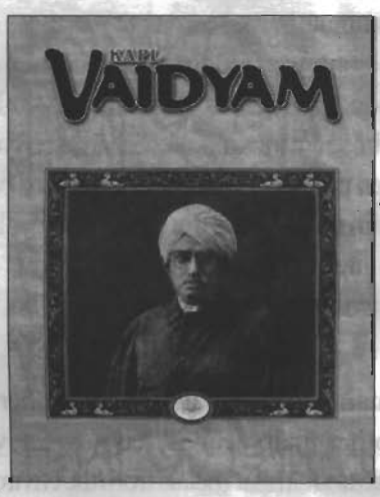
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VAIDYAM
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Aayurvedaacharya Vaidyan
K G K Panicker
Founder of Kerala Ayurveda Pharmacy Limited



Yadavji Trikamji Acarya

The cover depicts a rare photograph of Sri. Yadavji Trikamji Acarya (1881-1956), the renowned editor of great Ayurvedic compendia such as Caraka samhitaa and Susruta samhitaa. He founded the Ayurveda Grandhamaala Trust. He has also authored books like Dravya-guna Vijnaana and has published more than 25 books. He was twice elected as the president of Ayurveda Mahaa Mandala. He was the first Principal of the PG centre at Jamnagar. This photograph is from Nava naavaneetakam, published in 1926 from Lahore, in the collection of Kerala Ayurveda Book Archives.

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VAIDYAM

Metals on their mettle

Since their discovery, metals have been friends and foes of human life. Almost all present day human life is highly indebted to them though plastic is at large trying to replace them. Not only the bullets, swords and shells that hit us, but even food and medicines containing metals hurt us. The substitute plastic is also not much welcomed as it is not without perils of environmental pollution and health hazards.

The use of metals in medicines is an age old practice. Starting as the sidetrack of alchemy, the attempt to convert lower metals to higher metals, mainly for attaining economic prosperity, the use of metals and minerals in medicine has stayed and flourished. The Arabian and Persian druids turned their main attention from herbs to metals and minerals due to their convenience, small dosage, high activity and lack of unpleasant odor and taste. This influx of metals and minerals into medicine gradually faded as man recognized that they are not very safe.

Ayurveda was xenophobic about metals and minerals initially. Later the science tackled the problem to a great extent by adapting materials and methods to tame the metals and minerals. This effected the origin of Ayurvedic Rasa Saastra, a branch of Ayurvda dealing mainly with metallic and mineral remedies. Even when North India warmly welcomed the *Rasaushadhi* (medicines made of metals and minerals) Kerala was rather reluctant to adopt them without reserve because the Ayurvedic tradition of Kerala was always in favor of herbs than metals and minerals. Still various Ayurvedic formulations popular in Kerala contain certain metals and minerals, of course in some herbalized form.

Usually Ayurvedic enthusiasts claim that treating metals and minerals with herbal decoctions or juices reduces their virility and repeated calcinations make them suitable for medicinal use. Still there are skeptic corners that demand solid proof to the claim. Unfortunately we are handicapped in this arena as required scientific work in this area is pending and whatever research materials available in this regard are mostly undependable.

Yet there are scientists, not only Ayurvedists, who believe that the strong-hold of Ayurveda is its rich treasure of drugs based on metals and minerals especially in treating diseases like carcinoma where conventional medicine is utilizing more dangerous chemicals and radiation. To them *bhasmas* (ashes) of metals and minerals of Ayurveda provide a wide vista for the development of future medicine.

Modern medicine, that once discarded the use of metallic compounds such as mercurials, gold salts and so on, is now coming back to them, of course to their newer forms which are now considered to be relatively harmless. Utility of zinc and similar metals in traces is up heaving. Zinc has almost become an additive to vitamin supplements.

Still, the use of heavy metals in medicine invites decries from various corners. This is the story in brief of the purposeful use of metals and minerals in medicine. Now the Ayurvedic world is mostly worried about an apparently innocent and unintentional inclusion of heavy metals in herbal preparations. The presence of lead and other metals in ayurvedic preparations, when they are not really a component of the formulations, has alerted the Ayurvedic industry with warning bugles.

Earlier when lead was detected in Ayurvedic preparations every one thought that it was due to faulty or indifferent mode of manufacturing. Tracing the source of lead in trace in the medicine, all blamed the metallic utensils and equipment used in manufacturing the medicines. But even when rubber coated pulverizers to comminute herbal compositions those contain no metallic ingredient, we find that the presence of lead exceeds the permitted ppm levels. Triphala, the rinds of the three myrobalans those are incorporated at large in Ayurvedic formulations, when pulverized in a rubber coated ball mill was found to contain many times the permitted level of lead in it. This immediately pointed that the culprit is not the equipment or the utensils utilized in manufacture, but the raw material itself.

The herbs contain higher levels of lead neither due to adulteration nor other malpractices. It is now known that the herbs absorb lead and similar metals from the environment

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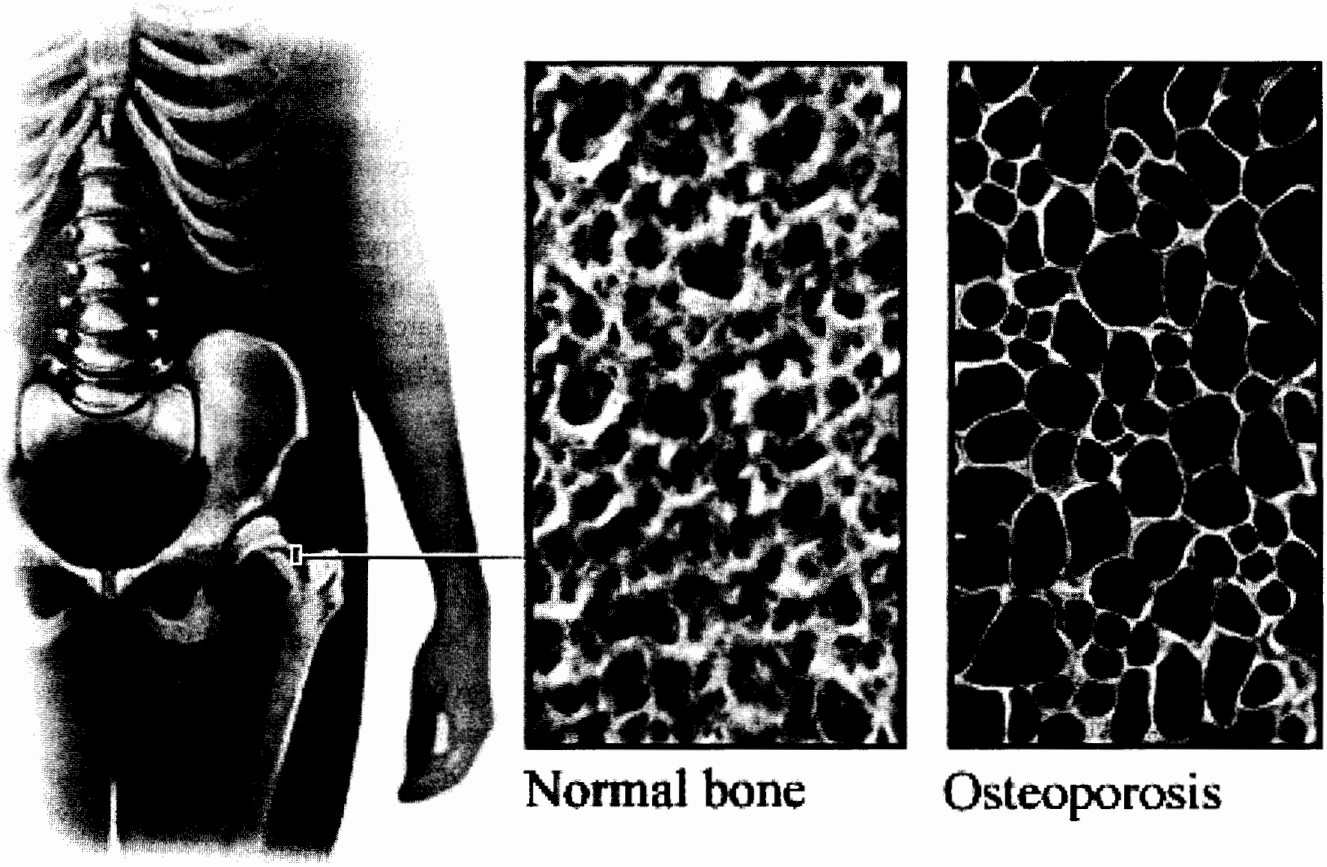
Osteoporosis – Solutions in motion

Dr. Sarala Samuel & Dr. C.I. Jolly

Life is a long journey with incidence of life impacts, physical stress and mental maturity. As you travel through this profile your physical entity takes its toll and a different course of action. Osteoporosis is very annoying and it comes when one takes life little easy.

Osteoporosis is a condition of low bone mass and micro architectural disruption of bones that results bone fractures with minimal trauma. Osteoporosis is a major and growing public health problem in developed nations. Between 30% and 50% of women and between 15% and 30% of men suffer fracture related to Osteoporosis. Characteristic sites of fracture include vertebral bodies, the distal radius and the proximal femur, but osteoporotic individuals have generalized skeletal fragility and fractures at sites such as ribs and long bones also are common. Fracture risk increases exponentially with age and is associated with reduced survival after any type of fracture.

Osteoporosis can be categorized as primary or secondary. In 1948 Albright and Reifenstein concluded that primary Osteoporosis included two separate entities: one related to menopausal estrogen loss and the other to ageing. This concept was extended by the proposal that primary Osteoporosis represents two fundamentally different conditions: type I Osteoporosis characterized by loss of trabecular bone owing to estrogen lack at menopause, and type II Osteoporosis, characterized by loss of corti-



Dr. C.I. Jolly and Dr. Sarala Samuel, R&D Division, Kerala Ayurveda Ltd.

cal and trabecular bone in men and women owing to long term remodeling inefficiency, dietary inadequacy, and activation of the parathyroid axis with age. It is not clear however that these two entities are truly distinct. Although many osteoporotic women undoubtly have experienced excessive menopausal bone loss, it may be more appropriate to consider Osteoporosis as a result of multiple physical, hormonal and nutritional factors acting alone or in concert.

The habits and the life processes lead to this state of affairs and they express in our personality. Multiple pregnancies, lack of weight bearing exercise throughout life, the menopause and large intake of meat (because it is high in phosphorous and upsets the calcium/phosphorous balance), low oestrogen levels, and cortisone treatments all contribute to the condition. If you have restless legs, leg cramps or joint pain, pay attention to calcium and magnesium requirements as spinal movement difficulties and weight loss are more advanced symptoms which you may be able to prevent in later life.

Secondary Osteoporosis is due to systematic illness or medications such as glucocorticoids or phenytoin. The most successful approach to secondary Osteoporosis is prompt resolution of the underlying cause or drug discontinuation. Whether primary or secondary, Osteoporosis is associated with characteristic disorder bone remodeling, so the same therapies can be used.

What Causes Osteoporosis?

There is no single cause of osteoporosis. Our body constantly builds new bone and removes older bone. In childhood, more bone is built than removed, and so the bones grow in size. After age 30 or 40, however, the cells that build new bone do not keep up with those that remove the bone. The total amount of bone then decreases, and osteoporosis may develop as a result. The average rate of bone loss in men, and in women who have not yet reached menopause, is small. But after menopause, bone loss in women accelerates to an average of one to two percent a year. This is because after menopause, the level of the female hormone estrogen in a women's body sharply decreases. Estrogen protects the skeleton by helping the body's bone-forming cells to keep working. After menopause, when the level decreases, some of this protection is lost.

Signs and Symptoms

It starts when one do not have enough solid calcium and phosphorous, and steadily loses their supporting protein framework. The bones become thinner and more fragile than normal and break more easily, particularly the spine, hip and wrist.

To maintain the density of bones, the body needs enough calcium and other minerals and must produce the proper amounts of several hormones, including estrogen in women and testosterone in men. In addition, an adequate supply of vitamin D is needed to absorb Calcium from food and to incorporate it into bones.

Osteoporotic fractures are those that occur under slight amount of physical stress that would not normally lead to fracture in non-osteoporotic people. Typical fractures occur in the vertebral column, hips and wrist. Collapse of a vertebra ("compression fracture") can cause one or a combination of the following: acute onset of back pain; a hunched forward or bent stature; loss of height; limited mobility and possibly disability. Fractures of the long bones acutely impair mobility and may require surgery. Hip fracture, in particular, usually requires prompt surgery, as there are serious risks associated with a hip fracture, such as deep vein thrombosis and a pulmonary embolism.

Diagnosis

The advance technology and the modern gadgets make detection simpler to recognise the impact on physiology. But to identify the anxiety and stress and rectify, the life has to be reorganised after 40's and 50's.

Dual energy X-ray absorptiometry (DXA, formerly DEXA) is considered the gold standard for diagnosis of osteoporosis. Diagnosis is made when the bone mineral density is less than or equal to 2.5 standard deviations below that of a young adult reference population. This is translated as a T-score. The World Health Organization has established diagnostic guidelines as T-score -1.0 or

greater is "normal", T-score between -1.0 and -2.5 is "low bone mass" (or "osteopenia") and -2.5 or below as osteoporosis. A low trauma or osteoporotic fracture, defined as one that occurs as a result of a fall from a standing height, is also diagnostic of osteoporosis regardless of the T-score.

