

4099



JOURNAL OF INDIAN MEDICINE.

VOL. IV

NO. 1

July - 1950

Oct. 1950

NO. 2.

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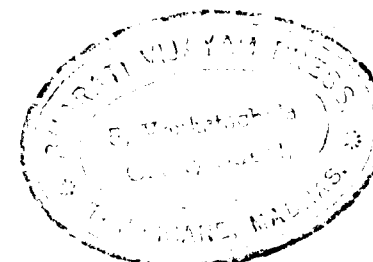
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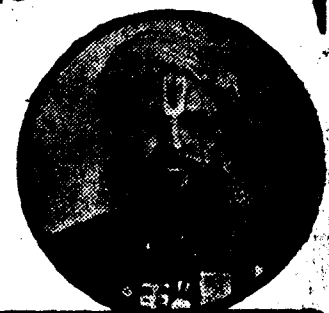
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Vol. IV

JULY 1950.

No. 1.

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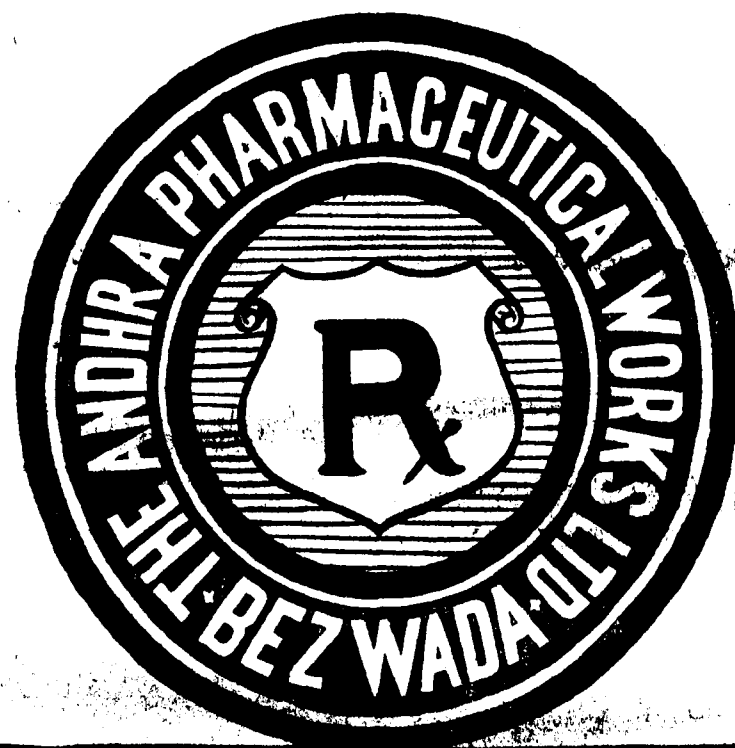
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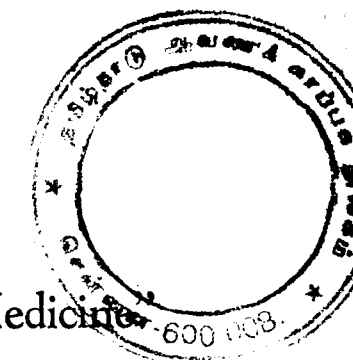
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A SEAL OF RELIABILITY

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"The Science and The Art of Indian Medicine"

By

VAIDYABATNA CAPTAIN G. SRINIVASAMURTHI B.A., B.L. M.B. C.M.

(Continued from Vol. III No. 4)

The exact sense in which the word is used in any particular case may be easily made out by the context. It may also be mentioned here that these secondary Dhatus are also called 'Dushyas' (or vitiables), so-called because they can be vitiated by the primary Dhatus (Vata, Pita and Kapha), which when looked at from this standpoint of causing vitiation are spoken of as 'Doshas' (literally faults). We may now go on to consider how food is transformed into various Dhatus; the first step is the conversion of food into Rasa dhatu; this takes place in Amasaya, Grahani and Pakwasaya (region of stomach, including pylorus and duodenum); the agents concerned in the production of Rasa from food are Vata, Pitha and Kapha. Vata in the form of Prana Vayu sends food down the gullet into the stomach whence after certain changes it is sent down the Grahani in Amashaya; in these digestive chambers food is acted upon by Pitha (Pachaka Pitha) in the menstrum of Kapha present there and gets converted into Rasa (Chyle), which contains, in essence all the ingredients necessary for the formation of the various tissue elements of the body. The essence of food becomes the Rasa dhatu, while its dross is rejected as mala. In a similar way we get by the repeated action of Vata, Pitha and Kapha, the transformation of Rasa (Chyle) into Rakta (Blood) Rakta into Mamsa (Muscle), Mamsa into Medhas

(Fat), Medhas into Asthi (Bone), Asthi into Majja (Marrow) and Majja into Sukra (Reproductive elements). Rasa is driven by Vayu to the heart and then to the liver and spleen, where the appropriate pre-Rakta constituents of Rasa are acted upon by Agni or Pitha (Ranjaka Colour-giving Pitha) in the menstrum of Kapha and becomes transformed into Rakta; this again is acted upon by Vayu and Agni (Mamsagni) in the menstrum of Kapha, when transformation into Mamsa takes place; this process is repeated till, by successive transformations, we get Asthi, Majja and Sukra. It is also held that every one of the Dhatus from Rasa to Sukra elaborate, during the course of its metabolic transformation, a special subtle essence, which goes to form the Ojas Dhatu which is, as it were, quintessence of all the seven Dhatu essences. The presence of Ojas is of the very essence of our life-activities; and if the successive metabolic transformations that end in the production of Sukra dhatu (Reproductive elements) are not properly formed, then, the Ojas-formation suffers, and life-activities themselves may cease altogether from lack of Ojas, if the metabolic transformations cease to be preformed for an unduly long time. Each of the Sapta dhatus is thus seen not only to take from the common stock whatever is necessary for its own normal life but also to give to that same common stock its own best and

highest essence (Prasadam) as its special and necessary contribution for the normal life of the organism as a whole. The *sine qua non* for the healthy life of each individual dhatu is that it should contribute its best to the healthy life and common good of all the Dhatus constituting the whole of the organism. Such is the Law, governing the life and health of each individual Dhatu that it should seek and find its own highest good by working for the highest and common good of all the Dhatus constituting the organism as a whole. This is only the application in the field of human organism of a most beneficent and universally-applicable Law (Dharma) that the highest good of the part is secured automatically when that part and all other parts co-operate to work for the highest good to the whole—a beautiful thought reminding us of a memorable teaching of our ancient scriptures that the due performance of Sacrifice (Yagnya) by each individual is the Law (Dharma) which governs the highest good of all (Lokasangraha). Where each Dhatu or part so works as to contribute its best as its special sacrificial offering, joyously and dutifully laid at the altar for the worship of the common good of the whole, its work is verily its worship and its sacrificial offering is returned to it blessed, and sanctified for its highest good. Such is the Law Dharma. This is good Physiology as well as good Philosophy and sound Sociology.

As far as I know, there is as yet nothing in Western Medicine corresponding to the above-noted conception of the metabolism of the Sapta dhatu leading to their orderly evolution from Rasa to Rakta, Rakta to Mamsa and so on to Sukra and Ojas. It may however, be noted that the conception of a special Dhatwagni (Mamsagni,

Medogni etc.) existing in each Dhatu and becoming activated by Vata during its metabolic processes in the substrate or menstrum of Kapha bears some resemblance to the conception of Endo-enzymes as envisaged in the following extract from pages 1022 to 1026 of Howell's *Text book of Physiology*—(1446 Edition) "In life, Endo-enzymes play their part within the bounds of the cells in which they are contained and probably constitute the chief means through which are effected the metabolic processes that characterise living matter.....In many cases; it can be shown that the Enzyme exists within the cell in an inactive form; and requires the Co-operation of some other substance before it is capable of effecting its normal reaction. In such cases, the second substance (Activator) is said to activate the enzyme.....In some cases, it may be supposed that after the enzyme combines with substrate, further effect upon the substrate depends on the activity of a Co-enzyme"

DIAGNOSIS AND TREATMENT

Examination By The Senses And Interrogation

In general, Ayurvedic methods of Examination for purposes of Diagnosis are similar to those of Western Medicine; but the method of approach as well as the nomenclature adopted are from the subjective standpoint so that all features that Western Medicine describes from an objective stand point as "Examination by Inspection," "Examination by Palpation," "Examination by Percussion," "Examination by Auscultation," "Examination by the Microscope" etc., would all come subjectively under one comprehensive category—"Examination by the senses"—whether such examination is by

sense aided by instruments or by an unaided sense. Thus, examination by inspection, palpation percussion, auscultation, microscopy etc., are all "Examination by the sense"; in some cases the sense may be aided as, for example, the sense of sight in Microscopic examination, the sense hearing in Sthethoscopic examination and so on; or, it may be unaided as in the case of ordinary inspection, palpation, etc., but whether aided or unaided, it is all "Examination by the senses"—a concise and precise description which is yet comprehensive and adequate enough to serve as a formula for all time: for, we cannot conceive any method of examination, whether direct or instrumental, whether known already or may become known hereafter, which will not come under the description "Examination by the senses," singly or combined, aided or unaided. This feature of enunciating all comprehensive formulæ adequate for all time is a striking feature of Hindu Analytic thought generally, as has also been noticed in all other divisions of our present study. In addition to "Examination by the senses", there is also mention of "Prasna" or interrogation so that the full formula "Examination by the senses and interrogation" will include all possible methods of examination whether known already or may become known hereafter. These several points are well brought out in following extract from the evidence of the late Kaviraj Yamini Bushan Ray, M.A., M.B. & C.M., a prince of practitioners learned in both Ayurveda and Western Medicine: "The diagnosis of diseases is six-fold—by means of the five senses and also by interrogation. Western Medicine, looking at things from without, designates its diagnostic methods by the terms inspection, palpation, etc., but, our

ancients, ever looking at things from within, referred them all to the five senses and to interrogation which (interrogation) was a very comprehensive and highly suggestive method, including, as it did, references to all the numerous relevant factors of diseases such as desa (country), kala (time or seasons), jati (tribe), satmya (compatibility), that is to say, whether correlation with particular climate, country season, previous illness, tribal peculiarities, etc., is or is not compatible to patient), athanka (the mode of onset), vedana samucharya (the mode of development of ailment), balam (constitutional strength), deepagnitha (state of digestion and assimilation), mutra-pureeshadi (state of urine, faeces, etc.) and so on. If any physician of any climate or country follows the detailed maxims laid down for the thorough examination of not only the disease, but also of the patient which examination was particularly insisted on by our sages, as being essential both for diagnosis and treatment, he is sure to do well by his patient and bring credit to his science and art."

Astasthan Pareeksha—The Eight Special Examinations

In every routine investigation of a case, the Physician is expected to pay special attention to the examination in respect of the following eight particulars:

(1) Nadi (pulse Examination): In Western Medicine, examination of the pulse is undertaken primarily for finding out certain features of the circulatory system; but, in Indian Medicine, it is undertaken to find out the State of disturbed doshas (Vata, Pitha, and Kapha) and of vital phenomena indicative of particular roga (disease) and

prognosis with reference to a particular rogi (sick person). Examination of the Nadi seems to have been cultivated with special assiduity by Siddha physicians, who look upon "Nadi" as indicative of the activities of the jiva (life principle) in the individual body and its orientation to cosmic forces of Vayu, Moon and Sun manifesting as Vayu Nadi, Chandra Nadi and Surya Nadi, corresponding to Ida, Pingala Sushumna of our Yogic and Tantric literature. It is difficult to explain these things in the language of modern Medicine because orthodox Physiology does not recognise the existence of any of these life-principles.

- (2) *Sparsa* (Tactile indication such as: "heat", "cold", etc.)
- (3) *Rupa* (Visual indication such as: lustre, colour of skin, etc.)
- (4) *Sabda* (Voice indication such as voice being excited, strong weak.
- (5) *Pureesha* (faeces indication such as: constipation, diarrhoea, colour.
- (6) *Netra* (Eye indications such as: various colours of the conjunctive, local swellings.)
- (7) *Mutra* (Urine indications such as: colour, lustre, clarity, turbidity, density, etc.) The examination of urine is cultivated with special assiduity by our Unani physicians.
- (8) *Jihva* (Tongue indications such as: colour, coating, existence of cracks, undue dryness, undue moisture and such other features.

Nidana Panchakam—Five-fold Investigation of Disease

The methods of investigation of diseases are usually described under the

following five heads beginning with Nidana and hence designated as Nidana Panchakam:

(1) *Nidana*.—First comes the investigation of 'nidana' or the root-cause of diseases; that is to say, of the particular causative indiscretion, such as, bad food, bad water, indulgences, excesses and the like. This gives us clues to diagnosis and prognosis. But, as one nidana may possibly be at the root of more than one disease, Nidana alone cannot help us to diagnose diseases.

(2) *Purvarupa*.—Next we proceed to investigate purvarupa, or the prodromata. This investigation helps the physician to correlate particular doshic derangement with a particular group of prodromata and also gives him some clue to prognosis.

(3) *Rupa*.—Next comes the investigation of rupa or symptomatology, by means of which the physician is enabled to judge the special features of the developed stage on disease, of doshas, dushya, etc., which indicate whether we have to deal with morbidity of one dosha, two doshas or all the three whether it is an affection of rasa rakta, mamsa, asthi, or any other dhatu or dushya, and so on. The study of the signs and symptoms was apparently pursued by Ayurvedists with remarkable diligence and skill.

(4) *Upasaya*.—Next in order comes what is termed Upashaya, which is really a form of diagnosis by applied therapeutics, a measure not unknown to Western medicine. Let us say, the question is whether a particular ailment is due to the derangement of vata. We are in doubt. We then prescribe a diet, exercise or any other remedial measure

known to cure this suspected derangement, which is then either ameliorated or aggravated. If it is ameliorated, then the hypothetical proposition is confirmed. If not, it is rejected.

(5) *Samprapthi*.—Finally, we have samprapthi, a term which is generally translated as pathology; but it is really much more because its investigation is conducted with a special eye to prognosis. It has reference to the following features:—

(1) *Sankya or number*.—That is to say; the number of varieties or types in which diseases may manifest themselves: thus—fevers in eight types, gulmas in five, leprosy in seven, and so on. (2) *Pradhanya or predominance*.—That is, the predominance of particular dosha or doshas. (3) *Vidhi or order of classification*.—That is with reference to either the two-fold causes, viz., idiopathic (nija) or extrinsic (aganthuka) or to the three-fold classification of tridosha, or to the four-fold classification of curable, incurable, mild and severe types. (4) *Vikalpa or possible alternatives*.—that is the ascertainment of the measure in which the doshas are excited in the combined doshic triad. (5) *Time of energising (balakala)*.—This is with reference to the time factor, which energises diseases and makes them either atibala, madhyabala or heenabala (severe, moderate or mild). e.g., the seasons, the day, the night, the hour of eating, and similar conditions.

TREATMENT

Categories of Treatment

तदेव युक्तं चैवमं वदामोऽयं कल्पते

सर्वेषु विषजं भेदो रोगेभ्यो यः प्रमोचयेत्

(Charaka)

That alone is the right treatment,
which makes for health;

He alone is the best doctor who frees
us from diseases.

To provide for our people the best available medical aid that it is in our power to give should be the supreme objective of us all engaged in the study, teaching the practice of Medicine. To do our part in achieving this objective, it is very necessary that we should keep ourselves constantly up-to-date and in continual touch, to the utmost extent that is possible for us to do, with the progress that is made all over the world. The adoption of such a course would come naturally and easily to followers of Ayurveda with its fundamental Catholicity of outlook and comprehensiveness of approach. In many places in previous sections, it has been pointed out that a characteristic feature of Hindu Analytical thought that strikes us everywhere in our studies is it is flair for enunciating theories so complete in their conception, so perfect in their logic and so satisfying from a philosophical stand point as to prove all-comprehensive and adequate for all time—a feature which strikes us as much in our study of treatment as in other studies. While firmly rooted in its time-tested Siddhanta of Tridoshic Physiology, Pathology and Therapeutics, it has nevertheless provided ready-made niches or mansions to which therapeutical practices of proven utility from everywhere and of all times can be readily welcomed at all time. To make this statement clear, I give below the all-inclusive categories under which Ayurveda arranges all possible modes of treatment (Chikitsa) of all times—past, present and future. Firstly, it states that two-fold are the methods of treatment (Chikitsa) namely Vipareetha

Chikitsa (Treatment by contraries' and Thadarthakari Chikitsa (Treatment by similars.) Each of these show a natural three-fold subdivision as indicated below.

