest they will be disappointed after undergoing the therapy, especially when the therapy is provided by unauthentic persons and centers.

The shortest definition of *rasaayana* is that it is the means of achieving the best nutrients. This means that a good nutritional status can be attained through rejuvenation treatment. Just supplying nutrients will not suffice. If the body is to assimilate the supplied nutrients, the pathways of the body should be patent. When filth has accumulated in the channels, these pathways will be blocked and the nutrition will not reach its destination. Hence before employing *rasaayana* therapy, the body and the channels should be cleansed thoroughly. Purification therapy is to be employed for this. But there are limitations for employing full term purification. The subject should be suited physically and mentally for purification. It is said that prior purification to *rasaayana* therapy is like washing the piece of cloth before dyeing it. *Rasaayana* without purification is ineffective like dyeing a dirty cloth.

There are two types of *rasaayana* therapies – intensive indoor therapy and mild outdoor therapy. Intensive indoor therapy requires admission in an isolated room. The room of the patient is surrounded by another room for attendants. This room is further surrounded by a large outer room where medicines etc. are prepared. This concentric arrangement of rooms facilitates isolation and inhibits unwanted interferences. The intensive therapy is difficult, expensive and time consuming. Hence people prefer to have the lighter version of outdoor treatment where the patient may get exposed to sunlight and wind.

It is stipulated that rejuvenation therapy is to be done in an early age, preferably youth. Hence if you are above seventy years of age, rejuvenation is not your cup of tea. Moreover, many purification therapies cannot be executed in old age.

Another important factor is the mental status of the patient. Only persons with a sound mind can be subjected to *rasaayana* therapy. Nevertheless, *rasaayana* therapy is indicated in mental disorders and epilepsy.

There are *rasaayana* formulations that can be consumed without much dietary restrictions and restrictions of activities. Relaxation therapies like Kerala special treatments also provide rejuvenation. But even apparently harmless formulations and procedures should be judiciously applied. Only a proper ayurvedic consultation can bring out the pros and cons.

So it is a must that you should have a thorough ayurvedic check up by a qualified physician before starting any *rasaayana* therapy. If not, it may not be beneficial and may even turn deleterious. Please don't buy a dog that bites the master. ■

"BIOGEST and HISTANTIN"

The best combination for upper respiratory tract infection



BIOGEST TABLET

Remedy for Chronic recurrent infection

- Useful in upper respiratory tract infection.
- Reduces throat infection.
- Relieves symptoms of nasal blockage running nose and contact allergic conditions.
- Reduces inflammation and pain.
- Preservation of intestinal flora.



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Combination of Anti-allergic drugs

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- Ant-allergic with excellent anti-histaminic and antipruritic action.

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Total Liver Care

HEPOSEM TABLET

- Prophylactic treatment for liver
- Corrects and protects liver cell
- Improves appetite and digestion
- Hepato regenerative
- Good for alcohol induced liver diseases

Corrects the impaired function of liver



Hepato corrective, Hepato stimulant,
Hepato protective and Hepato regenerative tablet.

COMPOSITION :
Each tablet is prepared out of :

1. *Phyllanthus amarus* (Bhumyamlaki) ..... 90 mg
2. *Andrographis paniculata* (Bhunimba) ..... 60 mg
3. *Picrorrhiza kurroa* (Kutki) ..... 60 mg
4. *Tinospora cordifolia* (Guduchi) ..... 45 mg
5. *Piper nigrum* (Maricha) ..... 15 mg
6. *Azadirachta indica* (Nimba) ..... 15 mg
7. Annabhedi ..... 15 mg

Dosage:
1- 2 tablet twice daily or
as directed by the physician.

Presentation:
Box of 10 blisters of 10 tablet.

KERALA ayurveda™
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