In order to differentiate between "primary" (postmenopausal, regardless of age, or senile - related to age) and "secondary" osteoporosis, blood tests and X-rays are usually done to rule out cancer with metastasis to the bone, multiple myeloma, Cushing's disease and other causes mentioned above.

Pathogenesis

When one looks at the pathogenesis, particularly of bone, it reveals the metabolic activities undergone in one's life processes especially among women. The ups and downs and the exercise, workload and exhaustion relentlessly take their toll.

The underlying mechanism in all cases of osteoporosis is an imbalance between bone resorption and bone formation. Either bone resorption is excessive, and/or bone formation is diminished. Bone matrix is manufactured by the osteoblast cells, whereas bone resorption is accomplished by osteoclast cells. The mechanisms influencing the formation of the disease are complex. Most cases do not result from inadequate calcium intake, but include other factors affecting bone matrix formation and reabsorption. These include: (1) cigarette smoking, which inhibits the activity of osteoblasts; (2) sedentary lifestyle with little weight bearing exercise, such as walking; (3) a family history of osteoporosis; and being age 30 or more. Both men and women are at equal risk starting at age 30. Trabecular bone is the sponge-like bone in the center of long bones and vertebrae.

Cortical bone is the hard outer shell of bones. Because osteoblasts and osteoclasts inhabit the surface of bones, trabecular bone is more active, more subject to bone turnover, to remodeling. Long before any overt fractures occur, the small spicules of trabecular bone break and are reformed in the process known as remodeling. Bone will grow and change shape in response to physical stress. The bony prominences and attachments in runners are different in shape and size than those in weightlifters. It is an accumulation of fractures in trabecular bone that are incompletely repaired that leads to the manifestation of osteoporosis. Common osteoporotic fracture sites, the wrist, the hip and the spine, have a relatively high trabecular bone to cortical bone ratio. These areas rely on trabecular bone for strength.

Bone remodeling is heavily influenced by nutritional and hormonal factors. Calcium and vitamin D are nutrients required for normal bone growth. Parathyroid hormone regulates the mineral composition of bone, with higher levels causing resorption of calcium and bone. Glucocorticoid hormones cause osteoclast activity to increase, causing bone resorption. Calcitonin, estrogen and testosterone increase osteoblast activity, causing bone growth. The loss of estrogen following menopause causes a phase of rapid bone loss. Similarly, testosterone levels in men diminish with advancing age and are related to male osteoporosis. In addition to estrogen, follicle-stimulating hormone (FSH) affects BMD. In mice, lower levels of FSH mean less resorption by osteoclasts.

Many times we make a statement that you are a senior citizen and that is it. In reality when the brain is at the peak the physical activity has to be complemented. If not, the life is not worth living. If both come together, one will be able to make substantial contribution to the society.

Physical activity causes bone remodeling. People who remain physically active throughout life have a lower risk of osteoporosis. Conversely, people who are bedridden are at a significantly increased risk. Physical activity has its greatest impact during adolescence, affecting peak bone mass most. In adults, physical activity helps maintain bone mass, and can increase it by 1 to 2%. However, excessive exercise can lead to constant damages to the bones which can cause exhaustion of the structures as described above. There are numerous examples of marathon runners who developed severe osteoporosis later in life.

Physical fitness in later life is associated more with a decreased risk of falling than with an increased bone mineral density.

Natural History

Today, most cases of osteoporosis are diagnosed before symptoms develop. This is due to widespread screening for osteoporosis using the DXA scan. With treatment, bone mineral density increases, and fracture risk decreases.

In the absence of treatment, osteoporosis is heralded by a fracture. Some fractures, like vertebral compression fractures or sacral insufficiency fractures, may not be apparent at first, appearing to patient and physician as a very bad back ache or completely without symptoms. Hip fractures and wrist fractures are more obvious. Hip fractures are responsible for the most serious consequences of osteoporosis.

An estimated 700,000 women have a first vertebral fracture each year. The lifetime risk of a clinically detected symptomatic vertebral fracture is about 15% in a 50-year-old white woman. However, because symptoms are often overlooked or thought to be a normal part of getting older, it is believed that only about one-third of vertebral compression fractures are actually diagnosed.

Distal radius fractures, usually of the Colles' type, are the third most common type of osteoporotic fractures. In United States, the total annual number of Colles' fractures is about 250,000. The lifetime risk of sustaining a Colles' fracture is about 16% for white women. By the time women reach age 70, about 20% have had at least one wrist fracture.

Treatment

Most of the medications used to treat osteoporosis are also used to help to prevent it. They include:

- Hormone Replacement Therapy (Estrogens and /or Progestins)
- Calcium and Vitamin D
- Calcitonin
- Selective Estrogen Receptor Modulators (SERMs)
- Recombinant DNA Parathyroid Hormone

While calcium, vitamin D, and exercise are important first steps for maintaining healthy bone at any age, they may not completely stop bone loss.

Hormone Replacement Therapy

Menopause, as well as surgical removal of the ovaries, causes estrogen production to decrease. Low estrogen levels make women more vulnerable to Osteoporosis. Women can protect themselves by taking estrogen to replace what their ovaries no longer produce naturally. This is called Hormone Replacement Therapy.

Studies have shown that osteoporosis can be prevented or delayed if estrogen treatment is begun within the first few years of menopause. Hormone replacement therapy is considered both an effective treatment and a preventive measure for osteoporosis.

Hormone replacement therapy has been shown to entirely restore the rate of post menopause bone loss to the pre menopausal rate. It may even replace a small amount of bone already lost. It also controls hot flashes, vaginal dryness and other symptoms, which can happen around the time of menopause.

For many years, hormone replacement therapy has been routinely given to women at menopause. In addition to osteoporosis prevention, it was thought to lower the risk of coronary heart disease and heart attack.

Estrogens are given either as tablets or as skin patches that is replaced periodically. Hormone replacement therapy often includes a combination of estrogen or progesterone. Estrogen given alone is associated with an increased risk of uterine cancer, but that risk is eliminated when progesterone is added. Progesterone is not necessary for women who have had a hysterectomy (removal of the uterus)

Although hormone replacement therapy (HRT) has obvious and proven benefits, this must be weighed against possible long-term effects. It remains effective for pre-

vention and treatment of osteoporosis and for relief of menopause symptoms. However, whether to begin hormone replacement therapy is a decision every woman must make for herself.

The bones of the human skeleton contain 99.5% of the total calcium in the body. It is the activity of bone osteoclasts, which absorb the calcium in the bone and release it into the blood stream. Remember, it is the calcium within the bones, which makes them strong.

Nature has given different structural identity and value systems for both men and women. Mother's womb has its merits and also has its consequences after delivery.

Role Of Calcium And Vitamin D

Starting at age 40-45, both men and women lose bone slowly, but women lose bone more rapidly around the menopause and for about 10 years after. Intestinal calcium absorption and the ability to adapt to low calcium diets are impaired in many postmenopausal women and elderly persons. The bones then become more and more a source of calcium to maintain critical extra cellular fluid calcium levels. Since this amount is difficult to derive from the diet, can cause constipation, and may not prevent trabecular bone loss, it should not be used as a substitute for sex hormone replacement. Women taking estrogen replacement should be provided the RDA for calcium of 800 mg/day at a minimum. Those who cannot or will not take estrogen should be asked to ingest at least 1000 to 1500 mg/day of calcium to delay cortical bone loss and prevent secondary hyperparathyroidism. It should be emphasized that up to 2000 mg/day of calcium is safe in teenaged children and adults. Excessive dietary intake of protein and fiber may induce significant negative calcium balance and thus increase dietary calcium requirements. It is also possible that excessive intakes of phosphate could have a deleterious effect on calcium balance in populations whose need for calcium is great (e.g. growing children). Moderation in the intake of these nutrients is urged. Generally, the strongest risk factors for osteoporosis are uncontrollable (e.g. sex, age, and race) or less controllable (e.g. disease and medications). However, several factors such as diet, physical activity, cigarette smoking, and alcohol use are lifestyle related and can be modified.

Women with the house hold chorus, family expectations, get very little time for sunlight exposure. Your wife, mother and grandmother need a walk in the morning and they deserve it.

Adequate vitamin D intake must also be considered when prescribing osteoporosis drug therapy, as it plays an essential role in the absorption of calcium, particularly in postmenopausal women. The majority of the body's vitamin D is met through sunlight exposure and secondarily through the consumption of milk and green vegetables. Vitamin D deficiency is common in older adults because they have a reduced capacity for synthesizing vitamin D, converting it to its active form, and absorbing it from the intestine. Studies have demonstrated that vitamin D supplementation of 800 IU daily reduces the risk of osteoporotic fractures in elderly populations who have low blood levels of vitamin D. In addition, a meta-analysis by Bischoff-Ferrari et al. found that elderly patients who took a vitamin D supplement had a reduced risk of falls and increased muscle function compared with those who did not take a vitamin D supplement. Supplementation with vitamin D in combination with calcium has been shown to reduce the incidence of hip fractures in elderly women by 35%–50% and to increase BMD by 2%–10%

Calcitonin

Calcitonin is a hormone that the human body makes in the thyroid gland. It slows the break down of bone. Supplemental calcitonin comes as an injection or a nasal spray that is approved for treatment of osteoporosis in men and women. Calcitonin supplements may be obtained from natural sources (usually salmon) or they may be made synthetically.

Selective Estrogen Receptor Modulators (SERMs)

The class of drugs called selective estrogen receptor modulators (SERMs), which attach to places on cells where estrogen usually attaches. SERMs act like estrogen in some parts of the body (such as in the bones)

without causing a general estrogen effect. Some early data suggests that SERMs may decrease the risk of breast cancer as well.

Recombinant DNA Parathyroid Hormone

Triparatide is human parathyroid hormone (PTH) created by recombinant DNA technology. PTH is a natural human hormone that controls calcium levels in the body. Triparatide acts like natural PTH to increase bone formation. It is Available only as a daily injection for postmenopausal women and men who are particularly likely to experience fractures caused by osteoporosis.

Nutritional Advice

Cut out coffee and tea and cut down or cut out alcohol. Eat and drink calcium and magnesium-rich foods. Drink Superfood on waking and at bedtime.

Natural Healing

Exercise is vitally important as impact with the ground creates bone remodeling as an ongoing job. Power walking is especially useful.

Role Of Herbs

Herbs offer a safer alternative to conventional medication in that they act to balance estrogen levels rather than raise levels. Being a natural alternative, their action is considerably much gentler than conventional HRT. If natural estrogen levels are low, herbal supplements containing phytoestrogens obtained from the diet will bind to the 'spare' estrogenic receptors so raising the level of estrogen in our body. If estrogen levels are too high in ratio to other hormones, the phytoestrogens will bind with the spare receptors to prevent the much more powerful estrogens produced by our own body from binding, so lowering the ratio of estrogen to other hormones.

Vitex agnus castus is thought to act on the pituitary to help balance the LH (Lutinising hormone) and FSH (Follicle stimulating hormone) secretion hormones during the menopause and pre menopause period.

Dioscorea deltoidea is useful for hot flushes, irritability and depression associated with the menopause.

Cissus quadrangularis

Cissus quadrangularis is found to contain vitamins, steroids, which are found to have specific effect on fracture healing. The anabolic steroidal principles from *Cissus quadrangularis* showed a marked influence in the rate of fracture healing by influencing early regeneration of all connective tissues involved in the healing and quicker mineralization of the callus.

Healing of the fracture is delayed considerably by the administration of cortisone. The periosteal reaction is reduced and the amount and density of callus is lowered. The mortality rate of the treated subjects is very high due to severe body wasting, atrophy of muscles and gastric perforation. *Cissus quadrangularis* treatment in these cortisone treated rabbits caused a significant increase in mucopolysaccharides level and also caused proliferation of osteoblastic, chondroblastic and cartilage proliferation. It also led to increase mineralization in the callus. Thus the parenteral administration of the total extract of *Cissus quadrangularis* not only neutralizes the anti-anabolic effect of cortisone in healing of fractures but also enhances the mineralization of callus. This effect was much greater than that of anabolic hormone durabolin.

Soya

Soya also contains chemicals called isoflavones, which belong to a larger class of plant chemicals known as phytoestrogens. Two of the main isoflavones in soya are known as genistein and daidzein. Because they are shaped like the female hormone estradiol, soya Isoflavones attach to estrogen receptors throughout the body - particularly in the bladder, blood vessels, bones, and heart. For women with normal estrogen levels, soya isoflavones may displace some of the natural estrogen levels, thus possibly preventing he development of estrogen-dependent cancers of the breast and endometrium. In postmenopausal women, who have generally low blood levels of estrogen, soya may act as hormone replacement, thereby relieving some of the symptoms associated with low estrogen levels. The observation that oriental women, who generally eat large amounts of soya as compared to

(contd. on page 28)

Osteoporosis – An Ayurvedic Approach

Dr. Prakash Mangalasseri

Osteoporosis is the term used for diseases that cause a reduction in mass of bone per unit volume. Osteoporosis may be compared with the depletion of asthi dhaatu *(Asthi dhaatu kshaya)*. Compactness of bone tissue *(Asthi dhaatu)* is essential for supporting the body *(dhaaraṇa)* by its skeletal framework, transmitting body weight and providing locomotor function. Individual with excellence of bone tissue *(Asthi saara purusha)* is characterized with prominent and well-formed bony parts, teeth and nail and possesses qualities like hard working, enthusiasm and tolerance extreme physical activities. (Ca. Vi. 8/107). When bone tissue becomes inferior in excellence *(alpa saara)* these qualities are compromised.