(A) *Vipareetha Chikitsa or Treatment by Allopathy in the sense of treatment by contraries or opposites.* This is of three kinds, namely: (1) *Hetu Vipareetham* or treatment by measures—Medicines (Aushadha), Diets (Anna) and Life activities (Vihara)—which are contrary to *Hetu* or cause of disease and operate for its removal; (2) *Vyadhi Vipareetham* or treatment by measures which are contrary to *Vyadhi* or disease (which is the effect) and operate for its removal; (3) *Hetu-Vyadhi Vipareetham* or treatment by measures which are contrary to both *Hetu* and *Vyadhi* and operate for their removal.

In certain cases, the cause may disappear after producing the effect namely disease. In other cases it may persist and make for continuance of recurrence of disease. In the former case, only the disease has to be dealt with. In the latter case both cause and disease have to be dealt with. In some cases, it may be sufficient to deal only with the cause. If a burning lamp is so near the skin as to cause burns unless removed, the development of *Vyadhi* or disease called burns may be dealt with by removing the lamp (cause) to a safe distance. If, however, the disease has already developed so that blisters, loss of tissue etc., has occurred in some degree, the removal of cause, (the burning lamp in this case) is not sufficient. The lamp has to be removed and burns also treated. That is, both *hetu* and *vyadhi* should be dealt with.

(B) *Thadarthakari Chikitsa or Treatment by Homeopathy in the sense of treatment by similars:* This again is of three kinds namely: (1) *Hetu Thadar-*

thakari or treatment by measures which are similar to the cause (*Hetu*) and operate for its removal. (2) *Vyadhi Thadartakari* or treatment by measures which are similar to *Vyadhi* (disease) and operate for its removal. (3) *Hetu-Vyadhi Thadarthakari* or treatment by measures similar to both *Hetu* (cause) and *Vyadhi* (Disease) and operate for their removal.

It will thus be seen that the classification given above is all-inclusive and valid for all times and provides ready-made niches or mansions, to which fitting welcome may be extended, as stated before, to any form of treatment of proven utility that may be known already (whether it bears the specific label 'Allopathy,' Homeopathy, Naturopathy or any other) or that may become known hereafter. There are, of course, *practical limitations* arising from the varying and limited capacities of individuals to acquire a sufficient knowledge of other presentations and incorporate harmoniously into their practice such things as are of proven utility in other practices. We know from our own experience and practice that such harmonisation can be done according to the measure of our individual capacity and opportunity. We know also of practitioners qualifying from Allopathic Colleges becoming votaries of Homeopathy, Naturopathy etc., later on and adopting them successfully in their practice.

The general principles of treatment—

Treatment to be based on accurate diagnosis and prognosis.

The general principles of treatment according to Ayurveda are indicated in the following extract from the written evidence of the late Kaviraj Dr Ganapath Sen, one of the ablest and most

successful practitioners of his day and a brilliant Sanskritist and Ayurvedic scholar learned in Western Medicine also: "The *sine qua non* of proper treatment is of course proper diagnosis particularly with a view to our "Thridosha" pathology. This done, we have to ascertain whether we have to fight the intrinsic cause (i. e., वात वैषम्य or the disease itself; also whether the case is *sadhya* or easily curable, *kricchra sadhya* or curable with difficulty, or *asadhya* or incurable. The last group of cases is either not treated at all or treated only to make the disease *yapya* or tolerable.

Samsodhana and Samshamana treatment.

"Now, let us first consider the *medical side of treatment*. First of all we take note of the *Samata* (समता) i. e., presence or absence of auto-intoxication (or autogenous toxicity) in every disease. If auto-intoxication is present, we treat the patient by fasting, purging, etc., within the limits of the patient's strength and tolerance till the symptoms have been stated very clearly in a general way as also in particular for different diseases. This line is called *samshodhan* or *clearing-up treatment*. As an example of this may be cited fasting or purging in some fevers as the first course of treatment. If there is no auto-intoxication, we treat the disease directly (e.g., giving a febrifuge in fevers.) This is called *Samshaman* or *putting down treatment*. Both kinds of treatment are of course done with a clear grasp of the *doshic* derangement, the removal of which is considered the ultimate goal of treatment.

Panchakarma or five methods of samshodhana treatment.

"In this connexion, it is worth while to mention that there are five method

(Panchakarma) of the *samshodhan* or clearing up treatment. They are: (1) *Vamana* or the use of emetics for washing out the stomach. (2) *Virechan* or the use of purgatives with a view to clear the upper or lower bowels. Numerous purgatives have been described to suit various cases. (3) *Shiro-virechan* or the use of errhines to promote the nasal secretions—in diseases of the nose and throat generally, in some diseases of the eye (as glaucoma) and in some forms of intractable headache and cerebral diseases. (4) and (5) *Asthapan* and *Anuvasan* known collectively as *Vastikarma* which comprise the various forms of enemata, known and unknown to the Western science. To enumerate some of these, we may mention (i) *Shodhana vasti* or *Niruha*, made up of medicated alkaline fluids (Kashayas) for clearing out the colon. (ii) *Snehavasti* or *anuvasan*, made up of similar fluid with copious oily substances in it—for clearing out the colon and soothing the pelvic nervous system. (iii) *Pichcha vasti* mucilaginous enemata used as emollients to soothe the inflamed mucous membrane of the colon in colitis and other diseases. (iv) *Brihmana vasti*, or nutrient enemata used not only in extreme cases, where feeding by the mouth is not possible, but also in ill-nourished patients who can take by the mouth. (v) *Bheshaja vasti*, or medicated, enemata—similar to Bromide and Chloral injections in Western medicine. and so forth, hundreds of drugs and recipes are described for use under each of the heads above enumerated. So much indeed was the reliance in *Vasti Karma* in certain diseases that we read: वस्ति चिकित्साधमिति ब्रुवन्ति । सर्वो चिकित्सावपि वस्तिमेकः ॥ "Enemata (Vasthikarma) constitute half the treatment if not the whole treatment as some physicians think."

AYURVEDA AS AN ART

The past and the present.

In the palmy and progressive days of Ayurveda, the fathers of Ayurvedic Medicine were the foremost exponents and all-round practitioners of their times, teaching and practising Ashtanga Chikitsa, 'the eight divisioned therapy', comprehending medical, surgical and other branches included in the term 'Astanga.' To those who are apt to judge the past of Ayurveda by the conditions of the present lack of self-sufficiency—especially in the Surgical field, a description of the striking achievements of the past even in the Surgical line as given in the Encyclopaedia Britannica (Vol. XXII—P. 672—9th Edition) may serve as a useful eye-opener. History has recorded that Medical students from all parts of the world came for post-graduate study to the Medical Faculty of some famous university in India, as the one at Taxilla or Nalanda. The field of activity of our Physicians and Professors of those days was not confined to India but extended from Greece, Persia and Arabia in the West to China, Java and other countries of Greater India in the East. Indian Professors and practitioners of Ayurveda were then warmly welcomed by Royal Patrons in other countries. They practised under Royal Patronage and exchanged thoughts freely with practitioners of those countries. The treasures of Ayurveda were translated into the language of other countries—Persian, Arabic, Chinese, etc.; and a number of remedies of proven utility used by the Arabians, Persians and Chinese were incorporated into Ayurvedic Pharmacopoeia; but due, to various causes—political and others which need not be gone into here, this palmy and progressive period was follo-

wed by dark and decadent days for Indian Medicine as for many other branches of learning and wisdom of India. State-recognition and state-patronage was withdrawn for Indian Medicine and transferred to the Western Medicine of our Rulers. This led to stagnation, obstructed progress, stunted growth and partial functioning from the effects of which Indian Medicine is still suffering; but even under the severe handicaps it has been subjected to, it is Indian Medicine that is still ministering to large sections of our Public especially the rural millions in whose hearts it still finds a place of greatful appreciation and abiding affection.

Examples are not wanting even in recent times to show how treatment of even new diseases could be successfully undertaken by practitioners of Ayurveda, by the application of their fundamental principles of Diagnosis and treatment which have served them well through the ages. When virulent epidemics like plague and influenza first broke out in India some years ago, practitioners of Ayurveda were quite equal of the task of devising, on the basis of tridoshic pharmacology and therapeutics, new remedies which proved at least as successful as the remedies then devised by any other system of Medicine. "Haimadi Panakam" and "Shathadoutha Ghritham," the remedies devised by the late Vaidyaratna Pt. D. Gopalachari for plague, were looked upon as specifics by the Public and used by a large number of practitioners, including Allopathists. Similar was the case with his "Charaka Vati" for influenza. It is not only in respect of new diseases that they have devised new remedies and methods of treatment.

(To be Continued)

Simple Treatment of Common Poisons

By

DR. R. SOURI RAJAN L. I. M. MADRAS.

The word poison, is derived from the Latin word "Potio" meaning a drink, and indicates the method of administration usually as a draught. Any substance either by its absorption into the system or by its chemical action on the tissues injures health or destroys life is called a poison. The dangers of poison and the treatment have been duly considered by the ancient Acharyas and the methods as to how to save ourselves from being exposed to such dangers have been discussed at length as also the treatment when one is affected by Visham. The word visham as it is derived from the root *vis* to pervade, to surround, to penetrate quickly, denotes the quickness of its infiltration in the tissues resulting in their damage, often causing death. Apart from the Theekshana, Ushna, and Rooksha properties its Vyavayitwam the quickness and spontaneity of action, is well denoted by the word visham.

Though certain substances are grouped as visham on account of their concentrated and quick action, every dravyam has got its own poisonous element not conducive to healthy tissues, under varying circumstances hence the subject has got to be studied carefully. There are many factors which would govern the action of a dravyam as a poison such as (1) quantity (2) form or absorbability (3) mechanical mixture (4) chemical combinations (5) method of administration and (6) condition of the body, as habits etc (7)

idiosyncrasy (8) sleep (9) intoxication and (10) presence of other diseases. Depending on these conditions even a non-poisonous substance under certain ordinary circumstances acts as a poison. 'One man's food is another's poison' is an oft quoted saying.

But it should not be lost sight of that poisons cure incurable diseases when administered with proper care and dose and one poison acts as an antidote to another poisons.

Broadly dividing, visha dravyams fall into two categories: (1) Sthavaram: which includes the various parts of a plant as fruit, root, leaf, flower, bark, milk, extract and seeds and metals inclusive of other substances excavated from earth and (2) Janghamam: which includes the various secretions of the animals such as saliva, special poisonous secretions, bile, sweat, semen, expired air, nail, hair, and faeces acting as poisons to other living beings:

Apart from the general and specific treatment for poison caused to be taken orally either accidental, homicidal or suicidal in nature and the treatment of virulent poisons of snakes, scorpion, the symptomatology and treatment of the poison due to insect bites, though not easily indentified, yet clearly classified according to the Doshic vitiation is marvellous as otherwise proper treatment for such cases will be difficult for want of specificity of the poison.

Though 80 types of snakes are described by Susrutha and others and are classified in 5 major groups as Darvikara Mandali, Rajila, Nirvisha, and Vaikaranja.

There is also some description of jathibedam as Brahmana, Kshatriya, Vaisya and Soodra among the snakes according to their colour, nature, living food, and severity of visham, but all these are not of much avail as far as treatment is concerned and much time is lost in investigating these points before we could begin treating him and actually there is no great advantage by such an investigation as all these are grouped according to the dosha that they vitiate, in the system on which alone the treatment is based.

दर्शकः मण्डलिनोः राजीमन्थस्य पञ्चगाः
त्रिधासमासतोमौमाः मिथ्यसेतेत्येकधा
व्यासतो योनिभेदेन नोच्य न्तेदुपयोगिनः ॥

To further facilitate the treatment at different stages of infiltration of the poison in the system the manifestation of the symptoms are described in seven stages or vegas according to the Dhathu and Asaya that is effected at each stage.

1. Dharveekara (the Cobra Variety) vitiates Vatha : and effects darkening of the area around and the spot; Cyanosis and darkening of the whole body, extreme weakness, inability to walk, excessive salivation coldness, sweating, symptoms of shock and slow arrest of breathing, unconsciousness, severe pain on recovery, marked swelling around the area of bite, loss of function of the Indryas (five sense organs) sensory nerve paralysis and finally respiratory and circulatory failure resulting in death.

2. Mandali (the Viper variety) vitiates Pitha and produces marked swelling of the spot of the bite or the whole limb, burning sensation, heat, profuse bleeding per nose, mouth and urethra, sometimes through the eyes and ears also. Eyess become red, gingivitis and bleeding through the gum, and sometimes hypofibrinemia develop.

3. Rajeela-(the Krait variety) vitiates Kapha: and makes the body icy-cold, with slow bleeding from time to time from the bite. Hard swelling marked around the spot of bite without much of acute inflammatory symptoms, excessive salivation, sleepiness, unconsciousness, extreme pain in the epigastric area and around the umbilicus and signs of indigestion are noticed.

Principles of Treatment. The main principle of treatment in cases of poisoning is,

1. Prevention of further infiltration and absorption of the poison into the system including neutralisation dilution etc.
2. Elimination of the poison from the system.
3. Restoration of the system (local treatments, antidotes, increasing the general resistance of the system, Samanam, Agadapanam Rasayanam, Hridayavaranam and the like.

Treatment: In snake poisoning.

1. A tourniquet 4" above the spot of bite immediately after the accident if it is in the limbs.
2. Complete excision of the bitten spot with a small portion of healthy tissue around it.

3. Cauterisation of the wound by hot metal rods except in cases of Mandali variety of snakes.
4. Local application of antidotes to the bite.
5. Blood letting by incision or by leech application.
6. Fomentation to the part by a bundle of Arka leaves.
7. Vishaharilehyam Gr. 5 to be given in betal leaf.
8. Nasyam and anjanam with tankanam fried and dissolved in cold water.
9. External application of a paste of Arka-patram (ripe) hingu and saindhavam each 5 Grs.
10. Jevaraksha pill 1 with a little of cold water especially when the condition is serious and Anjanam with the same pill.
11. Avipathikara choornam Gr. 60 in hot water internally.
12. Mrithunjayavati can be tried as a last measure in some cases.
13. If the patient gets round by these medicines, ghrithapanam (pure purana ghritham—well preserved cows Ghee) or any of the above medicines mixed with ghee or ghee and Honey to be given internally.
14. Administer gold Bhasmam—as makaradhwaja or poorna-chandrodayam in ghee and honey as Rasayanam.

pain at the spot and along the nerve root, swelling and tenderness over the spot sometimes throughout the limb, severe perspiration over the spot and occasionally the whole body, rarely unconsciousness and death.

If the patient is unconscious nasyam and Anjanam with maricham (Pepper powder) stirred in water and filtered, or Aswagandha Patra juice, can be done to get him back to consciousness. Ghee with a small quantity of Saindhavam or Saindhavam dissolved in pure water can be used for Dhara over the spot to relieve pain.

Dhoopanam with Narakesadichooranam. Anjanam with Thinthrini Patraswarasam tamarind leaf juice and saindhavam can be used.

Dasangam pill 3 one every 2 hours or 4 hours in honey or cold water to be given.

After the acute pain has subsided Avipathikara choornam Gr. 60 in Hot water to effect a purge is useful. Lastly blood letting also can be done.

Lootka Visham: Spider poison:—Itching and burning sensation over the spot, eruptions, vesicles and pustules swelling and other skin affections may appear in advanced cases. Severe cases will have fever, swelling all over the body intense pain and local inflammatory symptoms.

1. Nelli ghritham externally can be applied and the same can be given internally $\frac{1}{2}$ a tola B. d. with cow's milk.
2. Avipathikara choornam should be given Grs. 60 internally with hot water.

Scorpion Bite: Clinching symptoms of course with a history of scorpion having stung him are, throbbing neuralgic

3. Tulasi swarasam and Nisachoor-nam mixed can be applied externally.
4. Tulasi moolakalkam $\frac{1}{2}$ a tola in milk can be taken internally.
5. Thanduleeyaka moolam Kalkam externally and $\frac{1}{2}$ a tola internally in milk.

Keeta Visham: (Other unidentified poisonous insects' bites) the signs and symptoms manifested are classified according to the doshic variations into three and the treatment also is on the doshas vitiation.

These insects develop from various putrefacting materials and from the the dead and decaying bodies of various poisonous animals, as snakes, scorpion, etc., and as they are numerous and (individually) are not easily identified, so as to give specific treatment to each of them they are classified into the doshic groups according to the signs and symptoms resulting from their bite are in alignment to the doshic vitiation.

एकचरमेव दोषस्य विद्विषयं प्रतर्कयेत्
तस्य त्रयोपचयः कुपाम्नि परित गुणैरिष्यते ॥

Clinical Findings: In Vata Group: there will be excessive pain, pricking sensation black or dark red-discolouration of the spot, as also the eruptions or patches around it. Further there will be cardiac distress (Hritpeeda) obstructions to free breathing, stiffness of neck muscles, pain in the bones and joints and muscular twisting.