Before analyzing the etiopathological aspects of depletion of bone tissue *(asthi kashaya)*, certain physiological aspects of formation of bone are to be discussed.

According to Ayurveda bone *(asthi)* is formed from fat *(medas)*. It is formed by transformation of fat *(medas)* into compact form by virtue of the action of metabolic heat or fire *(ooshmaa)* present in fat itself upon the gross elements *(mahaabhoota)* like earth *(prithvee)*, water *(jala)*, air *(vaayu)* etc. The tissue elements of fat *(medas)* obtain compactness *(samghaata)* and attain qualities like stability *(sthairya)* and solidity *(kharatva)* (Ca. Ci. 15/ 22-35). The following laws of tissue transformation can be used to explain formation of bone *(asthi dhatu)*.

a) Theory of sequential transformation *(Ksheeradadhi nyaaya)* : - This theory uses the analogy of milk products in sequence. From milk curd is made. From curd, butter is obtained and melting the butter gives ghee. In the sequence of transformation of tissues, fat *(medas)* is transformed to bone *(asthi)*.

b) Theory of selective nutrition *(Khaḷe kapota nyaaya)*:- This theory is analogous to doves collecting grains from the yard. Each dove collects what it wants. From a general pool of nutrients, those are specifically nutritional to the bone tissue are selectively utilized by the bio-fire causing tissue metabolism of bone tissue *(Asthidhathvagni)*

c) Theory of sequential and selective nutrition *(Kedaaree kulyaa nyaaya)*:- Analogy of irrigation canals and fields is used here. Each field is supplied with water directly as well as with overflow from the upper field. This theory combines both the other theories. Thus there are direct channels to supply nutrients to bone tissue and there is the sequential transformation of the tissue as well.

These different laws can be used for managing *Asthidhaatu kshaya* in therapeutic aspect.

Pathology of Osteoporosis *(Asthidhatukashaya)*:-

Different pathological types cause diminution of *asthi dhaatu*. They are enlisted here.

A. Endogenous *(Nija)*

1. Reduced formation of the primary nutrient tissue *(rasa dhaatu.)*
2. Abnormalities *(vikṛti)* of the metabolic fire of bone tissue *(asthi dhaatvagni)* (A.S.Su.19)

a) Hypo-activity *(asthi dhaatvagni-maandya)*

b) Hyperactivity *(asthi dhatvagni-atitaikshnya)*

3. Hypoactive bio-fire of fat tissue *(medo dhaatvagni mandya)*

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4. Diminution of marrow *(majjaa dhaatu)* i.e., *majjaa kshaya*

B. Exogenous *(Aagantu)*

1. Trauma *(abhighaata)*

a) Acute

b) Chronic

C. Combination of the above different pathologies.

Endogenous depletion of bone *(nija asthi dhaatu kshaya)*

Because of starvation *(anaśana)*, malnutrition *(alpaahara)* i.e. insufficient nourishment etc. the first tissue, that is the essence of food *(rasa dhaatu)*, is not properly formed. This leads to generalized depletion of tissues *(dhaatu kshaya)* including the depletion of bone tissue *(asthi dhaatu kshaya)*. This is characterized with osteoporosis seen in under-nutrition with reduced calcium intake. The sluggishness *(hypo-activity)* of the metabolic fire of the bone tissue *(asthi dhaatvagni maandya)* cause reduced metabolic activities in bone tissue *(asthi dhaatu)* which leads to abnormal increase of bone tissue *(dhaatu vṛddhi)*. Abnormal osteophytes, irregularities in the secretions of parathyroid hormone etc. may be thus explained. Hyperactivity *(ati-taikshṇya)* of the bio-fire of bone tissue *(asthi-dhaatvagni)* leads to increased transformation of bone into subsequent tissues resulting in depletion of the bone tissue. Increased activity of osteoclasts and conversion of bone calcium to blood calcium leading to osteitis fibrosa cystica in hyperparathyroidism etc. are examples.

These two pathological entities *(maandya or ati-taikshṇya* of *asthi-dhaatvagni)* are important and are explained by Vaagbhata by the aphorism *(sootra) "Teshaam saada-atideeptibhyaam dhaatu-vrdhi-kshayodbhava"* meaning that the sluggishness and excessive sharpness of the tissue fires respectively causes the increase and depletion of the tissues. Even though the sluggishness of the tissue fire of bone leads to the increase of the bone tissue, it is not accounted as normal physiology *(prakṛti)*. It creates pathology *(vikṛti)* like spikes and projections of bones because of osteophytes which is common in osteoporotic lesions. In Conditions like Paget's disease the pathology is characterized by greatly accelerated remodeling process in which osteoclastic resorption is massive and new bone formation by osteoblasts is extensive. As a result, there is an irregular thickening and softening of bone and greatly increased vascularity.

The sluggishness of the tissue fire of fat *(medo-dhaatvagni-maandya)* leads to increase of fat in fat depots *(medo-vṛddhi)*. This causes obesity *(sthaulya)* as well as osteoporosis *(asthi-kshaya)*. This is the commonest clinical presentation. Fat *(medas)* gets accumulated in the body and bone *(asthi)* is not properly formed. Generalized osteoporosis along with osteoarthritis of the weight bearing joints like spine, hip and knee are very common in obesity. Similar clinical conditions are also available in hypothyroidism, estrogen deficiency in post-menopausal syndrome and post-hysterectomy complications. All these can be enlisted as an irregularity in proximal tissue leading to the depletion of bone tissue *(asthi-dhaatu-kshaya)*.

Irregularity in prior tissue can also lead to the depletion of bone tissue i.e., osteoporosis *(asthi-saushirya)* is found in depletion of marrow tissue *(majjaa kshaya)* [A.S. Soo.19/9]. The vitiation of the humor Vaata in bones and marrow *(asthi-majjaa-gata-vata)* [A.H.N1-15] can also lead to osteoporosis. Here diminution in succeeding tissue causes extraction of over nutrition from the previous tissue. Note that fat is prior tissue and marrow is successive tissue to bone.

Exogenous type of Osteoporosis:-

Trauma *(abhighata)* leads to depletion of bone tissue *(asthi-kshaya)*. An acute trauma may cause fracture, which is a possible cause for osteoporosis in future. It my also be due to reduced mobility after fracture. Chronic type of trauma is evidenced by stress fracture, osteoarthritis of knee seen in old age and in individuals with jobs demanding excessive walking etc.

In many cases different pathological factors of both

endogenous and exogenous group coexist in combination leading to the depletion of bone tissue.

Etiological factors:-

The etiological factors affecting the channels of migration of bone tissue *(asthi-vaha-sroto-dushti)* are explained below.

1. Over exertion *(vyaayaama)*
2. Traumatic – excessive physical agitation *(ati-samkshobha)*
3. Attrition or rubbing of bones *(astheenaam ca ativighattanaat)*
4. Food & regimen causing aggravation of Vaata *(vaatala aahaara vihaara)*

Interrelation between Asthi & Vaata

The abode of Vaata is asthi. But they are not directly complimentary. They are inversely related. Here, aggravation of one leads to diminution of the other. So depletion of bone is effected by activities and food leading to aggravation of Vaata.

Symptomatology of Asthikshaya:

Osteoporosis is characterized by the following symptoms [A.S.Su.19/9]

1. Falling of teeth *(danta saata)*, body hair *(roma saata)*, hair of scalp *(kesa saata)*, nails *(nakha saata)* etc.
2. Dryness *(raukshya)*
3. Roughness *(paarushya)*
4. Recurrent dislocation of joints due to looseness *(sandhi-saithilya)*
5. Pricking pain in bones (ostalgia-*asthi-toda)*
6. Desire for consuming meat attached to bone *(asthi-baddha-maamsa-abhilaasha)*

The hair fall, falling of teeth, irregular nail growth, dental caries etc. are evident in reduced calcium intake and metabolism. Patients of osteoporosis also exhibit these features in the early stage itself. Dryness and roughness of skin is also common. This is a symptom of aggravated Vaata. Cracks in soles and palm are very often seen in individuals with osteoarthritis. It is worth to remember the utility of the ghee preparation Mahaa-tiktaka-ghrta in osteoporosis, falling of hair as well as cracks. Looseness of joints *(sandhi-saithilya)* explains the reduced compactness of bone and allied materials in joints.

Pricking pain in bones is typical in osteoporosis. The individual will develop desire for food like meat attached to bone is explained as request of similar properties *(samaana-guna-praarthanaa)*.

Managment of Asthikshaya:-

The management of osteoporosis depends on its pathology. In any case, direct supplementation of bone in the form of cartilage *(tarunaasthi)* is recommended [A.S. Soo.19/14]. It can be considered as a material congruent in generality *(sarvadhaa saamanya dravya)*. If the patient is not ready to consume the same because of aversion, therapeutic application of similar qualities can be tried.

Enema made from bitter medicines *(tikta-rasa-siddha ksheera-vasti)* is an important choice in management of osteoporosis. Bitter taste usually aggravates Vaata. But processing *(samskaara)* bitter materials in combination with milk, ghee etc. converts their pharmacological activity and enables them to promote osteogenesis *(asthi-janana)* by combination of properties like unctuousness *(snigdhtva)*, dryness *(soshaanatva)* and solidity *(kharatva)*. Here this therapeutic application creates the same atmosphere as in transformation of bone from fat. When unctuousness *(sneha)* of milk and ghee are subjected to drying by bitter taste, solidity and hardness *(kaathinya)* are achieved [Arun.on AH.11/31]. So milk enema having ingredients of Tiktaka ghrita, milk boiled with the five bitters *(panca-tikta-siddha-ksheera)*, sesame oil *(tila taila)* and honey *(madhu)* etc. are commonly practiced in diseases like osteoporosis. Oil enema *(anuvaasana)* of Guggulu-tiktaka Ghrta is also a treatment of choice.

The sluggishness of tissue fire of fat tissue *(medo-dhaatvagni-maandya)* leading to increase of fat *(medo-*

vṛddhi) and depletion of bone *(asthi-kshaya)* should be treated with de-fatting *(medo-hara)* drugs like guggulu, bhallataka, sallaki etc. those routinely used in clinical practice. Decoctions like Varanaadi Kvaatha and Guggulu-tiktaka Kvaatha are commonly used owing to their lipolytic and osteogenetic properties.

Certain drugs directly promote bone formation. Lac *(laakshaa)*, Cissus quadrangularis *(asthi-sṛnkhala)* etc, are best examples. If depletion of marrow *(majjaa kshaya)* leads to osteoporosis, treatment should be aimed at correcting the depletion of marroew *(majjaa)*. Potentiated fats with repetitive processing *(aavartita sneha)* like Ksheera-balaa -101 etc can be used for the purpose. When Vaata is aggravated in bone and marrow *(asthi-majjaa-gata Vaata)* showing clinical features of joint pain *(Sandhi-soolaa)*, weakness *(bala-kshaya)*, pain in lower limbs *(sakthi-soolaa)* external and internal administration of fat is advised [Ca.Ci. 28/96]. Whole body and regional irrigation therapy *(sarvaanga dhaara & ekaanga dhaara)*, internal unction *(sneha-paana)*, palliative and eliminative treatments *(samana and sodhana)* etc. can be done. The treatment principles of joint diseases due to Vaata *(sandhi-gata-vata)* can also be applied in management of osteoporosis *(asthi-kshaya)*.

(contd. from page 2)

as a means of defense for bettering the chances of their survival. It is part of plant physiology. The initial notion that the plants living in urban areas are to be blamed is now almost overruled. In spite of the use of lead free petrol and diesel, plants continue to have a higher level of lead in their tissues. Further even samples of herbs from deep interior forests, where chances of pollution from vehicular exhaust are a rarity, are not very innocent in respect of lead content. Thus we have to conclude that lead comes naturally from the soil.

Lead is not a rare metal. It is everywhere. Lead happens to be the end product of all radioactive metals. On an earth which is the product of cooling down of a piece of Sun, a massive radioactive mass of gases naturally should have appreciable amounts of lead as the end product of radio-action. We cant' help it. Even today many geographic areas are highly radioactive. If lead is natural in plants, our food crops also should have high amounts of lead in them. The problem is not posed as an issue yet. It is posed in the case of drugs because we waned to export our medicines. Export is a business and in business transactions the preferences of the customer comes first. Hence if FDA has its own norms on the maximum ppm of lead in its imported drugs, nutraceuticals, food materials and food additives, we have only two options. We can either stop our exports to USA or we can comply with their norms. It will not be reasonable, though logical, to debate on the issue to compel USA to have Ayurvedic drugs with higher lead content at diplomatic levels. The FDA will surely reserve their rights in the name of the health of the people of USA.

What ever is left to the industry and its ambitions for mastering global market is not substantial. If we have to select our raw materials according the norms of FDA and their continental counterparts, what we are going to get will not be adequate to have any appreciable amount of business. If we are to confine to the present modus operandi, we shall better dispense off our ambitions for export of Ayurvedic drugs and concentrate on Indian market till the date when our own government prescribes norms of lead content prompted by the insights of FDA.

De-leading is not an easy task. Lead is an obstinate survivor. Drug industry based on synthetic materials can confine to the FDA standards. Only herb based drug industry is threatened by the present crisis. It is more threatening when we go for multiple ingredient formulations and insist on whole drugs instead of molecular products.

It is interesting to note that China is capable of generating drugs compatible with the FDA regulations. They are able to export their ginseng and the sort in bulk to USA and continent. But they are supporting their products with adequate scientific data and analytical reports. India is yet to begin such practices. It may be costly, but is rewarding. Instead of lamenting on our fate let us start something in the right direction. Let us try to have good and safe medicine. If China can do the feat why India cannot follow its steps?

Menopausal Syndrome

Dr. K. Jayarajan & Dr. Rohini

Menopause is a natural process/phase in life of every female wherein the cessation of menstruation occurs around the age of 50 years. Changes in the hormonal levels, physical and psychological fluctuations are quite common which collectively give rise to menopausal syndrome. It can neither be categorized in disease factor nor a weakness but a collection of symptomatic changes occurring in women in their pre, peri and post menopausal period. This collection of changes taking place resulting in certain subjective complaints is known as menopausal syndrome.

According to modern concept certain changes take place during pre menopausal and peri-menopausal period.

Gradual decrease in the physiological functions of ovaries resulting in changing levels of estrogen and progesterone. This affects the menstrual cycle during the peri-menopausal period. The peri-menopausal period starts at mid 40s where the following occurs:

1. Anovulatory cycles
2. Decrease in the estrogen, progesterone, FSH, LH and other hormones
3. Decrease in the fertility rate
4. Irregular menstruation

COMMON SYMPTOMS:

- Obesity
- Hot flushes or flash (severe at night/during stress).
- Reddening of head neck and chest
- Heat and Perspiration which can last for seconds to an hour
- Fatigue
- Nervousness
- Emotional disturbances
- Mood Swings
- Headache
- Insomnia
- Depression
- Irritability
- Dizziness
- Palpitation
- Muscle and Joint pains
- Osteoporosis
- Atrophic Vagina/ Dryness of Vagina
- Frequent Micturition/lack of bladder control
- Reduced libido
- High cholesterol and Cardiac disorders due to change in hormonal levels

Ayurvedic Perspective

Ayurvedic perspectives of the female reproductive system are available in the major triad of treatises *(br̲hatrayee)*. Ashtanga Hr̲daya S̲aareera 1: 7 explains about the menarche and menopause. The menstrual flow happens every month for 3-5 days in ladies from the age of 12 years and gradually disappears around the age of 50.

Most of the menopausal syndrome symptoms if noted are mainly Vaata and Pitta predominant. Since it is depended on the humor *(dosha)*, time *(kaala)*, constitution *(prakr̲ti)*, nature *(svabhaava)* etc., the transition of the symptoms varies in all degrees. It is also seen that women mainly of constitutions with dominance of Pitta and Vaata are the highest percentage affected. But there are some cases which show the symptoms of Kapha aggravation.

This also implies that there is an aggravation in Vata humor which leads to the depletion *(kshaya)* of bone tissue *(asthi dhaatu)*, primary nutrient tissue *(rasa dhaatu)* and Kapha humor according to the base-dependant relation *(aas̲raya-as̲rayee bhaava)*. On comparative study with the modern aspect and the Ayurvedic principles re-

Dr. K. Jayarajan & Dr. Rohini Ayurvedagram Heritage Wellness Centre, Bangalore

veals that the symptoms of osteoporosis, mood swings, lack of concentration, headache, vaginal dryness, sleep disturbances, fatigue, frequent urination joint and muscle pains clearly indicate the aggravation of mobility *(calatva)*, roughness *(paarushya)*, dryness *(rookshatva)* properties *(guna)* of Vaata humor whereas night sweats, hot flushes, irritability, palpitation indicate the increase in the hotness *(ushnatva)* liquidity *(dravatva)* properties of Pitta. Kapha type symptoms include listlessness, weight gain, and feelings of mental and physical heaviness.

Management:

Though the syndrome is seen in most of the females a fewer number of patients seek medical attention at the right time. It has been seen that most of the patients have neglected this phase following which right approach to the basic problem is left out for a long time. Patients usually come with associated complaints such as headache, joints and muscle pains. A detailed clinical history unfolds to get into the root cause of the problem to plan an appropriate treatment.

An analysis was done on more than 60 patients who had undergone treatment for Menopausal syndrome at Ayurvedagram and its clinics. The approach was to stabilize the system through purification *(sodhana)* procedures (in 30% of the patients) followed by proper combination of palliative medicines *(samana aushadhi)* to maintain the balance and to prevent further complications like osteoporosis, obesity, heart conditions, etc.

CATEGORY I – 19 Patients- Classical Sodhana procedures

Internal unction *(aabhyantara snehana)* with fatty preparations mitigating Vaata and Pitta such as Sukumaaram Ghrtam, Indukaantam Ghrtam, Kalyaanaka Ghrtam either as intensive internal unction *(accha paana)* or with food *(vicaaranaa - 'auttara-bhaktikam')*. External unction *(baahya-snehanam)* with oils *(tailam)* such as Pinda Tailam, Ksheera-balaa Tailam, Dhaanvantaram Tailam followed by sudation *(svedana)* and then purgation *(virecanam)* with Avipatti Coornam or Erandasukumaaram.

A managing enema *(Mustaadi Yaapana vasti)* is given in 9 patients using Sukumaara Ghrtam and Ksheera-balaa Tailam as fatty ingredients *(sneha)*.

In all the above cases we could monitor a remarkable improvement in their conditions

CATEGORY II- 42 Patients

The following formulations in different combinations were found effective in the management of Menopausal syndrome in various stages-

1. Guloocyadi Kvaatha
2. Sukumaaram Kvaatha
3. Sapta-saaram Kvaatha
4. Mahaa-tiktaka Kvaatha
5. Indukaantam Kvaatha
6. Erandasukumaaram
7. Sataavari Gulam
8. Sukumaara Ghrtam
9. Indukantham Ghrtam
10. Kalyaanaka Ghrtam
11. Maanasa-mitra-vatakam
12. Chandra-prabhaa pills
13. Asokarishtam
14. Lodhraasavam
15. Kumaaryasavam
16. Chandanasavam
17. Menogest
18. Ostogen

Following are some of the external Applications found suitable for the condition

1. Pinda tailam
2. Dhaanvantaram tailam
3. Ksheera-balaa tailam
4. Madhu-yashtyaadi tailam
5. Chandanaadi tailam
6. Balaa-asvagandhaadi tailam

Apart from the above medical support a well planned and balanced food and routines will surely help to manage this phase of life comfortably without much agony.

Back Care Basics*
Nine steps to relief

Dr. Yathish Agarwal

Back pain can strike a person at any time. The good news is, most of acute backache attacks resolve without much fuss. However, it is only sensible that each of us should know the first aid measures to soothe the aching back.

The most common cause of a back pain is strained muscles or sprained ligaments. Several things could lead to that: improper lifting, a sudden, strenuous physical effort, an accident, injury or fall, lack of muscle tone, excess weight especially around your middle, your sleeping position especially if you sleep on your stomach, sitting in one position a long time, poor sitting and standing postures, holding the telephone under your shoulder, carrying a heavy briefcase, purse or shoulder bag, sitting with a thick wallet in your back pocket, holding a forward – bending position for a long time, and the daily stress and strain.



The effect may begin to show immediately after you have strained the muscles or it be several hours before it hits you. The muscles knot up in spasm, and you can feel the pain. That's your body's way of signalling you to slow down and prevent further injury

If you suffer a sudden attack of acute back pain, you might consider taking the following first-aid measures:

Rest

At the first signs of back pain, just lie down. Being in a horizontal position places the least strain on your spine. If you're at home, slip into your bed, provided it's not too soft or uneven. If you're out, don't worry, the floor should be fine, just ask somebody to make the surface comfortable so that it's firm – not hard - and doesn't dig into your spine and ribs. If possible, let somebody spread a few rugs or blankets evenly on the ground.

If your muscles are in spasm it may take you a while to ease yourself on to the bed or down on to the floor. Try sitting on the edge of the bed and then rolling slowly on to it, or use a support to help you get to the floor.

There is no right or wrong way to lie. You can lie on your back, on your front or on your side whichever is the least painful. Lying in a horizontal position will help relax muscles that are in a spasm and you should find the pain slowly ease away.

If you are lying straight on your back, you might like to place a pillow or a rolled up towel in the small of your back. This should make you more comfortable. If you

Dr. Yatish Agarwal
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are lying on your side a pillow between your knees will support the upper leg and prevent from folding over forward. Whether your are on the bed or the floor, do not prop yourself upon pillows. That will put more strain on your back and worsen pain. Get plenty of rest, but avoid prolonged bed rest – more than a day, two or three may show recovery. Moderate movement keep your muscles strong and flexible. Aviod heavy lifting, pushing or pulling, repetitive bending or twisting.

Swallow a pain relief tablet

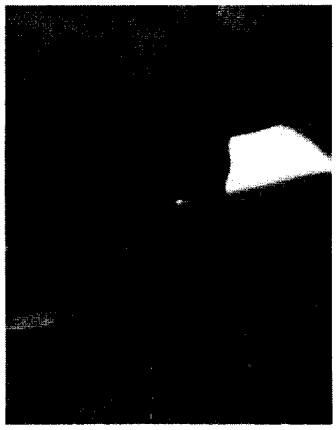
Do not be afraid to take simple pain - relief tablets during an acute episode of back pain. Medicines such as paracetamol, ibuprofen, declofenac, nimesulide or one of the other over the counter preparations can relieve your pain and ease you out of muscle spasm.

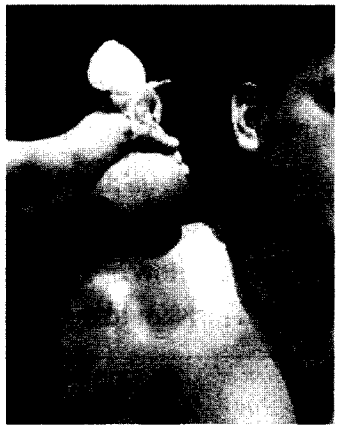
What works should simply guide the choice of the medication best for you. Just be careful that you don't add insult to injury by swallowing a tablet that might worsen an existing illness. A person who has peptic ulcer, asthma or allergy should particularly be vigilant.

Use a cold pack

During the first 24 to 48 hours, applying a cold pack against your back may help relieve the pain. Wrap an ice pack or a bag of frozen peas in a piece of cloth. Hold it on the sore area for 15 minutes four times a day. To avoid frostbite, never place ice directly on your skin.

Heat treatments work wonders





After 48 hours, you may use heat to relax sore or knotted muscles. Use a hot water bottle wrapped in a towel, an electric heating pad or a heat lamp. Spending a few minutes in a hot shower can also soothe a painful back. But be careful not to burn your skin with extreme heat. If you find that cold provides more relief than heat, you can continue using cold, or try a cold and hot combination.

A gentle massage can work magic

Ask your spouse, friend or a member of the family to give a gentle back rub. That can help to relax your muscles. Just make sure the room is warm, that you are lying on a comfortable surface, and the massage is gentle, not too vigorous. No pressure should be directly applied on your spine.

Try belladonna plaster

Provided the skin is in tact, you may apply a strip of the good old porous belladonna plaster over the painful lumbosacral (near the small of the back and the back part of the pelvis between the hips) and sacroiliac area. The sacroiliac area lies next to the spine and connects the sacrum (the triangular bone at the bottom of the spine) with the pelvis (iliac crest). Keep it on for the next four or five days. It should diminish the inflammation within the muscle planes and together with its counter-irritant effect should help ease the discomfort and pain.

Just be careful that you don't develop an allergic rash. Some individuals do. Watch for redness at the edges of the tape. If that happens, remove the tape.

Use at-home traction

There is a simple way of applying traction at home to stretch the lower spine and relieve the pressure on the discs. Lie on your back on the floor, and ask a member of the family to lift your legs by the ankles, lean back slightly and gently swing your legs from side to side. This simple technique should help if you have pain in the lower back or down the back of the leg.

(contd. on page 32)

Ayurveda - Holistic Medicine

Dr. K. Sasidharan

Ayurveda literally means Science of life which ultimately intends to preserve health to attain the *Purushaarthas* (pursuits of life) ie, righteous living, righteous amassing of wealth and to experience the righteous happiness. A healthy long life is essential to achieve these goals. Ayurveda describes human beings and nature with the same factors which has mutual interaction within health and disease at different levels. It postulates that mind and nature are interrelated and considers man as microcosm in relation to the universe. Naturally human mind tends to know things as to how it looks, feels, smells, tastes and vibrates which are more or less same to any human. In ancient period there existed a method of knowing things on the basis of logic and reasoning. But during 17th century, in the period of Newton the concept of mind and matter took a different view in which seeing, feeling, smelling, hearing etc. were considered mental projections and the science started to develop on the basis of materialistic philosophy. It observed nature by studying the matter that could be identified by shapes, weights, numbers and movements. This led to the divisive methods of analysis in knowing things and revolutionized the various planes of knowledge globally. Ayurveda epitomizes the qualitative method of comprehending the whole on the basis of properties and functions and states that there exits a law of uniformity in the constitution of material objects including human body on one side and the nature on the other which plays a vital role in health and disease. It is a fact that the most subtle state of the structure is immaterial. Hence grossness and subtlety are two sides of one reality. The structure becomes inconsistent at different levels of physical transformations which could be identified in terms of properties, function etc. The great physicists Dr. Warner Heisenburg and Albert Einsten have postulated that the ultimate physical reality is the reality of uncertainty and it is surprising that the new theories on thermodynamics, hydrodynamics, chaos theory, theory of synchronicity etc.have again brought back the integrate nature of mind and matter.