If there is exudation heat, burning sensations, red or yellow discolouration of the eruptions or patches of the colour of ripe dates, quickly suppurating and the ulcer quickly spreading, heat

and burning sensation in the precordial region: pungent taste in the mouth, fever and occasionally unconsciousness it is said to be caused by Agneya or Pittaja group of keeta.

In Kapha Keeta visham the eruptions will be hard and nodular like the ripe fig spreading slowly with little pain and much of exudation and itching sensation. There will be anorexia, excessive salivation running nose nausea and vomiting. The body becomes cold to touch with cold expirations.

Treatment: Fomentation in Vatha Keetavisham, Dhara in pitta keetavisham and Lepanam (application of pastes) in Kapha Keetavisham with Cundlies Kashayams and Pastes of vishahara dravyams or Ksheerivriksha Twak. Thailam prepared with the Kashayam and Kalkam of these barks can be applied externally. Dhooapanam (Fumigation) with Kasayaphadoopam (Human hair, mustard, peetarohini and old Jaggery) to the whole body relieves pain, itching and swelling.

Thanduleeyakam and Trivrith Kalkam or a powder of these with ghee to be taken internally. Dasangam Agadam or Bilwadi Gutika to be taken internally with cold water.

Uchitinga visham: The bites of multipede and centipede, makes the skin thick parhed and cold with haripulation. Some times heat and burning sensation with excessive itching is produced. Thick leniar nodules of the shape of the insects develop on the skin on scratching. The penis becomes swollen and stiff with pain and discomfort. Difficulty in micturition may also develop.

The treatment is as for keetavisham.

Rat-Bite: A definite bite or scatch over the skin, bleeding itching sensation, and swelling of the body are the symptom. In others the urine gets yellow, possibly due to the involvement of liver. In late stages respiratory disorders set in, which usually flares up in cold seasons and winter.

Treatment: Cauterise the wound with a burning rope, hot, iron-rod or acids.

Swarasams of Arka patram, Karpasa patram and Dathoora patram mixed with honey can be applied externally, or pure Arkapatram and Saindhvalavanam ground together can be applied as a paste. Internally Trikatu in Dhanyamlam or cold water can be given. Thanduleeyakamoolakalkam $\frac{1}{2}$ a tola in milk can be given. Ankoladi Vati one pill a dose to be taken in cold water and it can also be applied externally.

Seven drops of Swetarka Ksheeram to be given internally in brown sugar. Avipathikara Choornam $\frac{1}{2}$ tola in hot water.

Dog-Bite: Local symptoms are pain and swelling around the wound. In cases of rabid dog-bite the patient becomes naturally depressed, with excretion of thick roaspy saliva, loss of strength to the neck muscles with the head drooping down and afraid of things like mirror water etc., and on seeing or touching water, cries like a dog and acts like a mad man.

Treatment: Cauterise the wound immediately with hot iron rods or hot ghee and dress with suddha dooroa thailam. Neeli Karanjadi Gudika 1 pill with hot water internally; Ankodadi Vati 2 pills in cold water internally. This can be used externally also. Antirabic treatment is advised as it is compulsory under the public health act.

Horse and other animal bite: There is a wound, bleeding, pain, itching, and burning becoming septic, (dushtavanam). Fever and swelling may develop.

Treatment: Wound to be dressed with any of the above vishahara external application. Neelithailam Vacha, Lodharatwak and Aawagandha made in to a Kalkam in milk to be given internally with milk. Bilwadigutika one T.D. in hot water. Avipathikara Ch. Gr. 60 to 120 in hot water internally.

Cat-Bite: The symptoms are Local wound pain, bleeding and swelling with a nasty irritant discharge with history of cat-bite. In later stages diseases as fever, cough and Kshayam develop.

1. Suddha Doorva oil for external applications.
2. Hingu Kalkam mixed with Bhringarajaswarasam can be used both internally and externally.
3. Neeli Karanjadivati 3 pills daily in hot water.
4. Thrikatu Ch. gr. x with equal quantity of saindhavam to be given internally in ghee.
5. Avipathikara ch. gr. 60 to 120 in hot water.

Human-Bite: Local wound, not healing quickly, pain, swelling purulent discharge are found wound becomes septic and constitutional symptoms as fever and cough develop.

Neelithailam for external use.

Sariba thanduleeyakam and Neelimumlam in milk to be administered internally.

Bilwadigutika 3 pills daily internally.

Avipathikara Ch. Gr. 60 to 120 to be given internally in hot water.

WATER

By

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MADRAS

Introduction

No doubt a discussion about water is strictly within the jurisdiction of Hygiene, but at the same time, as it is one of the important articles of food and a vehicle (anupanam) for the introduction of it comes medicaments within the purview of Medicine.

Water must and does vary in its properties with the source and the nature of the country of its availability.

The different properties of water, according to the source: In September and October, rain water is very good and corrects the 'Three-doshas' while the same rain water between November and March is quite unhealthy and deranges the 'Three-doshas'.

Water from rainstorm and snow checks Pitha, increasing Vayu and Kapha.

Dew on its conversion to water deranges Vayu and checks Kapha, and keeps Pitha unchanged.

Water obtained from the Himalayan snow checks Pitha and increases Vayu. These varieties of water are known as 'Anthariksha' water coming from above as against Anthariksha we have Bauhma water collected in the soil and obtained from sources such as wells and tanks. It is clear from this that water must vary with the country through and into which it flows.

'Jangala' desa-water checks Pitha and increases Kapha.

'Anupa' desa water increases Kapha while 'Sadharana' desa water checks the Three-doshas.

Now let us take the water that is obtained from the source in intimate association with the soil. River water with strong currents is invariably good, while with a slow current is guru; spring water deranges Vayu slightly and checks Pitha; water from lakes and large tanks are nearly the same, deranging Vayu slightly but checking Pitha and Kapha.

Water from waterfalls checks Vayu and Kapha but Pitha is unaffected.

In the case of alkaline well water, it increases Pitha, checks Kapha and Vata Pitha. Surface water checks Kapha and Pitha and increases Vayu. Water from the rains stored in shallow pits is guru and checks Three-doshas.

Water from river bed, if sweet, checks Pitha, and if alkaline increases Pitha.

Surface water, in rainy season, is unhealthy and deranges three-doshas.

According to modern science, (1) Spring, deep well and up land surface water is wholesome. (2) Stored rain water and surface water from cultivated fields are suspicious.

WATER

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Source of good water in various seasons:

Winter: Large tank and lake water.

Rains: Rain water and deep well water.

Autumn: Water exposed to Sun's rays checks Kapha and that exposed to Moon's rays checks Pitha.

Place of water in Dietetics: Water is one of the important anupanams and is one of the many vehicles of medicines. It has such an important role to play that a discussion on water has been taken at the first instance even before the staple articles of diet are taken up for discussion. It should not be prohibited in any case of health and in diseases like Grahani and sopha and cases where mercurials and minerals are prescribed and salt is cut off.

In health: Excess of water is equally bad as not taking any water. Water taken before taking food makes the individual thin, that taken with food makes him moderately stout and if taken after food makes him fatty.

The best method is to take small sips of water several times in the course of a meal.

'The consensus of medical opinion was opposed to mid-meal use of water. "It is better to drink water with meals than between meals." (Barkett's Endocrinology).

In disease: Water should be restricted in acute fevers, certain eye diseases, leprosy and the allied groups of skin diseases, indigestion, dropsy, anorexia, catarrh, certain diseases of the mouth, wasting diseases, diabetes, abdominal tumours, diarrhoea, and piles, because

when excess of water is taken, Pitha and Kapha are excited and act injuriously.

Cold water should be avoided in acute fevers, catarrh, renal colic, and skin disease, after vomiting induced by emetics, in tympanitis; certain derangements due to Vayu and Kapha and during the course of administration of medicines containing fat.

Cold water should be administered in burning heat, diarrhoea, due to Pitha, haemorrhagic unconsciousness, alcoholism associated with fever, jaundice, derangement of blood, Pitha diseases in general lassitude and when food is not properly digested.

Test for good water: It is very cool, free from smell or taste, clear, laghu palatable and relieves thirst.

Bad water: It is oily, full of germs mixed with leaf, vegetables, clay colour, of bad taste or smell, thick, sometimes containing faecal, refuse, covered with leaves thus excluding Sun's rays falling on it.

Rain water collected in shallow pools from winter to spring (4 months) is not drinkable.

Repercussions of drinking impure water: Drinking impure water causes thirst, tympanitis, fever, cough, weakness of digestion, enlargement of thyroid, ophthalmia, and similar diseases.

Sodhanam of water: It is boiled high or exposed to the Sun. Sometimes dipping of hot metal serves the purpose. It is also purified by flavouring it with a little camphor.

Substances like Alum, Lotus, Gold and Pearl are added to it. Straining the

water helps in the removal of the mechanical impurities.

Excretion of water: As it is an essential item in the articles of food and anupanams, an idea as to the time taken for its complete elimination under various conditions is necessary. The time depends upon the nature of the water ingested.

(1) Unboiled Water takes for digestion about 3 hours. (2) Boiled and cooled about 1½ hours. (3) Boiled and hot about ¾ hours.

What are the effects of the boiling water, apart from the purification of the same? What is the attitude of these towards the Doshas? Answer to these questions will show how valuable a part this water plays in the control of the health and preventing disease. Water boiled and reduced to half its quantity checks Vayu while reduction to ¾ checks Kapha. Pitha is controlled by water reduced to a fourth of it.

Bearing in mind the various derangements of the Three-doshas in the different seasons water can be boiled and reduced

in proportion to suit and thus correct the vitiated dosha.

Boiled water taken hot acts as an appetiser and is a digestive, which can be increased by the addition of suitable medicines to the water at the time of boiling.

It induces perspiration, removes excretion, excites secretion (biles) and makes the body laghu. It is therefore good in diseases of the respiratory system as well. It is good in fever with Kapha or Vayu-Kapha, derangements, renal colic and nasal ulcer. It is good in thirst.

The same boiled water taken after cooling regulates the vitiated Three doshas. It is soothing. The cooling should be done out of contact with air, for otherwise during the cool draught, it becomes guru and diarrhoea may start and Kapha will be vitiated.

Lukewarm boiled water when taken at night is good for Kapha and Ama. It is useful in respiratory diseases and fever. The kidneys get flushed better and appetite is stimulated.

DRAVYA VIGNANAM

By

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II. Gunaprakaranam.

After the discussion about the Drug or Dravyam in the previous article, I now proceed to explain how these drugs act on the human system, which action is termed "Gunaprakaranam."

A drug is said to act in the body by virtue of its 1. Gunas or properties either singly or in combination namely (1) "Indriarthams" or the perceptions of the five senses (viz) Sabdha, or sense of sound, sparsa, or sense of touch, Roopa or sense of sight, Rasa or sense of taste, and Gandha or sense of smell. (2) Gurvadi gunas viz., 'Gurutwa' or heaviness-Laghutwa or lightness.

Manda or dull x Tikshna or keen.
Hima or cold x Ushna or hot.
Snigdha or oily x Ruksha or dry.
Slakshna, or smooth x Khara or rough.
Sandra or dense x Drava or liquid.
Mridu or soft x Khatina or hard.
Sthira or immovable x Sara or movable.
Sukshma or subtle, x Sthula or gross.
Visada or clear x Pichila or slimy.

(3) Buddhi, (4) Prayathnanthams namely Sukham or happiness, Dukham or sorrow, Icha or desire, Dwesham or hatred and prayathnanthams or effort and (5) Paradies, namely paratwam, aparatwam, yowkthi, vibhagam, pradhaktwam sankhya, samayogam, parimanam, samskaram and abhasam.

II. by virtue of its rasa contents which are madhura rasa or sweet, amla or sour taste, lavana or salt, katu or pungent, thiktha or bitter and kashayam or astringent.

III. by virtue of its veeryam or potency.

IV. by virtue of its vipaka or the power of action gained by a drug after it has undergone the process of digestion.

V. and by virtue of prabhava or selective action of a drug which is independent of the action as stated above viz. rasa, virya, vipaka, etc.

What is gunam? Gunam or the property of a drug is defined as one that exists in a dravyam or drug in an inseparable way ("Samavaya sambhandam") which is not its action but is the sole cause for its action.

As the action of any drug is dependent upon the extent of existence of these constituents it will be proper to deal with each of them in detail.

Gunas are (1) Indriarthams or the five special senses namely (a) *Sabdham* or sense of sound or hearing.

Sense of hearing is the quality or guna as its resources from the sensory organ, the ear. This quality is more

predominant in drugs of Akasabhutam and is of two types (1) Dhwarirupam or (sound produced by the various instruments such as drums, trumpets etc.,) and (2) Varharupam (sounds produced in the form of syllables)

(b) *Sparsam* or sense of touch the quality that can be noted by the drug on skin. This quality is present in Vayu bhutam and is of three types (1) seetham or cold (2) usham or hot (3) anushnaseetham or luke warm.

(c) *Rupam* or sense of sight is the quality noted by the organ eye by seeing through all the objects existing in the Universe in various colours as black, white, red, brown etc. This is the predominant guna of Tejobhuta.

(d) *Gandham* or sense of smell This quality is the one that is experienced by the nose. This takes its origin from Prithvi bhutam, and is of two types (1) Surabhi or good smell and (2) Asurabhi or bad smell.

(e) *Rasam* or sense of taste is the quality experienced by the organ tongue having its existence in two of the pancha bhutams namely "Prithivi or earth and Appor water. Originally this is "Avyaktha" in nature but got its taste by mixing itself with other Pancha bhutams.

How rasam evolved into the Universe.

Though rasa is pure or swacham and avyakta-rasa or undistinguishable rasa attained its various types of tastes as sweet etc. an coming in contact with other pancha bhutams as earth, water etc. Just like rain water though pure and without any taste as long as it is in the clouds, gets various tastes on coming in contact with earth and air. this rasa evolved by the union of panchabhutams in pairs. These are classified into six types. They are (1) Madhura or sweet (2) Amla or sour (3) Lavana or salt (4) Thiktha or bitter (5) Katu or Pungent and (6) Kashaya or astringent. As the above stated rasas they are not only evolved ones from pancha bhutas but also possess their seats in the seven dhatus which are the pillars of the Human body "*Pancha bhuthamakan thathu*" as the human body is governed by the three doshas namely Vata Pitta and Kapha, which possess their seats in the seven dhatus that bare the body ("*Vikrutha avikrutha Deham gnanthi they vardhayanthicha*") as the three dhatus maintain the equilibrium of the body. We now note some relationship between the six rasas and the five bhutas and the three doshas.

Table showing the relation between Rasas, Bhutas and the Doshas.

No.	Rasams	Bhuta from which they started-	Increase of Dosha	Decrease of Dosha
1	Madhura rasam	Bhu and Jala	Kapham	Vatam, pittam
2	Amla	Bhu-Agni	Pittam	Vatam
3	Lavana	Jala-Agni	Pittam Sleshma	Vatam
4	Thiktha	Akasam, Vayu	Vatam	Pittam Sleshmam
5	Katu	Agni Vayu	Vatham	Sleshmam
6	Kashaya	Bhu-Vayu	Nil	Pittam Kapham

The quality of rasa varies with the quantity of existence of pancha bhutam in it. That means the rasa will increase the quality of its own bhuta by the action of its qualities and vice-versa when used.

(1) *Madhura Rasa* or Sweet taste. Its quality and action. Madhura Rasa is defined as one which can be noted by its stickiness—Vakthranulimpanam (2) by producing a sort of pleasurable sensation on tasting "Sareeranonda janakam (3) Produce life energy and joy (4) Gumminess and (5) affinity for ants

By using this rasa on the human system it produces preenanam to the seven dhatus, or nutrition to dhatus and ojas, i.e. it produces rejuvenation, improves complexion, reduces vatam pittam and visham, relieves thirst, builds up good hairy growth. When used in excess it produces adiposity and kapha like obesity, indigestion, apoplexy, intestinal worms, urinary diseases, cough and enlargement of cervical glands and tonsils, diseases such as gala gandam and gandamala.

Drugs in which madhura rasa is predominant

They are ghee, jaggery plantain, coconut, acroot, kshirini athimaduram, bimbi, honey chinna peechara, pedda-peechara, grapes, sugarcane, laghupan-chamula.

Though madhura rasa drugs in general increase Sleshama and some of them such as old rice and green grams, wheat, honey, sugar and flesh of animals of hilly places will reduce Sleshama and increase Vatam.

II. Alma rasa or sour taste-its qualities and action.

Amla rasa is defined as that which produces excess of salivation, on putting

into mouth with a sense of clearness, shrinking of the eye brows and sourness of the teeth and dantha harshanam.

When used on human body it improves digestion and acts as anulomana. It is a tonic to the heart and restores the normal function of obstructed Vata.