According to Ayurveda, the health is defined as a state of equipoise of functions in the system, integrity of the tissue principles, proper metabolic functions and pleasant state of mind, senses and spiritual well being. These factors will get deranged due to seasonal variations, improper interactions of senses with environment and the perverse activities of the body, mind and speech. In this context, Ayurveda is termed as holistic in preservation of health of the body as well as mind which acts as integral part in the system.

The *Tridosha* theory (Vaata, Pitta, Kapha) of the system of Ayurveda is a scientific formula which comprehends numerous factors and functions in the human systems. Ayurveda describes body consisting of complex structures with attributes of particular properties and functions. Health is maintained when each factor is in optimum range of properties and functions. In *Tridosha* theory Kapha represents the solidity and cohesion, Pitta the principle of transformation and Vaata is the principle of movement which controls various physical and physiological systems. This could be termed as "motion, energy and mass complex" representing innumerable physico-chemical events in the system. This is the holistic philosophy connecting innumerable factors and functions to enable the deducement of a situation in health and disease on the basis of logical reasoning. Any conviction of a situation is justified in all its relations to other factors

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in the system. It is a fact that when we try to produce a result in a limited area of a particular system in a disease it will definitely cause contradictions with many other areas which might be left unconcerned as every factor is connected with each other in the human system. This is why many drugs produce reactions or undesired/side effects in the system while treating a particular condition. Here we need a proper deducement of the various factors in a disease process and the medicines applied should pacify all the possible inconsistencies produced in the whole of the system. Hence Ayurvedic treatment is a gradual process of changing the condition in a disease through various steps by either selecting or rejecting drugs, formulations, mode of treatment, etc. in order to suit the particular condition considering the related factors involved in the pathogenesis.

Whatever be the name of disease the symptoms are classified on the basis of the *Doshas* (Vaata, Pitta, Kapha) and variance are identified to give the most proper treatment. It would be interesting to note the grouping and regrouping of symptoms in various diseases without introducing a new symptom in any of the disease. The symptomatology in Ayurveda is like syndromes and in a disease process many factors may get deranged which could be corrected by reversing the pathogenesis. The effect of a particular combination targets such deranged factors in the course of treatment. It is a fact that each plane in our body possesses its own geometrical status and gets influenced by many other factors in health, disease and treatments. Constitution *(Prakṛti)*, defense mechanism *(vyaadhi-kshamatva)*, enzymatic processes *(agni)*, diet and habits *(aahaaram)*, tissue factor *(dooshya)*, bio-acceptability *(saatmya)* etc. are some of the factors which get varied in health and illness in different persons with same illness. Hence the presentations will not be the same in a disease in various people and requires a non linear equation in treatment using drugs in order not to produce contradictions within the system according to Ayurveda. The causative factors in the pathogenesis produce a cascade of physiological changes making the disease not a static entity in an individual. According to Ayurveda even though the causative factors are eliminated it becomes significant to make the normalcy of physiological processes and to purify the internal systems through various therapies. In many pathological events the body fails to get repaired by itself and it necessitates a different line of treatment to bring back equilibrium of system. Hence the concept of one drug to one disease is quite insensitive according to Ayurveda. The researchers in Ayurveda should focus on these lines which could open up new vistas in health care all over the world. This is a very comprehensive theory in which the subtlety and grossness of the body are simultaneously taken into account to establish a perfect health keeping a 'probiotic' approach in curing the ailments

Ayurveda proposes preventive care with much significance in view of the above factors. This is achieved by the conditioning of the body and mind making adaptable to changing environmental factors time to time. The daily and seasonal regimens, dietetics, rejuvenation measures etc. draw great attention in this regard. The daily regimen consists of the measures to adapt from dawn to dusk for righteous living and for ultimate happiness. It consists of cleanliness of body, importance of oil massage, exercises, bathing and etiquettes etc. which focus to enhance the health of the individual.

With regards to seasonal regimens, various routines and dietary rules are prescribed to combat the impasse of seasonal variations. It is a fact that each season causes positive as well as negative effects in the environment and in the human system. During these seasons Ayurveda suggests the series of measures of medication, dietary regimens and exercises. According to Ayurveda rainy season is considered worst causing vary serious illnesses due to Vaata and metabolic functions become weak. The diet is prescribed accordingly to alleviate the conditions and normalize the metabolic functions. Oil application,

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Alliin in Garlic

Dr. Sarala Samuel & Dr. C.I. Jolly

Overview

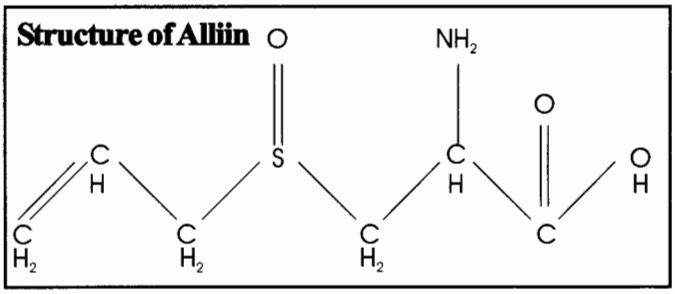
Garlic has been used as both food and medicine in many cultures for thousands of years, dating as far back as the time that the Egyptian pyramids were built. Later, grave diggers in early eighteenth-century France drank a concoction of crushed garlic in wine which they believed would protect them from getting the plague that killed many people in Europe. More recently, during both World Wars I and II, soldiers were given garlic to prevent gangrene and today people use garlic to help prevent atherosclerosis (plaque build up in the arteries causing blockage and possibly leading to heart attack or stroke), control high blood pressure, and reduce cold, cough, and bronchitis.

Medical research has been underway to assess whether these traditional uses of garlic have scientific validity. While the science is not definitive at this point, much of the research is showing real promise and many clinicians continue to report improvements in the areas of infection and heart-related risk factors for their individual patients. For example, test tube and animal studies suggest that garlic can kill many types of bacteria, some viruses and fungal infections, and even intestinal parasites. The belief is that properties of garlic may prove to help support immune function and prevent infection in people. Some experts believe that science may prove that garlic is particularly useful when taken together with medications (like antibiotics) prescribed for these infections.

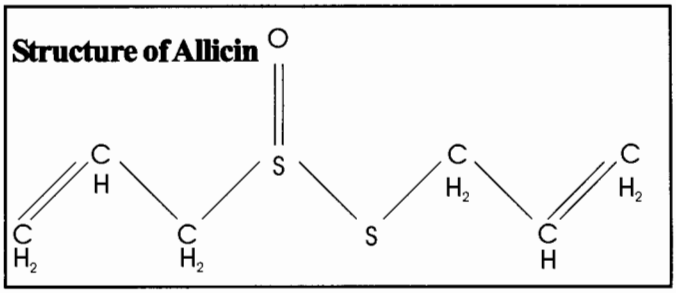
Garlic also has antioxidant properties. Antioxidants help scavenge free radicals -- particles that can damage cell membranes, interact with genetic material, and possibly contribute to the aging process as well as the development of a number of conditions including heart disease and cancer. Free radicals occur naturally in the body, but environmental toxins (including ultraviolet light, radiation, cigarette smoking, and air pollution) can also increase the number of these damaging particles. Antioxidants can neutralize free radicals and may reduce or even help prevent some of the damage they cause over time.

Garlic flavor is due to the formation of organosulfur compounds when the main odorless precursor, alliin, is converted by the enzyme alliinase. This occurs at low rates unless the garlic cloves are crushed or damaged. The main compound formed by this reaction is a thiosulfinate, allicin, the compound responsible for the characteristic odor and flavor of fresh garlic. Allicin is considered the most important biologically active compound in garlic since it decomposes to other sulfur containing molecules (thiosulfonates and disulfides) which

Structure of Alliin



Structure of Allicin



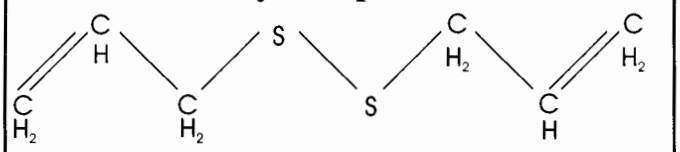
Dr. Sarala Samuel and Dr. C.I. Jolly, R&D Division, Kerala Ayurveda Ltd.

have purported activity in the human and model systems under investigation.

Allicin begins to break down quickly, expecially if heated. Conversely its breakdown can be slowed by refrigeration.

Alliin and the enzyme alliinase are quite heat stable, but allicin is not. Alliin and alliinase are also stable when dry and therefore dried powders can potentially preserve the biological activity of garlic. However a large variation has been found in the allicin releasing capability of commercial dried garlic preparations. This has been attributed to variations in the preparation procedures, but storage conditions (length of storage, temperature and relative humidity) may also be important.

Structure of Diallyl Disulphide



Allicin is also the chemical constituent primarily responsible for the hot, burning flavor of fresh garlic.

When allicin degrades it produces various diallyl sulphides, the most common of which is diallyl dishulphide:

Although the diallyl sulphides do not have the strong anti-bacterial and anti-fungal properties of allicin, they are still believed to have medical benefits especially as regards circulation and cholesterol.

MECHANISM OF ACTION

Garlic exhibits potentially beneficial clinical activity as an antihyperlipidemic, antimicrobial, antiplatelet, antioxidant, antidiabetic, and a vasoprotective agent. Allicin is commonly accepted as the pharmacologically active component in garlic.

•***Antimicrobial Actions:*** Infectious microorganisms utilize alcohol dehydrogenase for nutrient digestion and cysteine proteinase for tissue invasion. Allicin has been shown to inhibit these enzymes through a reaction with their sulfhydryl groups. This may explain why garlic can prevent the development of dysentery due to Entamoeba histolytica in hamsters.

•***Antihyperlipidemic Actions:*** Since sulfhydryl-containing compounds are involved in the synthesis of cholesterol, allicin's sulfhydryl binding ability may also explain the cholesterol-lowering action of garlic. The mechanism of action is believed to be through the formation of sulfide bridges by the disulfides found in garlic with 3-hydroxy-3-methylglutaryl-coenzyme A (HMG-CoA) reductase or the reductase molecules found in lipids.

•***Antiplatelet Actions:*** It is well documented that garlic inhibits platelet function, probably through inhibition of thromboxane synthesis. Methylallyltrisulfide (MATS) is the chemical substance found in garlic believed to be responsible for this effect. The ajoenes are also thought to possess potent antithrombotic actions.

•***Antioxidant Actions:*** The blood levels of the antioxidant enzymes, catylase and glutathione peroxidase, are increased by the effects of allicin. Thus, garlic, through the effects of allicin, has antioxidant and free-radical scavenging potential.

•***Hypoglycemic Actions:*** Limited animal data suggest that selected consituents in garlic might have some antidiabetic activity, resulting in increased serum insulin concentrations and increased glycogen storage in the liver. Patients with diabetes frequently purchase alternative remedies that have been purported to improve glycemic control, but there is no scientific or controlled evidence in humans of this action. Limited clinical evidence suggests that garlic does not affect blood glucose in those without diabetes

•***Vasoprotective Effects:*** Abnormal aortic function can result from any change in the structure of the arterial wall. Endothelium-derived relaxant factor (nitric oxide) and other substances can alter the elastic properties of the aortic wall through direct and indirect mechanisms.

Increased nitric oxide synthetase activity was demonstrated when human tissues were treated with garlic extracts, which may facilitate endothelium-dependent smooth muscle relaxation. Thus, garlic may improve aortic elasticity through restoration of impaired endothelium. Other studies suggest garlic increases fibrinolytic activity, inhibits platelet aggregation and atherosclerotic plaque formation. The precise mechanism(s) remain to be defined.

Atherosclerosis

Studies suggest that fresh garlic and garlic supplements may prevent blood clots and destroy plaque. Blood clots and plaque block blood flow and contribute to the development of atherosclerosis. Blockage of blood flow to the heart, brain, and legs, can lead to heart attack, stroke, or peripheral vascular disease (PVD). People with PVD experience pain in the legs when they walk and move. If garlic does reduce the build up of plaque, then stroke, heart attacks, and PVD may be less likely to occur in people who eat garlic or take garlic supplements.

High Blood Pressure

Studies suggest that raw garlic may lower blood pressure. Similar to cholesterol, however, the drop in blood pressure caused by garlic is fairly small. For this reason, further research is necessary before it can be routinely recommended for people with high blood pressure.

Cancer

Test tube and animal studies suggest that garlic may have some anti-cancer activity. Observational, population-based studies (which follow groups of people over time) suggest that people who have more raw or cooked garlic in their diet are less likely to have certain types of cancer, particularly colon and stomach cancers. Dietary garlic may also offer some protection against the development of breast, prostate, and laryngeal (throat) cancers. However, these types of cancer have not been as extensively studied as colon and stomach cancer.