When taken in excess it increases Pitta, Kapha and vitiates Raktham, produces soreness of teeth and early loss of dentine of the teeth, Retardation of early and proper healing of ulcers. The body becomes debilitated and develops a sort of burning sensation all over the body especially in the chest and the throat.

It also produces diseases like Dropsy, Anaemia Jaundice, Eriepalas, and Cataract.

Drugs in which Amla rasa is present.

(1) Amalaki Tamarind Madiphalam Amlavetasam Dadiman and amongst metals silver is supposed to contain amla rasam unripe mangoes, Kapitham Buttermilk, Butter, and aranam also contain amla rasam.

Though amlarasa drugs generally increase Pittam dadima and (Amalaki) act reversely inaction by reducing Pitta and increasing Kapham.

III. *Lavana Rasam* (Salt-taste) is defined as one which produces excess of salivation on putting it into the mouth and develops a sort of burning sensation in-side the jaws. When used on human body it aids digestion and promotes the gliding action of food while passing through oesophagus. It promotes digestion by clearing the sticking food-particles in the gut. It is a good appetising agent and increases taste, reduces Vata and increases Kapha. It aids easy defecation. It relieves constipation by stimulating more Kapha secretions in

the intestine and thus removing the obstructions for Vata passages."

When this rasa is used in excess it increases Pitta and produces diseases like unconsciousness burning sensation, all over the body, premature loss of teeth.

It also presents signs of premature old age such as grey hair, impotency wrinkles over the face and body, baldness, the diseases like visarpam, vata-raktham, leprosy.

Though lavanarasa drugs are generally harmful, to the eyes, rock salt, saindhavalavana, are the excepted one as they are converted into madhura vipaka after digestion.

Drugs in which Lavana rasa is present.

The five Lavanasa or salts Saindhava, Sowvarchala, Krishna, Bida, samudua and out of minerals, lead contains lavana rasam and akshara lavanam such as sadyaksharam, yavaksharam, etc. contain the above said rasa.

IV. Katu rasam. (Pungent taste) is one that produces pungent taste when put in mouth produces burning sensation in the mouth soon after it is put in the mouth and watering both through nose and eyes. It cleanses all the ducts in the body.

This rasa when used in the system produces, Alasaka urticaria and various types of inflammation in the body and excess of salivation and reduces excess of perspiration improves appetite and taste; cures abscess and ulcers and possess; laghu ushna, and theeksa gunas. It increases sukram or sperm and breast milk. When this rasa is used in excess it produces impotency. By virtue of its vipaka it produces moham or uneasiness

in the body, emaciation, excess of thrit dryness of the throat and lips burning sensation in the throat and pain all over the body.

Drugs in which Katu rasa is present.

Asafoetida, pepper, vidangam, Bhal-lataki, Katukam etc.,

V. Tiktarasa or Bitter in Drugs

Tikta rasa when put in mouth, immediately produces clearness of the throat and stimulates the organs of taste, and makes it inert to identify any other rasa. Though it itself is unpalatable one, of its own virtue it stimulates taste. It relieves murcha, itching, leprosy and is a good appetitision and stimulates secretion of breast milk. It elivate Kapham and Pitha is good for mental activities. It dries up the exudations from all parts of the body and also fat, bone-marrow, faeces and urine and causes Vata diseases such as paralysis, headache, convulsions etc.,

When in excess destroys ojas, and dries up breast milk produces roughness to all srothas creates, emaciation syncopes, vertigo.

Drugs in which Tikta rasa is present

They are Chedupotla Kalukaranugu Kuruveru, Sreegandham, Kiratal, Nimba, grandhi-Tagaram, Agum, Kutaja, Aragwada, nisa, mustha, chaga, vasa, pata, apamarga, and out of minerals bronze and iron, and amrita Kantakari vasa, athivisha, and Mahapanchamulams, etc.

All the tiktha and katu rasa drugs are generally increase vata and sukram, with an exception of amrita and chedupatla, amongst tiktha rasa drugs and the katugamongs katu rasa drugs which reduce vata and visham.

VI. Kashayarasa or Astringents and its qualities:—

This rasa is identified by the tongue by the production of numbness and

inertia in the throat and over the tongue and by blanching the vessels in the throat.

When used, on human system, it produces constipation and dryness, and coolness all over the body. It alleviates the vitiated Pitha and Kapha, promotes early healing of ulcers. It vitiates Raktha and Pitha and possesses ruksha, sita and sara gunas. It is a sedative and an astringent to the body and dries up any kind of exudation from any part of the body.

When used in excess, it produces dryness of the mouth, flatulence emaciation impotency and obstruction to the srothas in the alimentary canal. It also produces diseases like facial paralysis, hemiplegia and other types of vata diseases.

Drugs possessing Kashayarasa are thriphala khadira, honey, the five ksheeri trees, tender kapithafruit, date fruit, mrinalam, kamalam kumudini and among the minerals pearls, premala and rasanjanam.

Drugs of Kashayarasa generally are constipative but haritaki is the one exception which produces purging when used on human system.

Various types of Rasa and their uses.

After analysing the properties and composition of various rasas mentioned herein our Acharyas have enunciated that the properties and actions are more potent and intensify with the number of rasas going into combination of a dravyam. After a thorough investigation of the actions of rasas on dhatu and doshas the rasa combinations were found to be 63 groups, as one rasa combinations, two rasa combinations, three rasa combinations, four rasa com-

binations, five rasa combinations and six rasa combinations. They are:

(1) Eka rasa combinations or Single rasa combinations.	6 annas. Madhura group 6 Amala group etc.,	
(2) Dwirasa combinations. (combinations of 2 rasas in each.	15 as.	15
(3) Three rasa group containing 3 rasas in each combination.	(20 as) in Madhura group 1 in Amla group. 6 in Lavana group. 3 and in Tiktha group.	1 6 3 1
	Total.	20
(4) Chathurrasa combination. (combination of 4 rasas.	15 as in Madhu 10 combination..... r in Amla combination. 4 In lavana	10 r 4 1
		15
(5) Pancharasa combination (5 rasas in each combination.)	(6 as.) Madhura Amla (combinations. 5 Excluding Kashayarasa	5 1
		6
(6) and Shadrasa combination (6 rasas in one group.)		1
	Total.	63

The above stated rasa combination is better explained in the next slip 12 A) X mark in the tabular form. It is stated that one must be well versed with these enumeration about the rasa combination so as to become an eminent ayurvedic practitioner which are embodied in the 7 dathus which are like the

pillars of a house and as the above said rasas in combination possess specific capacity of reducing the diseases by controlling the three doshas by their inherent qualities.

Tabular form showing rasa combination groups.

Statement showing the Rasacombination.

I. Eka Rasa Dravyams. 6.

1.	Ma	0	0	0	0	0
2.	0	Aa	0	0	0	0
3.	0	0	La	0	0	0
4.	—	—	—	Thikata	—	—
5.	—	—	—	—	Katu	—
6.	—	—	—	—	—	Kasha.

II. Dwirasa Dravyam 15.

1.	Ma	A	—	—	—	—
2.	Ma	—	L	—	—	—
3.	Ma	—	—	T	—	—
4.	Ma	—	—	—	K	—
5.	Ma	—	—	—	—	Kasha
6.	—	A	L	—	—	—
7.	—	A	—	T	—	—
8.	—	A	—	—	K	—
9.	—	A	—	—	—	Kasha
10.	—	—	L	T	—	—
11.	—	—	L	—	K	—
12.	—	—	L	—	—	Kasha
13.	—	—	—	T	K	—
14.	—	—	—	T	—	Kasha
15.	—	—	—	—	K	Kasha

III. Thiri Rasa Dravyams 20.

M	A	L	—	—	—
M	A	—	T	—	—
M	A	—	—	K	—
M	—	—	—	—	Kasha
M	—	L	T	—	—
M	—	L	—	K	—
M	—	L	—	—	Kasha
M	—	—	T	K	—
M	—	—	T	—	Kasha
M	—	—	T	K	Kasha
—	A	L	T	—	—

—	A	L	—	K	—
—	A	L	—	—	Kasha
—	A	—	T	—	Kasha
—	A	—	T	K	—
—	—	L	T	K	Kasha
—	—	L	T	—	Kasha
—	—	L	—	K	Kasha
—	—	—	T	—	Kasha

IV. Chaturra Dravyams. 15.

1.	M	A	L	T	—	—
2.	M	A	L	—	K	—
3.	M	A	L	—	—	K
4.	M	A	—	T	K	K
5.	M	A	—	—	—	K
6.	M	A	—	—	K	K
7.	M	—	L	T	K	—
8.	M	—	L	T	—	K
9.	M	—	L	—	K	K
10.	M	—	—	T	K	—
11.	—	A	L	T	—	—
12.	—	A	L	T	—	Kasha
13.	—	A	L	—	K	Kasha
14.	—	A	—	T	K	Kasha
15.	—	—	L	T	K	Kasha

V. Pancha Rasams. 6.

1.	—	A	L	T	K	Kasha
2.	M	—	L	T	K	Kasha
3.	M	A	—	T	K	Kasha
4.	M	A	L	—	K	Kasha
5.	M	A	L	T	—	Kasha
6.	M	A	L	T	K	—

VI. Shadrasa Dravyams

1.	M	A	L	T	K	Kasha
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Summary.

Eka Rasa Drvya Rasamulu	6
Dwirasa Drvyamulu	15
Thirasa Drvyamulu	20
Chaturasa Drvyamulu	15
Pancha Rasa Drvyamulu	6
Shadrasa Drvyamulu	1

Total ... 63

N. B.—(1) M or Ma to represent Madhura Rasa.
 (2) A „ to represent Amla Rasa.
 (3) L „ to represent Lavana Rasa.
 (4) K or Ka „ to represent Katu Rasa.
 (5) T „ to represent Thiktha Rasa.
 (6) Kasha „ to represent Kashaya Rasa.

II. Gurvadi gunas.

Guna or the property is in reference to the fundamental properties or general qualities specifying the Physiological effects of drugs as stated by Dr. Venkataswamy, M. B. B. S., F. I. M. Professor, College of Indigenous Medicine in his statements. He said that the groups refer mainly to the digestability of the substance as to whether it is heavy of digestion or otherwise. They are 20 in number.

- (1) Guru, or heavy-ness.
- (2) Laghu or light-ness.
- (3) Manda or dull.
- (4) Tikshana or keen.
- (5) Hima or cold.
- (6) Ushna or hot.
- (7) Snigdha or oily.
- (8) Rukhsa or dry.
- (9) Slakshna, or smooth.
- (10) Khara or rough.
- (11) Sandra or dense.
- (12) Drava or liquid.
- (13) Mridu or soft.
- (14) Katina or hard.
- (15) Sthira, or immovable.
- (16) Sara or movable.
- (17) Sukshma or subtle.
- (18) Sthula or gross.
- (19) Visada or clear.
- (20) Pichila or slimy.

Viryam or Potency of a drug is defined as the power which by existing itself in a drug aids its action in accordance with the rasa, guna and vipaka. A drug is said to be inert when its virya is lost. Many versions are put forward by many experts in regard to its classification.

Susruta school of thought opines that Viryam would fall into 8 types, as Mrdu, Tiksha, Guru, Laghu, Snigdha, Ruksha, Ushna, and Seetha. This School of thought derived Viryam from

Gurvadi gunas. Vagbahthacharya propounded a reorientation and established his theory of classification, which is only two varieties in veeryam Vushna and seetha. These arguments are given in fora.

He concluded the above theory by saying that as the universe is governed by the Sun and the Moon which are the seats for heat and cold, and as the gehaprakriti also is being governed by Pitha and Kapha which represent Soma and Surya Viryam can only take two forms. He also said that as all the eight veeryams are given in the twenty gunas and as they are not in any way different from these they can be safely ignored and be concluded as being only two. Charaka who was the foremost Scholar also but more towards vagbhata but accepted both the theories.

Viryam has got a specific capacity of excelling the properties of a dravyam gunam and vipakam at times and acts independently. (ex: Mahapanch-amulam, contains properties of increasing Vata by virtue of guna and vipaka it acts as Vathahara by virtue of its viryam.

The actions of Viryam :—

1. *Ushna Viryam* :—Produces rubbing sensation, thirst, fatigue perspiration, burning sensation over the body, promotes early digestion and reduces Vata and Kapha.

2. *Sitha Viryam* :—Produces pleasure, satisfaction, and relieves especially diseases of Raktha and Pitha.

Vipakam (or the action of a drug after it has undergone): digestion and assimilative transformation) is the change that occurs at the end of digestion, to the food taken which is mainly dependent

on the rasas. On this state the poshy-arasas which are supported to exist in the body even from the time of fertibisation come into play and absorb their shares of assimilated and digested anarasa or chyle by three principles of absorption or nayam namely Kedarakulya, Khalakapothale, Ksheea Dadhis nayams which are explained in Charaka.

Classification of Vipaka :—There is much controversy about the vipaka classification. It is classified in 3 groups viz., Madhura which form from madhura rasa and lavana rasa 2. Amla from amla rasas and 3. Katu vipaka from tikshtha, katu and kashaya rasas respectively by Vagbhata school of thought which is based on rasas. But Susruta differed from him and stated according to guna theory as guru and stated that there can be only two vipakas namely madhura and katu, madhura rasa having guru guna predominate forms madhura vipakam and katu vipaka being laghu guna predominant. He discarded amla vipaka saying that it is not possible to exist because of the given reason below 1 being false notion about amla which is supposed to come when appetite or the jatagni impaired and pitha vitiated and appeared as if the food taken in has been transformed into Amla vipakas Susruta also stated that vipaka not only forms from gunas but also according to the bhuta composition of both rasa and the dravyam. He said that drugs of prithvi and app-bhuta in origin transforms into madhura vipaka and tejas vayu, akas bhuta drugs transform in to katu vipaka.

But all the ancient rishis have agreed that vipaka is the end state of food at the time of digestion. Yet another view states that all types of food transforms first into madhura vipaka then into

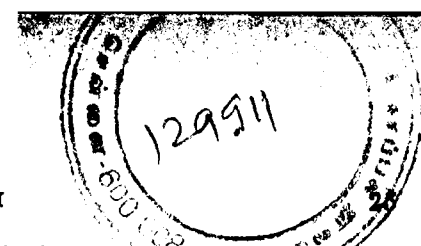
amala vipaka and lastly into the katu vipaka which suits even to the modern consumption about digestion and assimilation salivary digestion, gastric and intestinal digestion. Charaka stated as three vipakas.

The qualities and action of vipakas: All the Madhura vipaka drugs act as diuretics and purgatives and increase Kapha and sukra and semen and contain guru-guna, Amla vipaka drugs as diuretics and purgations increase pitha katu Vipaka drugs bind up bowels and reduce urination and increase vata and reduce sukram. Amla and katu vipaka drugs act as laghu.

The relation between vipakas and thridhoshas :—Madhura vipaka drugs increase Sleshma and reduces Vata and Pitha, amla vipaka drugs increase Pitha and reduces vata and Kapha and katu vipaka drugs act as Vata increasing and Pitha Kapha reducing Prugs. The action of a drug by virtue of its vipaka though generally agrees with the action the rasas contained in it are independent at times by differing in action.

Prabhavam :— (or the selective action of a drug) as defined by Chakrapanithe Commentator for Charaka Samhita is the specific action of a drug which is independent from the actions of rasa, guna virya, and vipaka. That means, two drugs though they are identical both in their rasa guna virya and vipaka composition, differ one from the other in their action (e.g.) Danthi and Chithrakam or Croton oil seed and plumbago. Zeylanica root though contain all contents equal to that of croton oil seeds are drastic purative whereas the other only differ in action which is explained only by the virtues prabhava action.

Vichithra and samana prathyarabdha :— If the Bhuta composition of the drug



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and the butha composition of the rasa that exist in that drug correspond one with the other that drugs knowu as Samanaprathayarabda drug and if they differ and opposite it is known as Vichithra prathayarabda drugs (e.g.)

Karma Prakarana:-Karma is defined as the action exhibited by a drug obeying the properties of the rasa guna virya vipaka and prabhava contents of it. It is in other words known as the therapeutic actions.

The Karma or the therapeutical action is explained in 5 ways. they are

- (1) Doshahara Karmam.
- (2) Doshakara. "
- (3) Rogahara. "
- (4) Rogakara. "
- (5) Deepanadi actions (24).

each will be explained in detail below.

SAMSAMANAM

I. **Depanadi 20 karmas.** Samsamanam is one that is capable of setting aright the three doshas when they are (vishamam) either produced or increased from their normal state is called (Samsodhana quality. This quality is present in drugs like Guduchi.

II. **Anulomanam.** The power that is responsible for digestion and assimilation for smoothing the faeces and promoting gliding (vata) movements to expel the faeces in the guts. Ex. Harithaki.