While these results are intriguing, more research is needed to best understand whether dietary intake of garlic and other substances in the same family (such as onions, leeks, scallions, chives, and shallots) truly help to prevent cancer. In addition, studies looking at garlic supplements (as opposed to dietary garlic) and cancer have been limited. Thus far, however, use of garlic supplements does not appear to reduce the risk of developing prostate, colon, stomach, lung, or breast cancer.

Tuberculosis

Numerous test tube studies have demonstrated that garlic extract inhibits the growth of different species of bacteria, including Mycobacterium tuberculosis, the organism responsible for tuberculosis. However, very high concentrations of garlic extract were needed to slow down the growth of M. tuberculosis in these studies, Some scientists speculate that a combination of garlic extract or garlic oil with anti-tuberculosis drugs may eventually prove effective against the disease. Research to test this theory is needed.

Intestinal Parasites

Laboratory studies suggest that large quantities of fresh, raw garlic may have antiparasitic properties against the roundworm, *Ascaris lumbricoides,* which is the most common type of intestinal parasite. Garlic for this purpose, however, has not yet been tested in people.

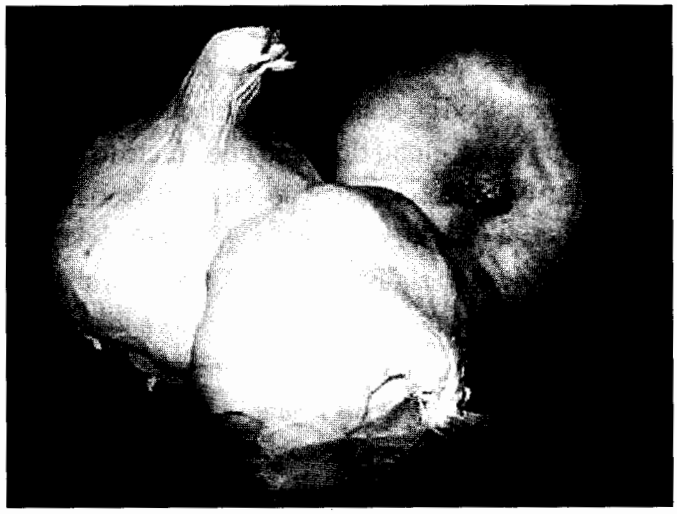
Ear Pain from Otitis Media

Most children with an ear infection known as otitis media experience pain. Often, ear drops with pain killers are prescribed to relieve this discomfort. A recent study compared this standard treatment to a combination herbal extract (also used as ear drops) containing garlic as well as calendula, St. John's wort, and mullein flower. The herbal combination worked as well as the prescription ear drops.

Pharmacokinetics: Garlic is administered orally and topically. Potency of garlic products can vary substan-

tially from manufacturer to manufacturer due to mode of preparation. An extract standardized to 1.3% alliin is recommended. Fresh garlic yields roughly 0.4% allicin, the desired active ingredient; garlic powder contains roughly 1.3% allicin; dried garlic contains no allicin, but does contain alliin (allicin precursor) and the enzyme (alliinase) necessary to convert alliin to allicin. However, this enzymatic process cannot occur in the acidic environment of the stomach. Dried garlic dosage forms must be enteric





coated for protection from gastric fluid and allow enzymatic conversion to occur in the small intestine. Since allicin is unstable in oil, oil-based products should be avoided. A German study found that only 5 of 18 commonly sold garlic preparations contained acceptable amounts of allicin, garlic's major active ingredient. Urinary presence of sulfur compounds has been documented following oral administration of garlic in human subjects.

Plant Description

Garlic originally came from central Asia, and is now cultivated throughout the world. Garlic is a perennial that can grow two feet high or more. The most important part of this plant for medicinal purposes is the compound bulb. Each bulb is made up of 4 to 20 cloves, and each clove weighs about 1 gram. The parts of the plant used medicinally include fresh bulbs, dried bulbs, and oil extracted from the garlic.

- Scientific Name: *Allium sativum* L.
- Family: Liliaceae
- Other Common Names: Allium, ail (French), ajo (Spanish), camphor of the poor, nectar of the gods, poor man's treacle, rustic treacle, stinking rose.
- A. sativum is an erect perennial, the bulb producing several long, flat, firm, narrow leaves. The bulbs and bulblets (cloves), enclosed in membranous skins, are strongly scented especially when cut or crushed. Thought to have originated in west-central Asia, garlic is today cultivated worldwide.
- The medicinal parts are the whole fresh garlic bulbs or dried bulbs that consist of the main bulb with several secondary bulbs or cloves. Powdered garlic is made from the dehydrated bulbs, while garlic oil is obtained by steam distillation of the crushed fresh bulbs.

Available Forms

Garlic products are made from whole fresh garlic, fresh or dried garlic cloves, garlic powder made from the dried cloves, freeze-dried garlic, or oil garlic extracts.

Not all garlic contains the same amount of active ingredients. In fact, there is a fairly wide variation in the amount of allicin and other important ingredients in both fresh garlic and commercial products. The amount present

depends on where the garlic is grown as well as how the product is prepared. Some experts believe that the wide variation in the quantity of active ingredients in garlic preparations explains why there is some variability in how well the substances lower cholesterol, improve blood pressure, and fight infection in different people.

Aged garlic products are made by fermenting garlic. Fermentation may reduce the amount of active ingredients in garlic. In addition, cooking garlic at very high temperatures may destroy its active components.

It is important to carefully read the label on all garlic products. It is best to use standardized garlic products to ensure that you are getting a specified concentration of allicin and other active substances. Also, follow the directions of a qualified healthcare practitioner with knowledge and experience in herbal medicine.

How to Take It

Pediatric

An appropriate medicinal dose for children has not been established. For this reason, use of garlic for health-related reasons in children should be directed by a qualified healthcare practitioner who has experience treating children with herbal remedies.

Adult

- Whole garlic clove: 2 to 4 grams per day of fresh, minced garlic clove (each clove is approximately 1 gram)
- Capsules or tablets of freeze-dried garlic standardized to 1.3% alliin or 0.6% allicin: 600 to 900 mg daily
- Oil: 0.03 to 0.12 mL three times a day

Precautions

The use of herbs is a time-honored approach to strengthening the body and treating disease. Herbs, however, contain active substances that can trigger side effects and that can interact with other herbs, supplements, or medications. For these reasons, herbs should be taken with care, under the supervision of a practitioner knowledgeable in the field of botanical medicine.

Garlic is considered to have very low toxicity and is listed as Generally Recognized as Safe (GRAS) by the Food and Drug Administration (FDA) of the United States.

Side effects from garlic include upset stomach, bloating, bad breath, body odor, and a stinging sensation on the skin from handling too much fresh or dried garlic. Handling garlic may also cause the appearance of skin lesions. Other side effects that have been reported by those taking garlic supplements include headache, fatigue, loss of appetite, muscle aches, dizziness described as vertigo (namely, the room spinning), and allergies such as an asthmatic reaction or contact dermatitis (skin rash).

Garlic has blood-thinning properties so people with bleeding disorders, such as hemophilia or platelet disorders, should not use garlic supplements or medicinal doses of garlic. This is also important to know if you are going to have surgery or deliver a baby. Too much garlic can increase your risk for bleeding during or after those procedures.

- Commercial garlic preparations vary greatly in the way they are prepared and the concentration of the active ingredient, alliin, converted by the enzyme alliinase to allicin. Enteric coating of dried garlic is essential to efficient allicin production, by protecting alliinase from degradation by stomach acid.
- Oil-based garlic preparations may not be as effective as whole garlic cloves, because allicin is degraded to other less active sulfur compounds. .
- The effectiveness of 'deodorized' garlic formulations is questioned by many sources, asserting that the healing benefits are linked to odoriferous constituents of garlic.
- Variation of sulfur compound composition with different treatments of garlic cloves: Nearly all (95%) of

the sulfur in intact garlic cloves is composed of two classes of compounds in comparable abundance, namely, S-alkylcysteine sulphoxides and γ-glutamyl-S-alkylcysteines; the most abundant sulfur compound is alliin (10 mg/g fresh weight or 30 mg/g dry weight) which accounts for about 80% of the total cysteine sulfoxides. When crushed no change occurs with the γ-glytamyl-S-alkylcysteines, but alliin and methiin are converted by the enzyme alliinase to sulfenic acids which undergo spontaneous condensation to form thiosulfinates such as allicin (regarded as the most active constituent of whole fresh and dried cloves) and allyl methanethiosulfinate; cycloalliin is unchanged. Under long-term aqueous incubation, γ-glutamyl-S-alkenyl (allyl and 1-propenyl) cysteines are converted, through the agency of the enzyme transpeptidase, to S-allylcysteine and S-1-propenylcysteine. Steam distillation generates from the acyclic alliins, diallyl disulfide, trisulfide, and allylmethyl disulfide and trisulfide. Incubation in oil or organic solvents converts cycloalliin to vinyl dithiins and ajoenes.

Garlic preparations and their chemical compounds

Raw garlic homogenate has been the major preparation of garlic subjected to intensive scientific study, as because it is the commonest way of garlic consumption. Raw garlic homogenate is essentially same as aqueous extract of garlic, which has been used in various scientific studies. Allicin (allyl 2-propenethiosulfinate or diallyl thiosulfinate) is thought to be the principal bioactive compound present in aqueous garlic extract or raw garlic homogenate. Other important sulfur containing compounds present in garlic homogenate are allyl methyl thiosulfonate, 1-propenyl allyl thiosulfonate and γ-L-glutamyl-S-alkyl-L-cysteine. The adenosine concentration increases several-fold as the homogenate is incubated at room temperature. The enzyme allinase responsible for converting alliin (S-allyl cysteine sulphoxide) to allicin is inactivated by heat. Thus the water extract of heat-treated garlic contains mainly alliin. Since garlic powder is a simply dehydrated, pulverized garlic clove, the composition, especially allinase activity of garlic powder is identical to those of fresh garlic. However, dehydration temperature should not exceed 60°C, above which allinase is inactivated.

Another widely studied garlic preparation is aged garlic extract (AGE). Sliced raw garlic stored in 15–20% ethanol for 20 months is refereed to as AGE. This whole process is supposed to cause considerable loss of allicin and increased activity of certain newer compounds, like S-allylcysteine (SAC), S-allylmercaptocysteine, allixin and selenium which are stable, highly bioavailable and significantly antioxidant. Another recently identified antioxidant compound of AGE is N-alpha-(1-deoxy-D-fructos-1-yl)-L-arginine (Fru-Arg) which is not present in raw or heat treated garlic.

Medicinally used garlic oil is mostly prepared by steam-distillation process. Steam-distilled garlic oil consists of the diallyl (57%), allyl methyl (37%) and dimethyl (6%) mono to hexa sulfides. A typical commercial preparation of garlic oil contains diallyl disulfide (DADS, 26%), diallyl trisulfide (DATS, 19%), allyl methyl trisulfide (15%), allyl methyl disulfide (13%), diallyl tetrasulfide (8%), allyl methyl tetrasulfide (6%), dimethyl trisulfide (3%), penta sulfide (4%) and hexa sulfide (1%). Oil-macerated garlic oil contains the vinyl-dithiins and ajoenes. Ether extracted garlic oil (essential oil) contains nine times as much of the vinyl-dithiins (5.7 mg/gm) and allyl sulfides (1.4 mg/g) and four times as much of the ajoenes (0.4 mg/g).

It indeed is a necessity to look around the articles you eat, the articles which you nurture and cultivate at your backyard. If one really cultivate one's mind to identify the qualities of these articles in our daily use they will give us an impetus for quality living. We are sure it will blossom beyond expectations. If you want to live life to the fullest, care your thoughts, utilize these articles like garlic in the right perspective, as you would, your most prized possessions.

Odor the Order

Dr. C.R. Agnives

Odor is the order, not only of the day, but throughout the history of animal kingdom and is still persisting in all animals those having the gift of sensing smell. Perhaps man may not be fully aware of his olfactory faculty and may not be utilizing this ability to the maximum extent. In fact, man has lost this great ability to a considerable degree as he has developed more intelligence during evolution. Still odor is the order of our lives.

Man has invented telescopes and microscopes to perceive light from distant places and also radios and telephones to bring remote sound to our ears. We have televisions too to extend the range of our vision. But still we have no efficient equipment to transmit smell as smell is innate in gross matter, large molecules, and cannot be fragmented and transferred to the electronic level.

The tip of the nose is the most anterior point of our body, if we do not develop a pot belly, and it is not for nothing that the nose is placed so. Smell comes first. That is the rule of perception. It can identify things even when things are ambushed or masked from vision. Of course, when not covered, we can see things which are very remote, even hundreds of light years far, such as stars and even other galaxies with naked eyes. But are our eyes supposed to see too much? Of all the sense organs our eyes have natural covers, the lids. By closing them we can make even proximal objects in the oblivion of darkness. Camels can close their nostrils when sand storms are blowing. We cannot. We have to keep our nostrils open throughout our life, if not our mouth will get opened.

So nose is not only a sense organ. It is also the organ to breath. Breath is a cardinal sign of life and life thus is intimately related with smell. Man may go deaf or blind with age. But anosmia, the inability to recognize smell, is not a usual eventuality of senility. Transient anosmia may occur during phases of nasal catarrh, as in common cold and smokers may have a lesser acuity of smell. But absolute anosmia is a very handicapping and frustrating neurological disorder. Hence disorders of odor are not to be ignored.

Smell is the most advanced of all our senses. All Indian philosophies almost unanimously proclaim so. Cosmogony begins with sound, passing through touch, vision, taste and culminates in smell. But when we come to the survival tactics in zoology, smell is very primary. In consuming food, animals first smell it and only substances with agreeable flavor are consumed. Others are promptly rejected. Man has ingeniously devised various means for masking disagreeable odors by flavoring food and there starts the havoc of consuming unwholesome substances those generate disease. We are willfully tampering our inbuilt security mechanism. We do it in medicine too. Flavoring the drug is a usual trick to generate acceptability.

Perhaps, smell may be the most advanced perception too as it is the special property of the earth element. We are mere earthly creatures. Bible states that man is earthen. So says the Indian novel logical philosophy (*navya nyaaya* or *tarka ṣaastra*) too. Accordingly our body is predominantly earthen ("*paarthivam asmad aadeenaam*"), though the bulk of the body is constituted by water. Still, without earth, water is not able to generate life. In fact, all living beings are islets of earth with fire and air in the vast ocean of water placed in the matrix of space. So, earth makes all the difference and let us recognize odor to be the special property of earth. That is why odor is the order of our life.

In the Indian paradigm of thought odor has a genetic level too. The Sanskrit term *vaasanaa* is synonymous to

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gandha or smell. *Vaasanaa* also means the instinct, impulse, aptitude, innate gift or talent of a person. It has both negative and positive connotations. By birth man has his animosity and it is education or training that makes man fit to adjust to the society. Society has dictated norms for preserving culture. Ayurveda also advocates the importance of ethical practices (*sadaacaara*) and hails them to be the best rejuvenating measure (*aacaara rasaayana*). As we know, health has two major aspects, personal health and social health. Social wellbeing is of equal importance to personal wellbeing. The whole topic of public health and hygiene is pivoted on the social wellbeing and ethics is the watch dog of social wellbeing.

By instinct man is very selfish. Though contemptible socially, selfishness is a valid biological protective mechanism for the preservation of the individual. But man being a social animal, as no one can enjoy freedom and health without considering others, selfishness is to be limited to the optimal level. We have to live and let live. It is in this context that it becomes pertinent to control the innate odor (*vaasanaa*) or instinct of a person.

In general, animosity is the order of life. Any living being can only have three types of affects. It can be happy, it can be unhappy and it can be confused. Happiness causes acceptance, unhappiness causes rejection and confusion breeds inertia. Rejection also is a phenomenon directed towards happiness. The innate instinct of all living things is to be happy. Hence all our deeds are for attaing happiness. ("*sukhaarthaa sarva bhootaanaam mataah sarvaah pravartayah*" – A.H.Soo. 2). But real happiness cannot be attained without adhering to the natural function vested in structure. This is called duty or *dharma*. Vaagbhata also reminds us that happiness cannot be derived without dharma. ("*sukham ca na viaa dharmaat*" – A.H.Soo. 2). Dharma for a social animal has its sociological norms and ethical codes, either ancient or contemporary, dictating the proper norms for social wellbeing.

In combating with the social norms to attain social wellbeing we will have to sacrifice our inner agenda for self sustenance. Thus greed has to give way to donation and selfishness to selflessness. If we are untrained in sacrificing, we will not be able to sacrifice without pain. That is why all religions instruct us to learn painless sacrifice. Sacrifice is painful because it is against the animal instinct in us. Giving off what is beloved is rejecting our own self in part or full and it is agonizing as it is suicidal in part or full. It is against the rules of life, biology and psychology. Yet we are human beings, much more than animals and we will have to mend our animosity to be better animals.

Coming back to the instincts, smell is the down to earth representation of all our instincts. It is zoomorphic. That is why we have a primary god, Lord Vinaayaka to represent our earthly instincts. Satisfying him symbolically happens to be the first agenda in any virtuous ritual. Consider that Lord Vinaayaka is leader in all his right and might. (*vi naayaka* literally means special leader). In our body, he is stationed at the lowest or first step of ascending, the root cycle (*moolaadhaara cakra*) by the tantric contemplators. It is the strong ground of id, the animal instinct. Also note that this elephant headed god is half animal and half man. A similar half animal god in Indian mythology is *Narasimha* (man-lion) with the head of a lion. Sure, man-lion is a terror, but his terrorism is to protect the righteous. Even an elephant can go mad at times and be violent, though the animal is very amicable otherwise. See that both these divine figures have animal heads and not human heads. Head is the seat of thought. So they represent the animal impulses in our thought. Man is the product of what he thinks. Gods can be dynamic in animate forms. Men are not supposed to mimic them. We have to shed off animosity and behave as human beings.

Vinaayaka is an impulsive character in Indian mythology. The long snout (nose, trunk) of an elephant is symbolic of perceptiveness to odor. Elephant is a great smeller with his enormous nose that can be pointed to any direction without turning the head. We cannot mimic the feat. It is also noteworthy that the elephant has movable large ears too. So, elephant is a symbolic combination of sound and smell, the beginning and the end.

Odor (smell) being the special property of the element earth, also points to this - worldliness. Instincts keep us down to earth. But elevation (*abhyudaya*) and liberation (*nissreyasam*) in life is always attached with going up. Even the heavens are up above. In the yogic and tantric practice the anima or the serpent power of the lowest level, is gradually elevated to higher planes to reach the superior most plane of the thousand petal lotus to experience bliss. The moral is to ascend from the bondage to this world and to proceed to liberation. But Ayurveda is a science that mainly deals with the problems of this world. Long benevolent and happy life in this world is the main prospect of Ayurveda though we have also plans for a better life elsewhere. But the instructions for the other world are also to be executed here it self. Thus this world is not a disposable botheration to us.

Coming back from mythology, sociology and psychology to real smell we find that human being applies many perfumes on his body, attire and environment to make himself and his surroundings agreeable. Cosmetic industry is a colossal one. Cosmetics go side by side with drug industry. That is why we have a Drugs and Cosmetic Act. Ayurveda too has its humble global role in the industry and we must note that now the whole of the cosmetic industry is turning herbal or Ayurvedic. Multinationals are praising the goodness of Ayurveda to sell their cosmetic products. Apart from cosmetics those are directly applied to the skin there are products like hanky perfumes which are not to be directly applied to the skin. Further we have an array of room fresheners, toilet deodorants, toiletries so on and so forth. The empire of smell is not that limited.

Human scent is very peculiar. Men and women want to mask it with cosmetics. But in spite of all the cosmetics, human scent stands apart and above all fragrances that we lavish upon ourselves, our attire and our surroundings. That obstinate is the human scent. It may vary from person to person. People with Pitta constitution will have more intense body odor. The apocrine and acrine sweat glands produce sweat and sweat generates the human scent. Irrespective of all the sprays, deodorants, perfumes, creams and lotions that we lavish upon us our identical body odor will be still appreciable. As in the case of the musk deer, human scent will attract the member of the opposite sex. No costly fragrance that we buy can be strong enough to mask our body odor. As Lady Mackbeth has lamented, all the scents of Arabia will not wash our hands clean. Such is the smell of human beings.

Ayurveda too has tried its level best to mask body odors. As part of daily regimen the science has advocated the anointing of scented objects such as sandal paste and wearing of garlands of fragrant flowers. Though Ayurvedic soaps are a comparatively recent invention, most of the perfumes and anointments that we use have an Ayurvedic sanction. Age old sandal, turmeric, musk and vetiver is triumphantly mastering the field pushing aside synthetic counterparts. The importance of fragrant substances is not only in the case of cosmetics. Even medicinal liniments are flavored with odoriferous objects such as camphor, musk, civet musk and the beaver jund. We have even a group of fragrant substances. Bhava Misra has given us an array of fragrant substances in *karpooraadi varga.*

Fragrant substances act also as counter irritants and antiseptics. So it is not the smell alone that matters. Volatile oils are in general substances with strong odors. All the liniments that we use contain counter irritants such as wintergreen oil and eucalyptus oil. Camphor itself is a counter irritant. Hence fragrance has a say in medicine too. Aroma therapy that utilizes the aroma of volatile substances is a tell tale example of the use of smell in medicine.

Speaking of smell we should identify that there is good smell or fragrance (*surabhi*) and bad or obnoxious smell (*asurabhi*) too. Ayurveda considers that obnoxious or putrid smell is a warning and signals us to keep away. Many diseases have peculiar smells. The bad breath of the patient is an index of his morbidity. Fishy smell, smell of blood, raw smell etc. has diagnostic value. Hence a good physician should have a good nose to catch the pathologic significance of the odor of the patient and his environment. Odor of the excreta like urine and feces

also has diagnostic significance. Increase of body odor is a hall mark in diseases like diabetes mellitus.

Though we cannot close our nostrils like the camel, we have fingers to close them. Even if we do not close them, the body has a neurological mechanism to neglect continuous odors. This is called adaptation. The receptors of smell will adapt quickly to odors and even if you continue to stay in an odorous atmosphere you will not continue to experience the scent. A passer by through a fish market may close his nostrils as the rotten fishy smell is unbearable. Think of the fisherman staying there. To him the odor is not a problem as he is adapted to it.

A pleasant smell for one may be unpleasant to others. We say that people are of different tastes. True. Let us add, people also are of different smells! There are certain people who are horrified with smell. They run away from the world of smells. They do so because to them smell is the forerunner of a sustaining malady – the respiratory allergy. Pollinosis (allergy to pollen grains) is a severe malady in the continent and when everyone is exited and filled with spirit and rush outdoors in spring our poor victims of fragrance keep themselves confined to the imprisonment of closed apartments.

The olfactory nerves can be considered as the most anterior extensions of the brain. Nasal mucosa is rich in free nerve endings that emerge from the brain. The olfactory lobe is placed most anterior in the sensory cortex. Hence these nerve endings are the direct extensions of the brain and any stimulation to these nerve endings will reach the brain in no time because of the proximity of these nerve endings with the brain. Hence not only snuff, but also medicines instilled into the nostril will alter the physiology of brain and that is one of the reasons to consider nose as the gateway to head. Ayurveda has considered nasal instillation of medicine (*nasya*) as a very effective treatment modality not only in the diseases of the nose or paranasal sinuses but also to ailments that affect the whole of the body such as paralysis.

(contd. from page 8)

women in western societies, have fewer hot flashes and other symptoms of menopause seem to confirm this theory.

Diet

Try to increase the amount of foods containing phytoestrogens and reduce your intake of animal products. Foods high in phytoestrogens include soya, beans, flaxseed and flaxseed oil, pulses, berries, vegetables, nuts, seeds, rye and whole grains.

Overweight

Being overweight can contribute to menopausal symptoms because estrogen is stored in fatty tissue - this can lead to an imbalance with other 'female' hormones, and exaggerate other risks such as thrombosis and heart disease.

Underweight

Being very underweight increases the risk of osteoporosis after the menopause because there are not enough fat cells to store the necessary estrogen to prevent bone loss. Being underweight also decreases weight-bearing movement, which again is essential to prevent bone thinning in later life.

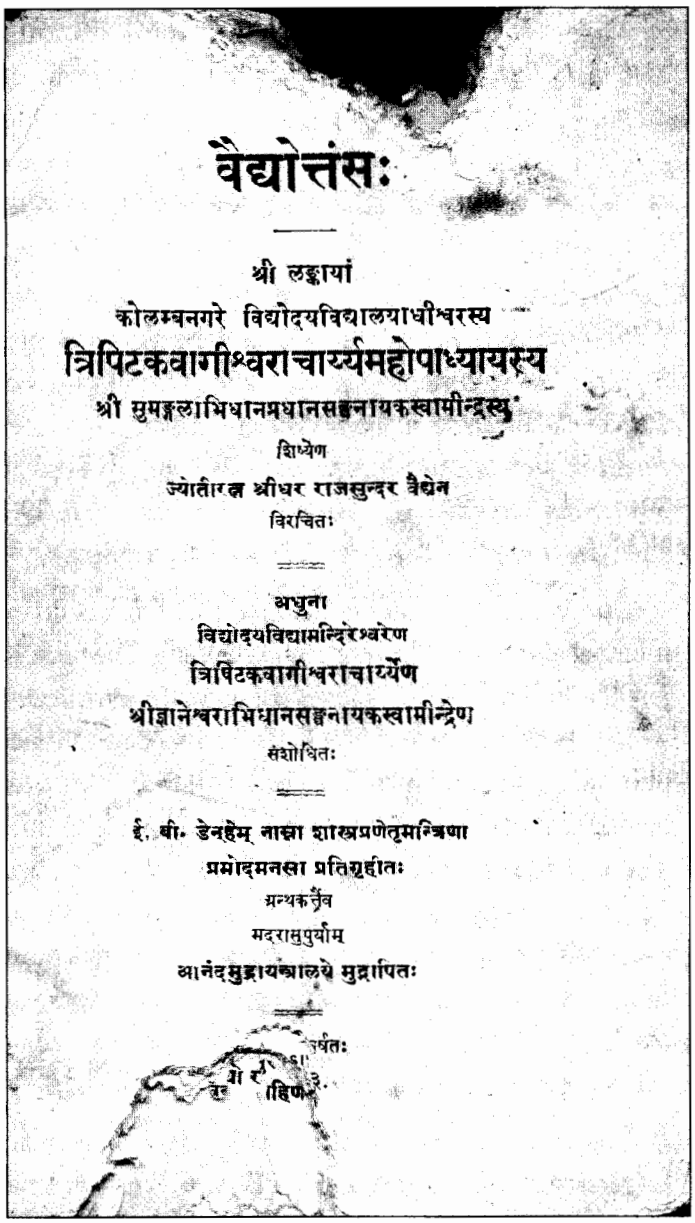
Essential Oils

Evidence for the phytoestrogenic and other hormonal action of herbs is quite significant, as yet, the evidence for the topical application or inhalation of essential oils having similar effects is scarce. Change in life style due to addition of artificial foods like pizzas and pastas, the aerated drinks and so on leaves imprints on your life pattern after 40's and 50's. Your changing mood needs relaxation.