III. **Sramsanam.** Is the power that expels the malas which are stick to the guts from Koshtham without digesting them. Ex. Aragwadam.

IV. **Bhedanam.** Is the power which expels the malas in the Koshtam which are constipated and hardened by either

as they are or by splitting them into parts (Katukarohini).

V. **Rechanam.** Is the power that expels the faeces that is in the intestines either in the form of digested or half digested state by absorbing the fluids in the intestines.

VI. **Vamanam.** The power that expels either Sleshmam or Pitha or both by way of mouth by forcing through (Ex.) Madanaphalam.

VII. **Sodhanam.** The power that expels the accumulated malas in the body either by way of mouth or by the rectum (Devadaru).

VIII. **Chedanam.** Is the power that clears or scraps the doshas by cutting away the stuck up malas and expels them. (Ex.) Sharamusu and Alkalies.

IX. **Lekhanam.** The power that is capable of scraping the doshas and malas from body by drying them. Ex. (honey)

X. **Grahi.** The power that improves digestion by absorbing the fluids in Amasaya and digests Ama and binds up the mala or faeces (Ex.) Jeerakam,

XI. **Sthambhanam.** Is the power that is responsible for constipating the bowels ("Sthambhanam") by helping to increase "Vata" by virtue of having asringent or Kashayarasa; Ruksha and Sitagunas (Ex.) Brahaty.

XII. **Rasayana.** Is the power or guna that prevents premature oldage due to disease and promotes new vigor and vitality (Ex.) Amruta, Bengal gram, Guggulu and Haritako.

XIII. **Vajeekaranam.** Is the power or guna that promotes or increases the

sexual desire in men. (Ex.) Nagabla, Vidarikandam, etc.

XIV. **Sukralam.** Is the power or guna that increases the sperm or sukra in the body. (Ex.) Aswagandhi, Musalikandam.

XV. **Sukshmam.** The power or guna which spreads even through the minutest spaces in the tissues of the body. (Ex.) Rock salt, castor oil.

XVI. **Vyavayi.** Is the power or guna with which it spreads all over into tissues by virtue of its prabhava and then digests there itself. (Ex.) Opium and Ganja.

XVII. **Vikaji.** Is the power or guna which separates ojas from the dhatus and make the body incapable of moving by debilitating and disabling the joints. (Ex.) Kramukam, Kodravam.

XVIII. **Madakari.** Is the power or guna which by virtue of Tamoguna destroys Budhi or intelligence and promotes "Madam" by spreading "Tamas" all over. (Ex.) Lady, Arrack

XIX. **Pranaahara.** The power or quality that is capable of extingting the life virtue of its having the qualities

"Vzavayi, Vikasi, Sukshman, Chody and Madakari," and being Agniya in nature and yogavahi (Ex.) poison.

XX. **Pramathi.** The power which is capable of producing watering through nose, eyes and mouth by virtue of its Veeryam (Ex.) Maricham Vacha.

XXI. **Abhishyandhi.** Is the quality or power which by virtue of having stickness and produces heaviness or gowravam to the body and witness by obstructing the "Rgavaha srothas", or duct (Ex.) curds.

XXII. **Depanam.** Is the power or quality which promotes appetite or increases "Jataraginy", without digesting the food taken in. (Ex.) "Satapush-pabeejam".

XXIII. **Reachanam.** The power or quality that can aid proper digestion without increasing Jataragni or without stimulating appetite. (Ex.) "Nagakesaram".

XXIV. **Deepanapachanam.** Is the power or quality which aids to proper digestion and assimilation and increases appetite. (Ex.) "Chitrakam, Nagara Sonti".

Kshaya Kasam in Children (Chronic Cough)

BY

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Diseases of the lungs occur almost as frequently in children as in adults. Some chronic lung conditions present pathological and clinical pictures different from those in adults.

1. *Pulmonary Tuberculosis*:—Tuberculosis is a chronic infectious disease, caused by the Tubercular Bacilli. The pathological and clinical features of the tuberculosis of the lung in children present different pictures from those in adults. The infection is more frequent in the first two years of life; it is rare during the school going age and again common at puberty.

In children, pulmonary tuberculosis is usually a lymph node infection. The primary focus in the lung is most commonly in one of the lower lobes and at the periphery of the lungs, very rarely it may be situated in any portion of the lung, in contrast to the secondary lesion in adults in which the focus is at the apex. The primary focus is generally single and composed of encapsulated caseous matter. The regional tracheo-bronchial lymph glands are infected from the primary focus and undergo caseous changes. The primary focus is quite harmless and usually heals by calcification, but in the first two years of life, it spreads and involves the lung substance (Parenchyma). Similarly, after the first two years of life, the infected tracheo-bronchial lymph glands heal by calcification and even by ossification. During this

time, the prognosis is worse, as the caseous glands may rupture into a bronchus infecting the lung. But direct infection of the lung by this process is uncommon.

The immediate causative factor of the tracheo-bronchial form of tuberculosis is from the infection by the tubercle bacilli through the air passages. After extensive studies, it was found that about 80% of children suffering from this form of T. B. come from the families in which there were open cases of pulmonary tuberculosis. In a small percentage of cases where no sources of infection could be detected in the family, such source is often traceable to the attendants of the child as nurses or some contact in the school. Hence close contact with some open cases is necessary for development of pulmonary tuberculosis in childhood. The duration of contact shows wide variations, in some cases it may be only a few months, but in tracheo-bronchial type of the tuberculosis it is about 4 years. As conceived from the thrush pathology, the important circumstances and therefore the pertinent causes for the flare up of such of those latent conditions, are langhanam, irregular meals and at irregular times and similar circumstances that render the bodily resistance below par and wasting starts.

The conception of the decontrol of the nervous mechanism in the co-ordination with the digestive and metabolic processes, resulting in a metho-

dical wasting reduces the defence of the body *Premonitory symptoms*: Rarely this is cognizable as they remain latent till there is a flared up state appreciable. Ill intake of foods, gradual emaciation with no known cause and vomiting.

Adult type of Pulmonary tuberculosis in children.

The adult type of pulmonary tuberculosis in children is rare, but it becomes more common during adolescence. The site is usually the apex of the upper lobe, some times it may be in any portion of the lung. The pathology of the lesions is the same as that in adults, i.e. the organism is first inhaled into a small bronchiole and there it penetrates the mucosa, where the reaction to its presence leads to the formation of a tubercle. Thus undergoes the ordinary sequence of changes, caseation and eventual healing by calcification and fibrosis or less commonly, liquefaction and discharge of its contents into a bronchiole to form a small cavity. A gradual spread of infection from a primary focus into neighbouring lung tissue, such as takes place in the adult form of the disease and leading to extensive cavity formation is quite unusual in children. Secondary infection, is common and sufficient immunity has not developed as the result of the lymph-node infection and this adult type of pulmonary tuberculosis develop as the result of reinfection by the tubercle bacillus due to exposure to an open case. It was found that the duration of contact necessary for this adult form of tuberculosis to develop is somewhat longer than in the case of tracheo-bronchial form of tuberculosis. The sputum may show the presence of the tubercle bacillus. The prognosis of the disease is nearly the same as in adults: but in majority of cases the disease remains latent and symptomless

in adolescences to be activated in early life. In latent cases there will be no fever, or loss of weight and the physical signs in the chest are indefinite or absent. In a minority of cases, definite signs and symptoms are present such as fever, loss of weight, impaired percussion note at the apex and presence of rales. In such cases radiological examination of the chest is of great help. Tuberculin test is also of additional use. But in non-tuberculous fibrosis of the lung (any allergic reactions which some times develops in the lung surrounding a primary focus, giving fluffy x-ray shadow which slowly resolves as the child recovers, but leaving in its centre the hard well defined shadow of the calcifying primary focus) gives an x ray picture some what similar to those obtained in the latent cases. The history of contacts and the tuberculin test evidences are in favour of diagnosis.

Predisposing Causes.

1. Malnutrition, lack of vitamins A and D, lack of sunlight, over-crowding and bad hygienic environments are important predisposing factors. The pulmonary tuberculosis is most common among the children of the poorer classes. With the improvement of dietary and of hygienic conditions, the prognosis becomes much better and the tendency is for healing with calcification.

2. Previous attacks of measles, whooping cough, bronchopneumonia are the important factors for P.T. in children. These may sometimes give rise to bronchiectasis and non-tuberculous pulmonary fibrosis and quite often wrongly diagnosed as P. T.

Clinical Features and diagnosis. The clinical features and diagnosis of the tracheo-bronchial tuberculosis in children is fraught with difficulties as these symptoms are usually slight or may be

absent. The child is usually well nursed and in good health. There is no temperature, no deformity of the chest or any respiratory excursions to suspect the lung disease. Sputum is negative for T. B. but the cough may be of a brassy character. Paravertebral areas of dullness is often indefinite, bronchial breath sounds are audible as far as the 6th thoracic vertebra instead of at the 2nd. These sounds increase when is no enlargement of the tracheo-bronchial lymph glands and absent when they are enlarged. The breath sounds and vocal resonance may be normal. In a small number of cases, there may be pallor, failure to grow, fever, and loss of appetite. Presence of enlarged glands in the axilla is of definite help in diagnosis. Since this disease is symptomless in children, it is necessary to investigate all cases in contact with proved open cases of pulmonary tuberculosis.

There are two reliable methods.

1. One is Radiological examination of the chest, both in anteroposterior and lateral planes to get the enlargement of tracheo-bronchial lymph glands but it must be differentiated from a foreign body.

2. Intracutaneous Tuberculin (Mantoux) test is of great help but it is not absolutely conclusive about the activity of the lesion. A negative reaction means that the child is not suffering from tuberculosis. A positive reaction means either that the child has active tuberculosis lesion or that the lesion is now healed. The degree of the reaction is of help in determining the activity or otherwise of the lesion. If the reaction is severe, it is a strong evidence for the infection is still active and not healed.

The tracheo-bronchial glands may rarely burst through their capsules into

an artery or a vein, giving rise to rapidly fatal form of tuberculosis usually of a meningitic type.

Prognosis. The mortality rate, of tuberculosis in tracheo-bronchial glands is greatest during the 1st year of life. In the 2nd year, though the mortality rate is still high it is less than in the 1st year and there is more tendency for healing. After the 2nd year of the life, the mortality rate drops markedly and healing by fibrosis is the rule.

In the adult form of pulmonary tuberculosis in children, the prognosis of the minority of cases that are progressive is the same as in adults. In latent cases, that are in the majority, the immediate prognosis is good, but it is likely that the disease will be reactivated in early adult life.

Clinching sign and Symptom are constant catarrh of the nose, hoarseness of voice, disgust for food, headache pain in the sides of the chest, fever, general debility of the body.

Difficult to cure. If there is not much emaciation, as may be evident from the presence of wasting in the muscles, the prognosis is good, even if the Ekadesa symptoms are present.

Progressive wasting despite good intake of food that is nutritious, weakness, diarrhoea, oedema in the scrotum and the abdomen are some of the fatal symptoms. While disgust for food, dyspnoea at rest and painful but copious discharge of sputum are also equally of grave import.

Tuberculosis is a more preventable disease than a curable one. Sunlight and fresh air are inimical to their growth. So,

these should be utilised to the utmost. This consists of two methods. One is public and another is private. The former consists of improving the general sanitation in theatres, factories, and schools etc and opening up new parks and gardens and also providing receptacles for sputum in all such public places. The indiscriminate spitting in streets, public places, conveyances etc should be prevented.

The boys and girls are to be advised to observe regularity in their diet, sleep and strict cleanliness in their habits. Bathing at least once a day, wearing clean cloths after bath, washing their cloths if they are dry, sitting for food soon after their bath, without attending to any other work, cleaning their teeth and massaging their gums regularly twice a day, gargling the mouth with water as often as possible, taking oil baths preferably twice a week, and taking diet regularly. Preferring fruits as tiffins to other stuffs (as these contain vitamins and also act as laxatives taking exercise in open air avoiding biting nails by teeth, greeting friends with folded palms in preference to shaking their hands, going to bed early and getting up early next morning. The school authorities should arrange for inspection of school children, washing the school furniture once a week and varnishing them once in six months. The buildings should be white-washed at least once in a year, and granting licence to fruit-sellers in the school premises but not to coffee hotel keepers.

Segregation of patients suffering from advanced pulmonary tuberculosis and serious attempt for reduction of fly nuisance in the houses should be kept in mind. Regarding private measures, light and air increase resistance against the disease. Bed rooms and sitting

rooms should therefore be kept open. Fruits containing vitamins should be taken. A consumptive should not marry. A consumptive mother should not kiss or suckle her baby and avoid further pregnancies. A change of occupation from indoor to outdoor life is useful. The consumptive should spit in a vessel containing a disinfectant and the spit should be burnt or buried safely. His vessels and cloths should be kept clean and separate. Wet cleaning of rooms, instead of dry cleaning should be insisted upon.

The diagnosis of tuberculous infection in its incipient stages may be regarded as a means of preventing the more severe forms of the disease so long it is confined to a primary lung focus and involvement of nearby glands, the recovery under treatment may be expected. In this connection the importance of phlyctenular conjunctivitis and erthema nodosum, two conditions often signify a recent infection with tuberculosis.

A wide trial has to be given as a method of immunising children by giving them small doses of a vaccine specially prepared with a virulent bacilli first introduced by Calmette and Gwerin (B. C. G. Vaccine)

TREATMENT-CURATIVE

The principles of treatment are the same for children as for adults. A combination of rest and fresh air are the two essentials when the child has been infected by a phthisical adult, further contact must be prevented.

With regards to rest, the child should be nursed in bed all day. The temperature and pulse rate should be noted daily, and the weight should be taken be taken once a week. The temper-

ature, pulse rate and increase of weight gives the progress of the child. The sedimentation rate of red cells once in a fortnight should be estimated. If the rate of sedimentation is above normal i.e. 10 m.m. in one hour the infection should be regarded as active. As long as these pulse, temperature and sedimentation, rate are abnormal, the child should remain in bed-until they are normal for a month.

Then the child is gradually allowed up and light exercise is encouraged but it should not fatigue. Fresh air is of almost as much importance as rest. The child must be nursed in a sunny room, with open windows. Direct sunlight is of great benefit when the fever has subsided, but it may be quite exhausting when the fever is on or it may prolong it. The air at the seaside and the mountain air are of great value to the affected children. The sanatorium treatment for a tuberculous child is an ideal one, if the parents can afford to get it. In the convalescent stage it is better to keep the child in a suitable locality with healthy adult.

The diet should be simple, nourishing and in proportion to the appetite. The child should not be forced to eat more than what he wants, when the appetite is poor, the following mixture should be given five minutes before meals.

R/
Sodii Bicarb gr. V
Tr. Nucis Vomicae mii
Infusum gentianae compositum

Milk, eggs, butter and cheese should form a regular part of diet. A tea spoonful of codliver oil and malt extract may be given after meals. Calcium and suitable preparations like Syr. Calci lactophosphatis in teaspoonful does three times a day gives a lot of help.

In the early stages when the cough is troublesome the following mixture should be given for a child of two years and above.

R/
Tr. Camphorae campositae m x
Syr. Totutamim m x
Syr. scillae m x
Glycerine m x
Add Aqua m x

When the respiration is wheezy and the x ray shows the pulmonary collapse, then the bronchial obstruction due to granulations and caseous material has to be removed by careful methods, (Hybronchscopy). Then the air ways get clear and the affected portion of the lungs usually expand within a few days. The prolonged collapse and the subsequent bronchiectatic changes may be avoided.

(To be continued)

Glimpses in Ayurvedic Surgery

By

AYURVEDACHARYA DR. M. VISWESWARA SASTRY, H.P.I.M.

Introduction to Ayurvedic Surgery

It is accepted on all sides that the Ayurvedic physician of Ancient India practised surgery, for the benefit of the suffering. The fact that it was studied in those times, both as a science and as an art, that it was developed in course of time, and that it had been the basis for the further development of surgery which has now taken the name of Modern surgery cannot be denied. The very fact that surgery or salya-tantra as it is called in Ayurvedic Literature, is accepted as one of the branches of Ayurvedic treatment which testifies the scientific classification, adopted by the ancient physicians.

Susrutha, defining salyatantra, says that it is the branch of medical science which deals with the methods adopted to remove, from the body, any foreign body or bodies such as hair, fragments of stones or sticks, dust, iron, or bone, nails, clotted blood or condensed pus. The removal, with instruments, of a dead foetus is also included in this, not excluding the safe delivery during parturition of cases of abnormal presentation handling of instruments, the use of ksharams (caustics) application of fire (cautery) with the knowledge of their principles come under this branch.