Whenever we observe and feel the winter and the fog engulfing us especially when we reach the places of prayer early in the morning the road is always a mystery. Nor so in life. The spiritual fog and the mental anxiety can lift if we accept the right lifestyle.

"God- who knows the way of abundant life, offers us direction."

Vaidyottamsa

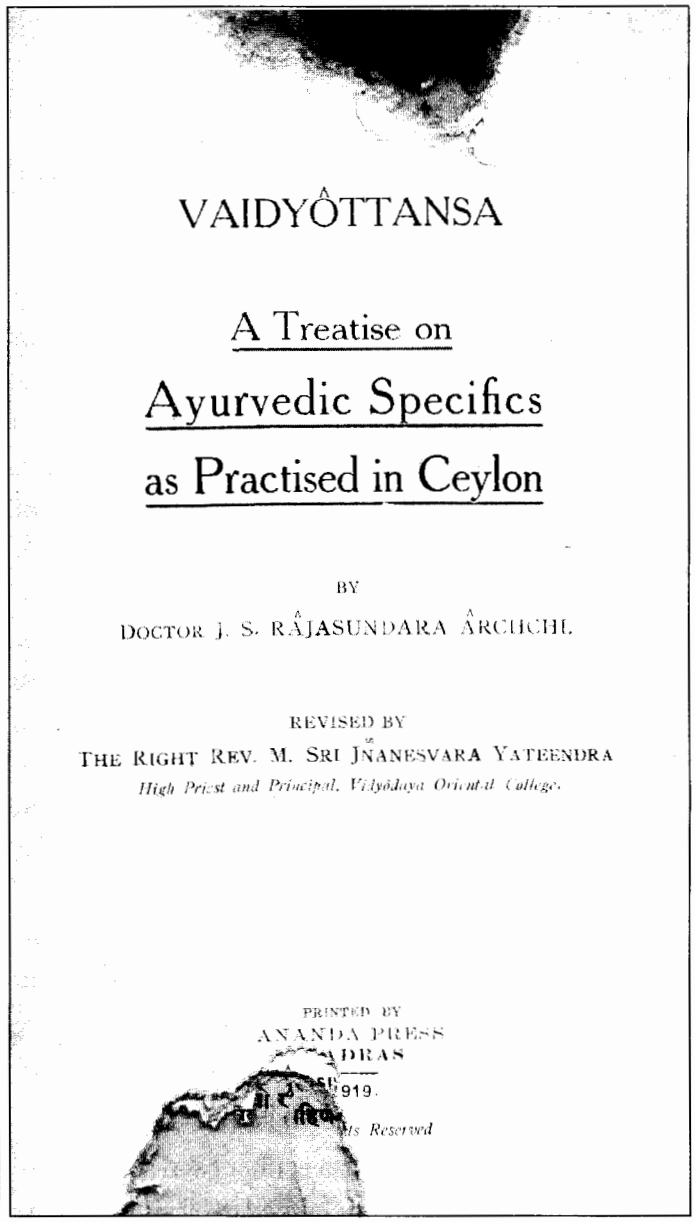


वैद्योत्तंसः

श्री लङ्कायां
कोलम्बनगरे विद्योदयविद्यालयाधीश्वरस्य
त्रिपिटकवागीश्वराचार्य्यमहोपाध्यायस्य
श्री सुमङ्गलाभिधानप्रधानसङ्घनायकस्वामीन्द्रस्य
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अधुना
विद्योदयविद्यामन्दिरेश्वरेण
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श्रीज्ञानेश्वराभिधानसङ्घनायकस्वामीन्द्रेण
संशोधितः

ई. बी. डेनहेम् नाम्ना शास्त्रप्रणेतृमन्त्रिणा
प्रमोदमनसा प्रतिगृहीतः
ग्रन्थकर्त्रैव
मद्रासपुर्याम्
आनंदमुद्रायन्त्रालये मुद्रापितः



VAIDYÔTTANSA

A Treatise on

Ayurvedic Specifics

as Practised in Ceylon

BY

DOCTOR J. S. RÂJASUNDARA ÂRCHCHE.

REVISED BY

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Vaidyotamsa is a treatise of Ayurveda written in Sri Lanka in the early years of twentieth century C.E. The book is wholly written in Sanskrit verse and the author is Jyotiratna Sreedhara Raajasundara Vaidya. He is the disciple of venerable Mahopadhyaaya Sri. Sumangala, a Buddhist teacher of Sri Lanka. Sri Sumangala was the founder and former principal of the Vidyodaya Oriental College, Colombo. The book was carefully scrutinized by another Buddhist priest, Right Reverent Sri. Jnaaneṣvara Yateendra, the then (1919 CE) Principal of the Vidyodaya Oriental College.

The book can be considered as a compendium (*sangraha grandha*) and is a handbook of the Ayurvedic treatment in Sri Lanka. Sri Lanka has its own tradition of Ayurveda. The Sri Lankan Ayurveda has its Buddhist

identity as it were Buddhist monks who propagated it there.


Sri. Sumangala


Mr. E. Denham


The Author

The treatise Vaidyottamsa, is evidently a book of Buddhist Ayurveda as it begins with praising Lord Buddha as the great sage (*muneendra*) who mitigated the pain of the birth cycle (*samsaara-arti*) with the medicines truth (*satya*) and righteous duty (*dharma*). The book is a compilation of formulations for various diseases. The book contains only four hundred stanzas. The Sanskrit used is similar to that of Vaidya Jeevana of Lolimba Raaja. But the cupidity of Lolimba Raaja is totally avoided in this work. This exclusion is natural of a Buddhist author as Buddha is also known as the winner of cupid (*Maarajit*). There is a section of reproductive medicine at the end of the book. When, even Vaagbhata, the author of Ashtaanga Hrdaya falls into erotic verbosity in the context of reproductive medicine, this book confines well within the limits of decency in dealing with the effects of formulations to enhance libido. The maximum statement that slips into poetic eroticism is that promises to provide copulation power to satisfy hundred and ten sexually aroused women. This as all of us know is mere exaggeration and as law givers of poetics confirm, exaggeration is an unavoidable factor in figure of speech.

The verse in Vaidyottamsa is fluent and sufficiently alliterated. But it cannot be claimed to be simple as the names of herbs in formulations are sometimes uncommon and the reader will have to frequently refer the herbal dictionary for identification. But this obscurity is inevitable when the author is more in favor of the verbal aesthetics. Note that possibility of implied or apprehensive ornamentation (figure of speech – *artha-alankaara*) in scientific versification is highly limited and often risky. The only alternative to the author for beautification is alliteration which is accepted as phonetic ornamentation (*varna-alankaara*). Our author is adept in it.

Another notable thing is that when most treatises are set in the eight lettered meter (*anushtup*) this book uses an array of flowing flowery meters like *Indra vajra, Vasanta tilaka, Druta vilambita* and the lot and even the pretty long *Sragdharaa*. In certain verses the author has mentioned the name of the meter in the *sloka* itself. The name *Vasanta tilaka* in stanza 387, *Vamsasthaa* in 388, *Malinee* in 390, *Mandaakraantaa* in 391, *Upendra vajraa* in 393 and *Saardoola vikreeditam* in 395 are examples.

Coming to the contents, we find that there is no or minimal attempt on theoretical enlightening. The book is just a collection of formulations. The contexts start directly with fever pass on to diarrhea, mal-absorption syndrome, piles, dyspepsia so on and so forth. All these contexts belong to the branch general medicine (*kaaya cikitsaa*). There is no surgery in the book. Only ten stanzas are devoted to the treatment of head and neck. Here also surgery is not met with. But the author mentions that most of the diseases coming under the purview of the branch are surgical and are not detailed here. Evidently the author was a physician and not a surgeon.

It is worth noting that the book is dedicated to an English man Mr. E. Denham, Esq, B.A., C.C.S., Director of Education, Chairman, Committee on Oriental Studies, Ceylon. This is a unique dedication as no Sanskrit book on Ayurveda in print is seen dedicated to a foreigner.

The author in his initial statements as well as scattered in the text mentions that he has examined most of the works of Ayurveda such as Caraka Samhitaa and Susruta Samhitaa for this compilation and also have obtained instructions from physicians of Ceylon such as Charles Fredric for the work. He vouches that all the formulations

in the book are practical and has been used and found effective by him. This certification seems to be very valid because of the brevity of the book, practicability of formulations in it and lack of unwarranted theorization.

The book was printed at Anand Press and published in 1919 C.E. from Madras by the author. Perhaps at that time printing in Devanagari script may not be available in Ceylon. To facilitate reading by novices, the compound words of the text are printed in split form. This naturally creates some problem in fluent reading and will not be tolerated by Sanskrit grammarians as avoiding conjunction of words when they are warranted and splitting the fused words into two without avoiding the fusion will be considered as serious grammatical errors. But the text is often in lengthy lines without gaps in between and this will be difficult for new readers of Sanskrit if printed in fused form.

In the Sanskrit preface of the book the author admits the presence of various compilations of Ayurveda with Simhala commentaries such as Saaraartha Samgraha and Yoga Ratnakara. Yet he wanted to write this book for favor of his students.

The father of the author was Jyotiratna Ganaka, a scholarly astrologer and his uncle was a renowned Ayurvedic physician.

We are unaware of the existence of any translation of the book in English or Indian languages. To protect the heritage, such literary ventures are to be undertaken. The photographs given here are from the copy of the book belonging to KAPL Book Achieves.

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Those who wish to publish their scientific articles related to medicine, in **KAPL Vaidyam** may please send them to the following address. The articles should be in CD, in Microsoft Word program using Times New Roman or Ariel font. Any picture to go with the article should be Windows compatible. A printout of the article also should be sent.

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Dr. K. Anil Kumar,

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(contd. from page 18)

easily digestible food, medicated rice porridge etc. are recommended during this season. Kapha gets deranged in spring season during which phlegmatic diseases will be prevalent. Fat free diet, physical exercises, dry massage, honey wheat preparations etc. are recommended during spring. As the forceful initiation and suppression of urges also causes diseases, control of these acts also falls within the principles of prevention of diseases. The incompatible food habits, such as fish and curd, over intake of food, untimely food etc. should be avoided in dietary regimen.

According to Ayurveda, curing of disease is exactly nothing other than bringing back the normalcy of functions in the system. Medicinal measures and non medical measures are followed for this purpose. Non medical measures consist of fasting, physical activity, exposure to sun and breeze etc. Medicinal measures include internal and external administration of medicines and *panca-karma* treatments. The merit of Ayurvedic treatment is that it does not produce any contradictions in other system while treating a disease affecting a particular system. The *panca-karma* treatments tone up the various systems of the body by purifying the metabolic wastes accumulated over a period of time in one's life. It improves immunity and prevents the reoccurrence of diseases. This is an additional advantage of Ayurvedic treatment. Thus Ayurveda has its high merits in preserving the physical and mental health of the individual.

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Warm up

Gradually begin gentle stretching exercises. Avoid jerking, bouncing or any movements that increase pain or require straining. Healing will occur most quickly if you can continue your usual activities in a gentle manner while avoiding what may have caused the pain in the first place. Avoid long periods of bed rest, which can worsen your pain and make you weaker.

The road ahead

Simple home remedies such as these generally suffice, and you should find that the pain has become much less acute within the next 48 to 72 hours. With proper care, you should notice a steady improvement. However, strenuous use of a strained muscle during the next few weeks may bring back the pain. Most back pain is gone in six weeks. Sprained ligaments or severe muscle strains may take up to 12 weeks to heal.

Once you have back pain, you're more prone to experience repeated bouts of such pain. Your best bet to keep your back pain-free relies on maintaining your flexibility and strength and keeping your abdominal muscles strong.

When to seek medical help

In case, your pain does not settle, or you have any of the following symptoms that suggests possible nerve damage from a prolapsed disc, you would do well to consult a doctor as soon as possible:

- When you start developing a problem with your bladder or bowel, seem to be losing control over them, or suffer any numbness or loss of feeling in the groin or rectal area.
- When your leg or foot feels weak and you experience difficulty in walking and you relate it to your back.
- When you have pain in your back that also radiates down the leg with numbness or loss of feeling in your leg.
- When you have pain down the leg and you experience repeated or prolonged 'pins and needles' in your leg.
- When your pain results from a fall or blow to your back.
- When your pain lasts longer than three or four days.

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For more than a century, Ayurveda fraternity has been lamenting about the need for research in the field of Ayurveda so that the science can exist, progress and flourish. However, stringencies of time and money have restricted the real benefit of Ayurvedic research to reach the society at large. Onset of post-graduate studies has naturally necessitated research activities at the academic level.

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