This itself will clearly tell us the Scientific outlook, our ancestors and the propagators of Ayurveda, held in respect of diagnosis and treatment. It

is also, beyond doubt, a fact that surgery in those times was brilliantly practised as to set an example to others to adopt. The history itself tells us how this branch along with other branches of knowledge was taken by other countries.

This was of course the condition of Indian Surgery in those palmy and prosperous times of Ancient India. And there is no use, as we all know, in praising the past glory of our Science. There is no doubt that the Modern surgery has developed now to an incomparably great extent. This present condition of Modern surgery as compared to Ayurvedic surgery to-day, may not stand to comparison. But this fact should not be taken to cry down the usefulness of the methods of Ayurvedic surgery. Both the physicians of modern science as well as the heads of *Institutions of Indian Medicine*, seem to think that this particular branch of Ayurveda can logically be replaced, by Modern surgery.

Not only we do not decri this suggestion but also support the stand and that to a certain extent, as the practitioner going out has to 'deliver goods' which can be done only from the practical training they would have had. It is not got by the mere reading of books and the methods. We do not deny the fact that they are not many who practice the methods as described in those books, today. The

reason for this is obvious, be it political religious or circumstantial.

This, however, should not give room for minimising the importance of the principles enunciated in Ayurvedic surgery. It is often thought, it is only the result that is taken into account which no doubt can be better appreciated and obtained by adopting the 'replacement, method'. But where does all this lead to? The practitioners of Indian Medicine are trained to practice Indian Medicine on the principles of the *thridosha* *Siddhantha*. To an Ayurvedist it need not be said that *thridosha* theory is the bedrock of science and the line of treatment chosen, and the medicines and diet etc., adopted are all based on the same theory. If by adopting modern surgery, means only the adopting of the art, we have no complaint. But if it is wholesale replacement, pushing the *thridosha* theory to the background, it cannot fit in well. If it is considered that certain methods of antiseptic and antibiotic principles are more demonstrable and really beneficial for being adopted, they can indisputably be taken. But the point to be remembered is they require to be interpreted in terms of the *thridoshas*. Otherwise it will be like an artificial leg, set to a lame person, which may perhaps help him to stand but not to walk or trot.

A study of the various intricate methods of Ayurvedic surgery shall I am sure, convince about the adaptability of this method i.e. the art of surgery with the science of Ayurvedic surgery.

Origin of Ayurvedic Surgery: It is a known fact that any science develops

as a result of past experience taking the useful part and casting away the failures. This is the common source of knowledge in any part of the Universe. Such is the case in India as in all other countries with the creative spells and healing mantras which preceded the science of healing methods as we now have as methods in medicine. The first man for giving us such a method, in India, was a priest. He was one *Bhisak Atharvan*, who held a superior position of a surgeon, to the society at large of the then times. During the days of warfare, the usefulness of these surgeons were of laudable nature. This we find described in the *Rig Veda* where amputations, enucleation of injured eyes, withdrawal of foreign bodies. Such was the performance of the surgeons of yore though some of the feats of surgery may sound incredible.

The story of the progress of Ayurvedic surgery is long and interesting but it must suffice here to maintain that with the return of peace, the small Aryan settlements, grew in number and prosperity and the rich Aryan nobles now travelled in stately carriages and as there were constant accidents there were a class of surgeons who extensively devoted themselves to the treatment of injured animals. The surgeons, now no longer required in camps and on battle fields, had to attend on the rich ladies at baronial castles during parturition. The (magic) doctor (*Bhisak Atharvan*) who could assuage fever and concoct tonic portions was held as the greatest of them all.

(To be continued)

A Valuable Research Work

The following letter relating to a promising work of research on the preservation of Aqueous Extracts of Drugs (*Kashayams*), Butter, *Mamsa-rasam*, Syrups etc., in their natural state by the use of *Trijatakams* (cloves, cardamomums and cinnamon) and long pepper, has been sent to us by Dr. N. Hanumantha Rao, L. I. M., a Member and Director of the Madras Provincial Indian Medical Practitioners' Co-operative Pharmacy & Stores, Ltd., Adyar, Madras. It has been sent to us for investigation together with a sample of the preparation, and a report of experimental work already done. The sample has been sent to Col. R. N. Chopra, Director, Drugs Research Laboratory, Kashmir, with the note from Capt. G. Srinivasamurti, printed after Dr. N. Hanumantha Rao's letter [Editor]

It has been baffling the practitioners of Indian Medicine, to stock and dispense decoctions of herbal drugs (*Kashayam*), *Mamsa rasams*, and proteid food⁸ like egg albumin yolk etc., due to their rancidity and decay from 2nd and 3rd day of their preparation.

It is neither economical nor convenient to prepare these daily for dispensing purposes.

Of late the Madras Provincial Indian Medical Practitioners' Co-operative Pharmacy & Stores, Ltd., Madras, has decided to solve this problem, and requested me to find out means towards this, and I am instructed by them that my work should be based on the lines of Indian Medicine.

So, in my preliminary study of this subject, I am convinced that a preser-

vative should have the properties to stop the bacterial growth and fermentations.

My attention is drawn to the fact that to many of the preparations of Indian Medicine "*Prakshevadravyams*" belonging to the class of *Sandhana* substances, such as cloves, cardamomum, and cinnamon (the *Trijatakams*) and others with similar properties, are added for preserving the Medicines.

Later I prepared a distilled extract of this group along with long pepper by the *Arkam* process of Ayurveda. This will be demonstrated in the meetings of Scientists and medical personnel, if a meeting for the purpose is arranged. This preparation is non-alcoholic; and alcohol is not used in any stage of its preparation.

N. Hanumantha Rao,

TO

COL. SIR. R. N. CHOPRA, M.D., I.M.S., (Retd).

DIRECTOR, THE DRUG RESEARCH LABORATORY,
SRINAGAR, (KASHMIR & JAMMU STATE)

Dear Friend,

I send herewith a note from one of my past students. He thinks he has discovered a formula for a "Preservative" which is effective in its action and has no deleterious therapeutic effects noticed in the use of chemicals like Chloroform, Salicylic acid, Toluene, etc., which modern Ayurvedic Pharmacies have begun to use to prevent the fermentation of Asavas, Arishtams, Sherbaths etc., prepared and sold on a large scale. If the claim could be confirmed by your Laboratory, it will undoubtedly be a great boon to Ayurvedic Practitioners. I am sending herewith the practitioners' note giving his formula as well as a few details of the tests he has conducted.

By separate post, I shall send a sample of his preservative, which is a liquid, prepared as an Arkam (Arak). The Practitioner and myself will feel grateful if your Research Laboratory could interest itself in the investigation of the claim.

Thanking you, and with my warmest regards,

Yours Sincerely,
Sd. G. Srinivasa murti

Report on the experimental work done with preservative

Date of specimen tried.	Date of observation	Specimens tried.	Procedure.	Changes observed.	Remarks.
4-5-50	13-6-50	Egg Albumin including yolk of egg.	Two eggs taken and beaten including yolks of eggs. Then $\frac{1}{4}$ oz of preservative added and vigorously shaken.	There is no change either in colour, odour, or consistency. No precipitation or fungi is formed. In addition to their characteristic smell there is a aromatic flavour.	Counter specimens for every specimen is kept without preservative. In every cases there are signs of putrefaction and decay.
4-5-50	13-6-50	Fresh Butter	Six ounces of butter allowed to melt on hot water bath and added 1 oz of preservative and vigorously shaken.	do	
4-5-50	13-6-50	Mutton soup	Two ounces of preservative is added to six ounces of mutton soup and mixed well.	do	
16-5-50	13-6-50	Liver soup	Two ounces of preservative is added to six ounces of liver soup and mixed well.	do	
20-5-50	13-6-50	Fresh juice of white gourd with sugar.	$\frac{1}{4}$ oz of preservative is added to 4 oz of white gourd juice and 2 tolas of sugar. Mixed them well.	do	
20-5-50	13-6-50	Fresh juice of white gourd without sugar.	$\frac{1}{4}$ oz of preservative is added to 4 oz of white gourd juice and mixed them well. (note no sugar is added.)	(Though there are no signs of putrefaction, some layers are formed on the surface of the liquid.)	
23-5-50	13-6-50	Hareethaki Kashayam (Decoction of Terminalia chebula)	1 oz of preservative is added to 7 oz of Hareethaki kashayam and mixed well.	Like in first specimen.	
9-6-50	13-6-50	Protein Hydrolysate.	4 drachms of preservative is added to 30 C. C. of protein Hydrolysate.	do	
9-6-50	13-6-50	Slovina (whole liver extract)	4 drachms of preservative is added to 20 C. C. of slovina.	do	

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2. Subscription ...	1,584 8 0	2. Suspense repaid to Stores.	76 12 6
3. Cost of paper recovered from L. I. M. & N. M. Associations.	56 0 0	3. Suspense to L. I. M. Association.	117 12 3
4. Donations	300 0 0	4. Printing charges.	2,024 12 0
5. Sale of Old Newspapers ...	76 15 6	5. Cost of Paper	423 4 9
6. Suspense from Stores.	76 12 6	6. Postage	387 5 6
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Y. KONDAL RAO,
Editor.

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Editor.

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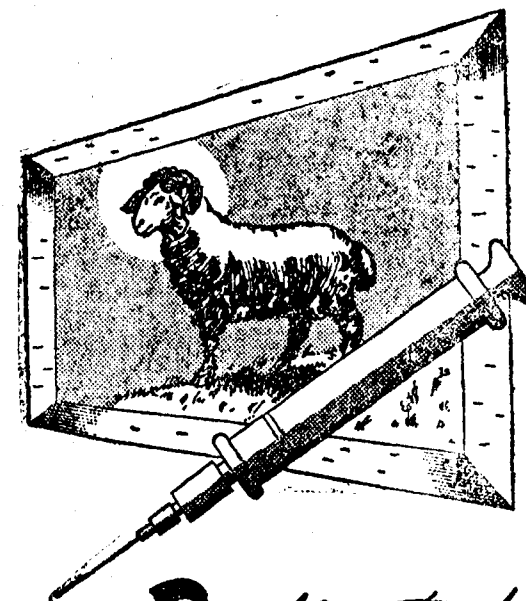
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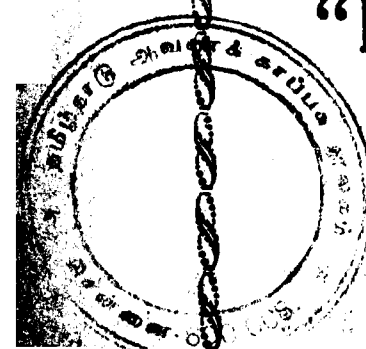
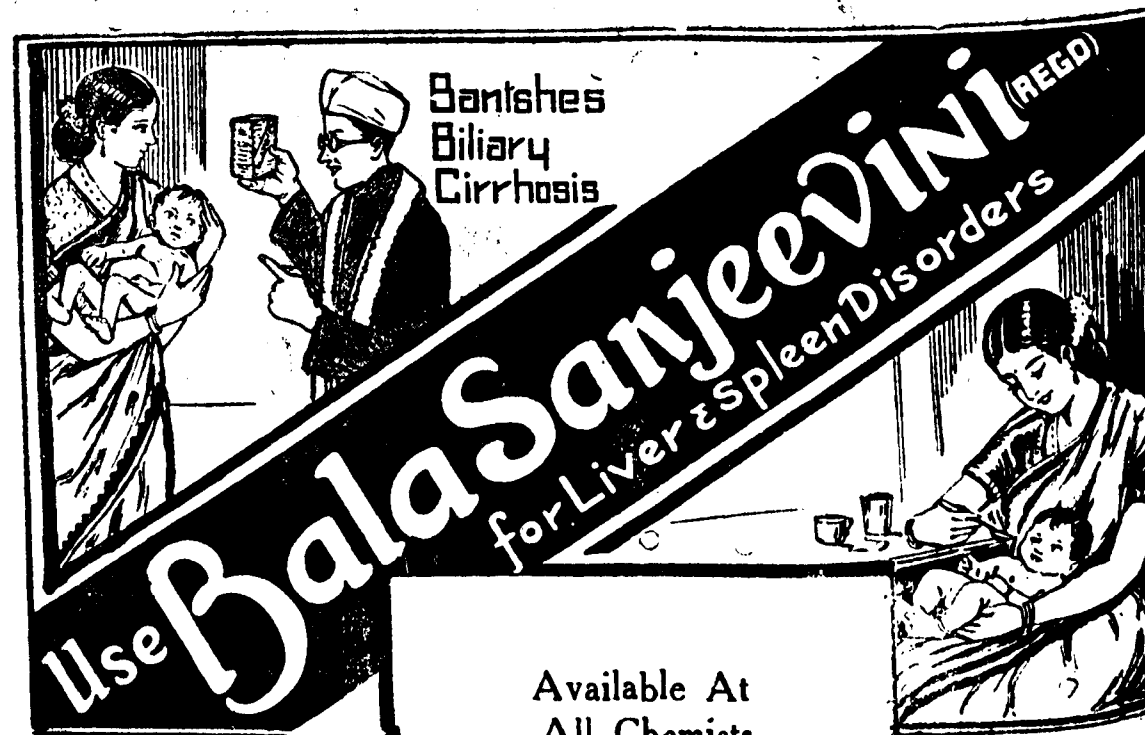
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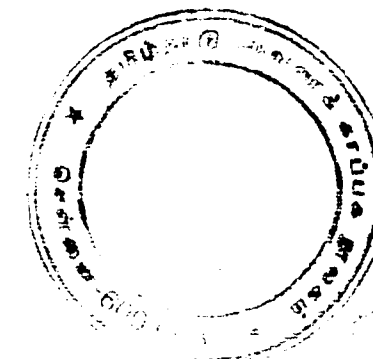
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Adyar, Madras. 20. Q.H. No. M.S. 231-140-7-50.

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JOURNAL 1049 OF 4 50. INDIAN MEDICINE



Vol. IV No. 2.
October 1950.

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Journal of Indian Medicine.

Vol. IV

OCTOBER 1950.

No. 2.

Edited by

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Subscription :—Annual Rs. 3. Single copy Re. 1.

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**Putam paribhasha and Yantra
paribhasha**

Putam: This, as per Ayurvedic system is the product in which the given medicine after properly purifying is reduced to ashes by a combustion process as to have a physical and chemical change to form a different substance without losing its original properties or actions.

I. They are (1) *Mahaputam*: It is the process in which the given medicine after proper purification is to be put in a glass bottle whose water surface is reinforced with a protective cover with red clay and thin cloth all round or in earthen dishes reinforced with proper covering as stated above and to be burnt amidst the dried cow-dung cakes which are half filled in a pit, dug in earth with 1 yard breadth, length, and depth (i.e., 1 yard culu) and the medicine is to be taken after it is completely cooled down in the pit itself.

II. *Gajaputam*: In this the pit has the dimensions as 27 inches (or 3 Janas) length, breadth and depth and all the other process are to be carried out as stated in Mahaputam.

III. *Varahaputam*: In this process the pit being $\frac{1}{2}$ yard length, breadth and depth all the remaining processes are to be done as in Mahaputam.

IV. *Kakkutaputam*: In this all the processes being the same as in Mahaputam the pit has to be dug as 9 inches culu.

V. *Kapothaputam*: is the process in which the process being the same as above and pit being 9 inches culu and cow-dung cakes are to be 9 in number and has to be burnt.

VI. *Gouaraputam*: is the process in which the given medicine has to be burnt amidst the dried cow-dung cakes without any pit.

Yantra paribhasha

In preparing some of the Ayurvedic preparations especially Rasa preparations, our scientists have invented some Machinery viz., Yanthrams which they used to prepare with earth in various forms with fitting names for each one of them (eg). Dhamarukam or Drum shape, Dolayanthram or floating machinery, etc. They used to utilise these yanthrams while purifying and reducing into ashes the Maharasas, Shadharanarasas.

They are I. *Dolayanthram* or floating machine.

Here they put the prescribed decoction or free extract of drugs into an earthen pot half filled, two small pieces of apparatus on either side of its neck with or without, a piece of thin strong wooden rod suspended to the above wooden rod with a cloth tied to it half immersed into the fluid.

II. *Swedana Yanthram*: In this an earthen pot half filled with the decoction or fresh extract prepared out of drugs with a clean cloth covered to the mouth in which the drugs which have to be purified is put and covered by an earthen dish well packed around according to the yoga and made air tight and is to be buried.

N.B.—The detailed description of these yanthrams with model figures will be described in the chapter Rasa Vignanam.

Putā paribhasha and Yanthra paribhasha

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but it is also essential that methods should be devised whereby a portion of such knowledge as is necessary is communicated to each individual in the community in order that he may make it his own and co-operate intelligently in carrying out measures intended to prevent diseases and promote health. If we are to profit by the experiences of the West in this respect, we have to realise that the programmes of Health-lectures, Health-demonstrations, Health films and other forms of propaganda carried on till now have proved insufficient for achieving the supreme objective of all Health-culture, viz., the formation of the *right habit*—the health habit if you please—which would enable a person to *behave habitually correctly* under all circumstances, to follow hygienic ways and avoid unhygienic ones as a matter of unconscious or automatic behaviour, exactly as a properly educated gentleman would act correctly and behave gentlemanly under all circumstances merely as a matter of right habit (resulting from right training) and without any need to think in each case whether it is correct to act in one way or in another. The ideas in my mind in regard to the causes of the present unsatisfactory situation and the way to deal with them are so well expressed in an Article by Dr. Atkinson, former Commissioner of Health for Western Australia that I beg leave to give below a summary of his article using his own words as far as possible: The results of the present-day methods are appallingly slow; the ignorance of the general public in regard to even the simplest principles of Hygiene is still colossal. *If we have succeeded in importing the knowledge, we have not succeeded in persuading the great majority of individuals to apply it.* If facts are pushed before them, they wake up temporarily and take notice, but tend to forget

readily and fall back into ignorance. Our literature pushed under the noses, is casually read and thrown away. Our lectures are attended by the few and for the most part by those already so instructed in the subject as not to need them. Our lantern slides are viewed out of curiosity; and if amusing are appreciated for the laugh they invoke rather than for the message they convey. And so, much of our time is wasted. It is all so temporary in its effect and so casual and infrequent in its presentation. It does not arouse permanent interest nor retention. In other words it does not stick. Now the question is to consider what it is that has led to this unsatisfactory result. The answer is that it is because we approach the question in the wrong way, in that we endeavour to teach it as we would a science, academically, instead of trying to develop it as a sense—the Public Health sense if you like—a sense of right and healthful communal and individual living. Now, how may this sense be developed? The answer is that it *must originate with first impressions very early in life.* If the parents themselves had this public health sense and knowledge developed from their infancy, they would unwittingly develop it in their offspring. The imitative infant watching its mother convey food to the mouth might equally well watch her drive away the flies from milk-jug and cover the jug. During this infant stage, the teachers of the very young can do a lot through stories, nursery rhymes and the like. Why not invent stories with a definite health-value, stories that will, whilst being of a nature to hold the child's interest and remain in his memory, convey real facts and principles of value in later life. What an opportunity we are missing! Just think how tellingly one might describe the adventures of a ghoulish fly which laid its eggs in the manure heap

Kshaya Kasam in Children (Chronic Cough)

BY

DR. T. RAJESWARI, L. I. M.,

WOMAN MEDICAL OFFICER,

MUNICIPAL MATERNITY & CHILD WELFARE CENTRE, TENALI.

Diseases of the lungs occur almost as frequently in children as in adults. Some chronic lung conditions present pathological and clinical pictures different from those in adults.

1. *Pulmonary Tuberculosis*:—Tuberculosis is a chronic infectious disease, caused by the Tubercular Bacilli. The pathological and clinical features of the tuberculosis of the lung in children present different pictures from those in adults. The infection is more frequent in the first two years of life; it is rare during the school going age and again common at puberty.

In children, pulmonary tuberculosis is usually a lymph node infection. The primary focus in the lung is most commonly in one of the lower lobes and at the periphery of the lungs, very rarely it may be situated in any portion of the lung, in contrast to the secondary lesion in adults in which the focus is at the apex. The primary focus is generally single and composed of encapsulated caseous matter. The regional tracheo-bronchial lymph glands are infected from the primary focus and undergo caseous changes. The primary focus is quite harmless and usually heals by calcification, but in the first two years of life, it spreads and involves the lung substance (Parenchyma). Similarly, after the first two years of life, the infected tracheo-bronchial lymph glands heal by calcification and even by ossification. During this

time, the prognosis is worse, as the caseous glands may rupture into a bronchus infecting the lung. But direct infection of the lung by this process is uncommon.

The immediate causative factor of the tracheo-bronchial form of tuberculosis is from the infection by the tubercle bacilli through the air passages. After extensive studies, it was found that about 80% of children suffering from this form of T. B. come from the families in which there were open cases of pulmonary tuberculosis. In a small percentage of cases where no sources of infection could be detected in the family, such source is often traceable to the attendants of the child as nurses or some contact in the school. Hence close contact with some open cases is necessary for development of pulmonary tuberculosis in childhood. The duration of contact shows wide variations, in some cases it may be only a few months, but in tracheo-bronchial type of the tuberculosis it is about 4 years. As conceived from the thrush pathology, the important circumstances and therefore the pertinent causes for the flare up of such of those latent conditions, are langhanam, irregular meals and at irregular times and similar circumstances that render the bodily resistance below par and wasting starts.

The conception of the decontrol of the nervous mechanism in the co-ordination with the digestive and metabolic processes, resulting in a metho-

ed, jealousy, etc., would make for ill-health while certain others like affection, charity, contentment, compassion, joy, etc., would make for good-health. This was ridiculed as an evidence of the incurable habit of our ancients to go about mixing up scientific laws with rules of ethics on the one hand and superstitious beliefs on the other. Fortunately for all concerned, the times are now fast changing and the discoveries of modern science are seen to confirm the ancient teaching. Modern science seems now to be prepared to explain that with every fit of anger, rage etc., there will be a corresponding unhealthy stimulation of the adrenal or other glands which, if frequently repeated, may lead to such exhaustion of the affected glands as to result in, say, Diabetes, Neurasthenia, Dyspepsia etc. Modern science seems to be prepared to look for even epidemics of emotional disorders similar to epidemics of physical disorders, for instance, in the statement of an American doctor that "when stocks go down in New York, diabetes goes up." It will perhaps be explained that widespread financial crash results in widespread emotional crash of a specific nature which in turn leads to a correspondingly widespread pancreatic bankruptcy, resulting in an epidemic of diabetes. Far from ridiculing the ancients as persons who knew no better than to mix up health and ill-health with the practice and non-practice of the social and moral virtue, Modern science itself may well be prepared to preach an "ethical" sermon, somewhat in the following strain: "If you habitually allow yourself to get into fits of anger or rage the result will be, among other things, unhealthy stimulation of your adrenal glands, leading perhaps to neurasthenia. If you habitually get into temper as often as you can, you will surely have

to pay the penalty for it in the shape of dyspepsia and such other troubles. If on the contrary you are ever affectionate and cheerful, radiating sun-shine wherever you go, you may safely trust to your own glands—both the ductless and the ducted, to keep you ever young and in radiant health. In brief, judged even from the most materialistic standpoint of sheer physical well-being it will pay you exceedingly well to practise altruism, sobriety cheerfulness, affection and other social and moral virtues, while avoiding like poison, passion, hatred, jealousy, anger, rage and other vices. Go about doing good, avoiding evil, and practising Sadachara (right social and moral conduct) as Nithyakarma and I promise you the very best of health and therefore of happiness." Thinking along such lines, it should not now be difficult for us to appreciate in our own measure the profound wisdom of the great Rishis of this ancient land who, in laying down precepts of our daily practice (Nithyakarma and Dinacharya), have ever proclaimed that what is essential for a healthy life is, first of all and most of all, to live nobly, to think clean thoughts, to feel noble emotions and to behave rightly under all the varying conditions and circumstances of our lives. It is good to have clean bodies; but clean minds are even more essential. It is good to keep our body clean and feed it on pure food, but, it is better to take our food after a cleansing bath and with clean minds and pure hearts. Such is the ancient teaching which Ayurveda has ever proclaimed. Our great forefathers attached so much importance to the observance of rules of hygienic living as part of our daily routine that they incorporated them into rules of Sadachara or the Nithya Vidhi which it was incumbent upon everyone to carry out every day and throughout the day. These

hygienic rules of Sadachara or right conduct meet us everywhere—in the Srutis and Smritis and Dharma Sastras, Itihasas, Puranas, Medical and other scientific treatises, Popular songs, Kavyas, Natakas and Literature in general, as though they desired that every-body should become drilled in the habit of healthy living, no matter what his special study or avocation may be. We have now to re-edit the ancient rules of Sadachara laid down for the conditions which obtained in the spacious and leisurely days of old with its peculiar social, religious, economic and other environments so as to adapt them to the much altered conditions of the rural and urban lives of our modern days.

Is Ayurveda Self-Sufficient at Present?

While the immense popularity and practical efficiency of Ayurvedic practice in the Medical line are of undeniably high value as are also the Ayurvedic writings and traditions in regard to Health-culture, Dieting, Domestic Medicine, Nutrition, etc., it does not appear that Ayurveda is self-sufficient in the surgical line as practised at present (i.e. twenty-five years ago when this Memorandum was first written): Such is the opinion of a scholarly exponent and successful practitioner recognised as an eminent authority on Ayurveda, the late Kaviraj Dr. Gana Nath Sen who has referred to this aspect of the question in the following terms: "Whatever may have been the past glory of Ayurveda it would be self-deception on our part to think that we still sit on a high pedestal. The number of Ayurvedic physicians in India is legion but soundly educated exponents of the ancient system are not numerous. Besides, there is yet a good deal of conservatism, which is contrary to the

liberal spirit of Ayurveda which must be overcome. Much of the old valuable literature has been lost and what exists is not often studied in a scientific spirit. If the sound principles and methods of treating diseases with the time-honoured recipes of reliable efficacy were not there, the Ayurvedic system of medicine would have been dead by this time in the struggle for existence. So, let us not be slow in recognising the crying need for reform. We may have once made great progress in Surgery but we must confess that we now lag sadly behind.....And even in the great departments of Medicine and Pharmacy which are our great pride and mainstay, we must work hard to demonstrate and utilize the principles of medicine that we have in our books. One may therefore be permitted to suggest that it is not in the interests of the public, the promotion of whose well-being must always be our paramount consideration, to shout out any useful means of medical, surgical or other relief, no matter whether it is of the European or of any other denomination".

The Short-Range Objective—Transition to the Synthesis of Indian and Western Medicine.

It is on the basis of opinions such as those noted above that The Madras Government Committee on the Indigenous Systems of Medicine observed as follows in their Report published early in 1923: "It seems to us that the first and foremost problem that we have to address ourselves is to see how we can make the Indian systems of medicine rapidly self-sufficient and fully efficient; for, unless and until this is secured, the problem of bringing adequate medical relief within the easy reach of our masses, especially, in the rural areas, will not become satisfactorily solved. Moreover, the establishment of insti-

tutions of Indian systems will, under these circumstances, remain a proposition of limited applicability; because it would involve the maintenance of a double set of institutions, one, the Indian, to look after our medical ailments, and the other the European, to look after our surgical needs—an arrangement as uneconomical as it is unsatisfactory. Some such arrangement may, however, become inevitable in the transitional stage; but this period should be as short as possible. We, therefore, consider that the most urgent and immediate concern for the State is to establish and also to promote, by State-aid, State-recognition, and such other means, the establishment of suitable centres of medical education, and the devising of suitable scheme to studies of Indian medicine calculated to make those trained under it equal to the task of ministering, not only to our medical needs, as at present, but to our surgical ailments as well. Consistently with this view, we would like to see the future practitioners of India, no matter what denomination they belong to—Ayurveda, Siddha, Unani, European medicine or any other being so schooled and trained as to be able to bring to bear on the problem of health and ill-health, not only the expert knowledge of their systems, but, as far as practicable, the best that is in other systems also."

The Long-range or ultimate objective—the synthesis of Indian and Western Medicine into a unified and integrated whole.

It is to implement the short-range objective noted above, that I have pleaded frequently that a working knowledge of Indian Medicine is to be acquired by the students of Western Medicine and a working knowledge of

Western Medicine is to be acquired by the students of Indian Medicine through two types of institutions in both of which there would be provision for training in both Indian and Western Medicine but with emphasis on Indian Medicine in the one type and on Western Medicine in the other; but this, I have always stated, was to be deemed as only a temporary and transitory arrangement. The long-range or ultimate objective should be the synthesis of Indian and Western Medicine into a unified and integrated whole. It is by free exchange of thoughts and excellences that the Science of Medicine is enriched and Medical Practitioners of every country are enabled to serve their people better than they could do otherwise or in isolation. We should keep ourselves constantly up-to-date and in continual touch with current scientific thought and achievements of proven utility, arranging our courses of study in such a way as to enable those trained under it to prove equal to the task of serving the country successfully, efficiently and with distinction in all fields whether it be Medical Relief or Medical Education or Medical Research. This should be easy and natural for us; for, it has been the unique feature of Indian culture throughout the ages that while it has gone on assimilating the valuable and significant features of other cultures it has all the time remained fundamentally rooted in its own cultural excellences. It is because of this feature that Greco-Arabian or Western Medicine of yesterday which we call Unani has now been assimilated into and become part and parcel of Indian Medicine of to-day. Working along similar lines, we may confidently hope that Allopathy, the Western Medicine of to-day, will likewise get assimilated into and become part and parcel of Indian Medicine of to-morrow.

but it is also essential that methods should be devised whereby a portion of such knowledge as is necessary is communicated to each individual in the community in order that he may make it his own and co-operate intelligently in carrying out measures intended to prevent diseases and promote health. If we are to profit by the experiences of the West in this respect, we have to realise that the programmes of Health-lectures, Health-demonstrations, Health films and other forms of propaganda carried on till now have proved insufficient for achieving the supreme objective of all Health-culture, viz., the formation of the *right habit*—the health habit if you please—which would enable a person to *behave habitually correctly* under all circumstances, to follow hygienic ways and avoid unhygienic ones as a matter of unconscious or automatic behaviour, exactly as a properly educated gentleman would act correctly and behave gentlemanly under all circumstances merely as a matter of right habit (resulting from right training) and without any need to think in each case whether it is correct to act in one way or in another. The ideas in my mind in regard to the causes of the present unsatisfactory situation and the way to deal with them are so well expressed in an Article by Dr. Atkinson, former Commissioner of Health for Western Australia that I beg leave to give below a summary of his article using his own words as far as possible: The results of the present-day methods are appallingly slow; the ignorance of the general public in regard to even the simplest principles of Hygiene is still colossal. *If we have succeeded in importing the knowledge, we have not succeeded in persuading the great majority of individuals to apply it.* If facts are pushed before them, they wake up temporarily and take notice, but tend to forget

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Research into the Theory of Tridoshas

By

AYURVEDACHARYA M. VISVESWARA SASTRY, H.P.I.M.,

The Tridosha theory is the foundation for the edifice of Ayurveda. Every aspect of Ayurveda namely, the Hygiene, Physiology, Anatomy, Pathology and therapeutics, have been explained in terms of this Theory. Thus, it becomes the first and the foremost of subjects for study. It is given importance in Hygiene, for, a person who is defined as Swastha, or a healthy individual, is said to possess the three Doshas in their normal quantities (Sama Dosha). Again dealing with the food of an individual its nature and action on the body have been explained in terms of the three Doshas, as certain foods being Vathala, Pithala, Kaphala (increasing Vatha, Pitha or Kapha) according to the nature of the material. With regard to habits and daily movements of the individual also, certain practices as exercise, etc., increase Vatha, exposure to heat increases Pitta and sleeping during day time, etc., increases Kapha.

From the stand point of Physiology too, the normal function of the various organs of the body have been classified on the basis of the Tridosha Theory. The respiration, enthusiasm, bodily movements of various forms, etc., have been attributed to Vatha, and digestion, intelligence, complexion smoothness of the skin, etc., have been attributed to Pitha, and steadiness of the body, greasiness, strength in the joints, physical forbearance, etc., to Kapha. Even from anatomical study of the body, the Doshas are said to be

mainly contained in the various constituents (of the body). For instance, bone or asthi, is said to be the seat of Vatha, Blood (Raktha), Sweat (Sweda) are the seats for Pitha, while the Kapha, is said to be found in all the other Dhathus, viz., Rasa (Lymph & chyle-Mamsa (Flesh), Fat (Medus), Bone) marrow (Majja), Semen (Sukram) and also in Malas, such as urine (moothra) and Faeces (vit).

Coming to the importance of this Theory in Pathology, it is said in Ayurveda, that there cannot be any abnormal or pathological conditions without the disturbance in the equilibrium of the Tridoshas. Every symptom or sign found in any disease is attributed to the vitiation of one or the other Doshas, and every illness is again classified on the basis of the Tridosha Theory. Thus we see in almost every disease, the Vathaja, Pithaja, Kaphaja, variety, in addition to a few clinical forms, and the varieties based on specific etiology.

In the treatment of diseases again the Doshas are given the first place. The principle of treatment according to Ayurveda is to bring about the equilibrium of the disturbed Doshas. The treatment is mainly divided into two groups, as Langhanam and Brimhanam, their application on the body is only to treat the vitiated Doshas. The Langhana treatment which is meant for either elimination of the vitiated Doshas from the body (Sodhana) or

subduing them by adopting suitable diet, and habits (samana) is mainly directed to reduce the quantities of the Doshas and the other entities of the body (Dhatu and Mala) that are related to them. Bhrimhana is restorative in nature and is anti Vatha and anti Pitha. All these have been explained in order to show how important is the knowledge of this theory for a Physician proposing to treat diseases according to Ayurveda. A question has often arisen as to how to identify and isolate these Doshas. Then alone they can be properly studied and understood. In Ayurveda it is said that the abnormal condition of the three Doshas can only be identified from the clinical picture of diseases. A clinical picture is only a group of certain symptoms which is called a 'syndrome' or a disease. To try to recognise this apart from the Syndrome is not possible and it will not also help us in studying the nature of the Doshas.

The question now to be considered is whether these Doshas are demonstrable in one form or the other beyond their clinical manifestations. In Ayurveda, the Doshas are classified under Dravya (matter) present only in a living body, (biological products) Dravya cannot be taken as a correct translation for matter because under the heading of Dravya, besides the five Boothas, namely Prithivi (Earth), Ap (Water), Agni (Fire), Vayu (Air), Akas (Ether), Kala (Time), Dik (Space), Manas (Mind) and Athma (Soul) are included.

The definition of Dravya, is that which has two main features, viz., the Guna (Physical properties as weight, volume, etc.) and Karma (action). In so far as Kala (time) and Dik (space) are concerned, it will not be correct to use 'matter' for Dravya. From the

modern scientific stand point, the space and time are more of abstract, than of material entities. So when we say, that these Doshas are Dravyas, a doubt naturally would arise as to whether these are material entities or abstract ones. These Doshas can be proved with the help of modern Laboratories and other scientific methods, only if they are of the former group, namely material. There cannot be any doubt, as regards the existence of these Doshas in the material form for the reason that the following five features are found in the Doshas, as attributed to by Arunadabata, a celebrated commentator for Ashtanga Hridayam, who refers to his argument on the 'trinity' of the Doshas having (i) Sthana (their own abode), (ii) Lakshana (Characteristics), (iii) Karya (Function), (iv) Vikara (abnormal features) and (v) Santhi (attenuation by remedial measures).

In every disease, there is the vitiated Dosha, as the main cause. The symptoms produced on the body are due to one or the other doshas as already explained. In the production of a disease, the vitiated doshas are said to enter into the various Srothas (ducts), or Dhatu (tissues) Asayas (organs) and they manifest themselves in their own course with their respective symptoms. Susrutha, an authoritative writer on Ayurveda, formulates six stages in the course of the Dosha vitiation in the causation of a disease.

1. Chaya (accumulation in its own place).
2. Prakopa (increasing beyond the capacity of the its area and getting prepared to overflow).
3. Prasara (the stage of overflowing and extending into various organs

of the body through the different passages.)

4. Sthanasamsraya (getting settled in a suitable organ as to invade it.)
5. Vyaktibhava (the manifestation of its symptoms after duly invading the organs concerned.)
6. Bheda (resolution or termination of Doshic phenomenon, when the disease may be cured or become chronic or incurable, leaving certain sequelae.)

These six stages can occur only when there is an irritating factor which can only be material in its form and not an abstract one. This will be another point in support of the contention of the Doshas being concrete. Further the six stages of vitiated Doshas are almost akin to the six stages of the invasion of the micro-organisms which can be taken as an analogy. A specific micro-organism when it enters into a human body, is said to have the following stages:

1. Entrance.
2. Multiplication.
3. Extension.
4. Invasion.
5. Manifestation.
6. Resolution.

Thus we can see the stages of the bacterial invasion on the one side, and the Doshic invasion on the other which are almost similar. The only difference that can be explained between these two forms of invasion is, in the case of micro-organisms they are foreign bodies entering into the human system while in the other, viz., the Tridoshas, they

are found within the body itself. Explaining the relationship between the Doshas and the diseases, it is said that it is transitory. The Doshas when they are in the normal condition maintain the health of the body while the same Doshas when abnormal bring about disease. It is possible that the Doshas are the secretions of the body, which become manifest as such when in excess and appear as diseases when vitiated, showing the relevant signs or symptoms of that secretion or secretions. It is essential, that we know what these Doshas are like and could be when viewed at, from a modern scientific outlook.

Embriologically, we know that the whole system evolves from the three layers, the Ectoderm, Mesoderm and the Endoderm.

From the Ectoderm are evolved the nervous tissue, the epithelium of the skin, the Pituitary body and the penial body and also, the medulla of the suprarenal capsules. These when analysed and compared, have the elements of Vatha in them.

The mesoderm gives rise to menstrual flow (arthava) — (this has less albumin) Blood, lymph, spleen and lymph glands, the Graafian follicle, the epithelium of the ovary, including the ova, male organs of generation and Spermatozoa, also arise out this layer. This has a semblance and is akin to Pitha characteristics.

Whereas the endoderm yields the sukra, (containing more albumin) the epithelium of the alimentary canal and all glands opening into it. The Thyroid Parathyroid and Pancreatic glands also emanate from this layer; this has the Kapha element in it,

A study of the *histology* reveals that the nervous tissue, Epidermis, Adrenal, Pituitary glands belong to the Vatha category. The Medullary secretions, the digestive secretions, the succus entericus, and all alkaline substances and the vitamins belong to the Vatha group.

Even so the Thyroid and Para Thyroid secretions, the Hydrochloric acid, Pancreatic juice and bile, the acid substances and Enzymes belong to the Pitha group.

Whereas Pituitary excluding the Pars Nervosa secretions from the mucous glands, Carbohydrates, Proteins, and Fats belong to the Kapha group.

Systemic classification shows that the nervous system can be taken to be Vathic, digestive system to be Pithaja and Respiratory to be Kaphaja.

While the discussion is in one aspect non-pathological, it can also be considered pathological.

All kinds of atrophies, necrosis, calcareous infiltration, and rickets all these belong to the Vatha group.

Hyparaemia, pigmentary changes, and inflammation come under Pitha group.

Oedema, Hyperplasia and Hypertrophy characteristically show the Kapha nature of these.

Whether these secretions are from the internal secretory glands or other parts of the body, is one aspect of the question. Another aspect is, whether they could be isolated from the Dhatus (tissues) themselves. It is clearly said in Ayurveda that the Doshas and Dhatus have a certain relationship known as "Asraya Asrayi" bhava. The entertained and the entertainer. These Dhatus being the entertainers of the Doshas, in health, their vitiation should

naturally be seen in them (Dathus) and an effort to isolate them from the Dhatus should prove successful. The Doshas are also said to be produced daily from the food by the action of these secretions in the alimentary canal, at various stages. The food as it enters the Amasaya (Stomach), is said to get mixed with kledaka kapha (the secretion) there and due to its action over the food, the Kapha of the body is nourished, while in Pachyamana-saya the same food getting mixed with Pachaka Pitha (the digestive secretions) there nourishes the Pitha of the body, and further the same food in Pakwa-saya, due to the action of Samanavayu there, Vatha is produced. From this we can understand that there are certain quantities of the Tridoshas, in the body which are stored up in it, get exhausted either due to action or work or through excretions while bringing about Dhatu parinama (Metabolism). These quantities are replenished by the daily supply of food. It will also be reasonable to think that these Doshas are found mainly in pure forms in Dhatus (tissues) of the body which are their seats. Now, when a disease is caused, depending on the nature of the cause, the Doshas, vitiated in their own places, pass through the bodily ducts, to reach the respective organs of the body, to produce the diseases. In this connection, it will be interesting to note that the vitiated Doshas have to pass from the Koshta (alimentary canal) to the Sakhas (generally known as branches, but here meaning the Dathus) and then to the other organs. In so far as the Doshas have to pass through these Dathus, before getting into the organs of the body, a trial to identify and to isolate them in the Dhatus may prove successful, for, only when they are in their vitiated states, and so gross, they are easily cognizable. Whereas

in their pure and normal states, they are said to be subtle and in the sookshma states, and have only to be inferred. In different diseases different Dhatus, organs, malas, are said to be involved. It may not be so easy to isolate them from every Dhatu. The most successful way, would be to find a disease in which the Dosha is mainly found in Raktha (Blood) which can easily be taken out from a living body and subjected to various tests.

The one condition in which the Dosha directly enters into the blood and remains there for a sufficiently long time is Snake-bite. The poisonous snakes according to Ayurveda are mainly three:—

(1) Darvikara. (2) Mandali. (3) Rajeela.

The poison of these three snakes is said to be respectively Vatha, Pitha and Kapha, in predominance. Thus a bite by Darvikara snake produces two groups of symptoms:—

1. The effects of poison on the human system.
2. The symptoms pertaining to the dosha, viz., Vatha in this case.

Similarly the other two varieties of poison too. Ayurveda has clearly explained the nature of visha as to possess certain properties, as Thikshna (smarting) Ushna (heat) Vyavayi (quick-spreading) Madavaha (to bring about unconsciousness.) Jeevithahara (to bring about death). These features are common to all kinds of poisons, while the Vathaja, Pithaja, Kaphaja visha or poison, will in addition, have the features of the respective Doshas as associate symptoms. From this we can take that a Darvikara visha will have two parts in it, as already said above, the Doshic portion and the visha portion. It may not be so easy in other

diseases, as in this case, to detect the Dosha, because the poison is directly injected into the blood, where it remains for some length of time. In my report on Visha Vaidyam, I have tried to prove that the three groups of poisonous snakes, described above, are no more than the three forms of poisonous snakes explained in the modern toxicology text books, viz., Cobra, Viper, and the Krait.

Now the scheme for Research on the theory of Tridosha is to collect the plasma, of the patients bitten by the three kinds of snakes and subjecting it to various tests, in order to make out the nature of the plasma, in different cases. This can be tried on small animals, like, guinea pigs, or rabbits and carry out the other laboratory tests. In this connection it will be necessary to see the changes that are seen in animals as the poison enters into the blood. It has also got to be seen as to how far the laboratories where antivenom of different types is prepared, would be of any help to us. First thing to be done in this case is to try to separate the visha portion of the poison from the Dosha portion of it, as both are co-existent in each of the varieties of poisons. If possible we may try to neutralise the poisonous portion of it and take the Dosha portion of it for further clinical trials and other laboratory tests.

While the conception of the two portions existing in the poisons under reference, gives us the opportunity and facility to isolate the doshic portion by neutralising the Visha portion, facts, relating to the components with their properties, and of the chemical substances in snake poison now are discussed.

As it is, we have two broad varieties of snakes, the Colubridae and the Viper,

In the former we have again two subjects—the Cobra and the Krait and in the latter the Viper and the Russell's Viper.

Snake poison, an amber coloured liquid becoming glassy scales on drying, consists of a mixture of albumoses and globulins. The albumoses coagulate the blood, acting directly on it, while the globulins act on the nervous system.

It is found that Colubrine poison contains more globulin whereas the Viper poison contains more of albumose.

The globulins are insoluble in water but dissolve in dilute salt-solution, and from this they can be precipitated when the solutions are saturated with Mg So 4.

A hint to isolate the globulins.

Classification of the Snakes being definite and admitting a matching with the Dosha types bearing their actions on the nervous and haemopoietic systems, a parallel and effective correlation can be arrived at, to express the states of the blood, here of the Visha elements, in terms of the biochemical components of blood.

The other proteins, the Albumoses and the Phosproteins are equally representative of the Kapha and Pitha groups respectively.

Albumoses are available as Carbanates and an endeavour to convert the nascent albumoses in the blood to Carbanates may perhaps be an easier method in the neutralisation of the poison. Phospro protein a heat forming element is responsible for the irritative processes occurring in poisoning. Thus Globulins, Phosproteins and Albumoses have a definite relationship to Vatha, Pitha and Kapha respectively.

As a test from trying with snake poison, there is also another reliable method

and that is to list out the drugs which increase Vatha, Pitha and Kapha mostly and also those which are said to reduce, (samana) them. Small animals like guinea pigs and rabbits, rats, etc., (if possible on human beings, too with non poison drugs) may be fed on these foods totally. The blood, saliva, and excretions of these beings are examined both before and after feeding and the differences both, biochemically and chemically noted. It will be also possible to watch any changes on the Physical characteristics of the animals also.

Even coming to diseases, it will be to some extent possible to make out the changes in the blood, secretions and excretions of persons suffering from certain diseases, in which a particular Dosha is mostly found in blood. For instance, a patient suffering from Vatharaktha can, with reasonable magnation be expected to have vitiated Vatha in excess in raktha (blood) and especially in the raktha present in the part affected. The blood of such a patient may be taken and subjected to different tests and also compared with the blood of a healthy person.

Similarly Rakthapitha is a disease in which the vitiated Pitha is said to be present and such blood should necessarily contain the portions of Pitha though in a vitiated form.

Though there are very few diseases caused by the vitiated Kapha, present in blood, a disease like Sopha and Sleepada, in the causation of which, Kapham and Raktham are equally involved, and even in that the Kapha varieties should necessarily show certain definite changes, in the nature of Raktha (blood) which, if examined may give us the clue for identification of the

Kapha, even in the vitiated form. All these tests that can be conducted only in well equipped laboratories. There are also ways of carrying out the research into these Doshas by individual practitioners even without any laboratory Practitioners at large practising in rural or urban areas who come across a number of patients every day can help to a great extent in the direction of this scheme.

1. *Prakrithi Pareeksha*: As a first step the physician should try to study the Prakrithi (temperament) of the different individuals. He should make it a routine to examine at least six individuals a day, preferably healthy persons. The features of the seven Prakrithis should be kept in mind and go on recording the names and the features of the Prakrithi recognised in each case with necessary remarks. One who develops the habit of recognising the Prakrithis is bound to recognise the doshaic features easily in their abnormal forms. The physician should develop in him this faculty, for proper diagnosis and prognosis. This should start with Prakrithi study.

2. When patients come to a physician for consultation and treatment, he should study the history of the patient and the disease, in such a way that he will be able to correlate the mithya-aharam and viharam (injurious foods and habits) leading to the vitiation of the respective Doshas and

to the present illness. These facts should be carefully preserved, when they relate to the cases, whose Prikrithi have been examined prior to their ill-health. This forms the second step.

3. The third step is to record the effects of certain drugs which are spoken of, as highly useful in the respective Doshas, for instance Rasna in Vatha diseases and to watch the results in the patients by the use of drugs. Here the intensity of each symptom present in a patient both before and after the use of the drug should be recorded.

4. After studying about a dozen cases on these lines, the cases should be reviewed with regard to the details of the above three stages. Correct statistics prepared on these lines, go a long way first in getting confidence in the theory of Tridoshas and then in proving their existence in the body.

Investigations, done in the laboratories and by the individual practitioners, as said above when put together and studied, are bound to be successful in the identification and isolation of the Doshas.

Work on these lines may lead to attainment of the missing link between the Doshas and the modern science. It will not be out of place to quote here a saying that "We must not take it that the Tridosha Theory, cannot be proved because French Savants and English too are not beginning to support the idea".

Ksheeram and Ksheera vikriti

By

DR. T. P. RAJAGOPAL, B.P.S.M.,

MADRAS.

Milk may be considered as the ideal liquid food for the sick, containing as it does, all the proximate principles of food. The very objections as to its bulk is of definite advantage in diseases where liquid food is indicated. Hence its extensive use all over the world in a large number of diseases.

The following are the diseases where exclusive milk diet is of value. Dropsies of all kinds, Cardiac, Renal, or Hepatic, obstinate intestinal neuralgias recalcitrant Dyspepsia, Asthma, Hepatic congestion, Hysteria, and specially in disorders of nutrition, depending on latent catarrh of the stomach and the intestines.

Karrell of St. Petersburg maintains that it is also useful in Rheumatic and gouty affections, in organic diseases of the heart, and advance renal degenerations.

Exclusive milk diet was known to the Ayurvedic physicians who had a thorough and good grasp of the situations and conditions where milk was exclusively used.

क्षीरान्नं पथ्यम्।

was an of quoted dietetic restriction recommended in the treatment of chronic intestinal conditions when mercurials and other allied drugs were used.

Modifications of milk

- (1) Skimmed milk or butter milk-सकम्
 - (2) Sour milk or fermented milk दधि
 - (3) Whey पूरुटम्
 - (4) Medicated milk.
 - (5) Artificial milk foods.
 - (6) Milk mixed with other kinds of liquid foods.
- (1) This is a modified form of milk in which the fat is removed. It is a cheap form of liquid nitrogenous food in which the protein remains in an easily digestible state. Butter milk on the other hand is practically the same as skimmed milk but the removal of the fat is by a manipulation. It still contains some fat and the protein is in a fine and assimilable form.

The chief indication for administration of fat-free milk is a feeble state of the digestive organ as in chronic Gastritis. Butter milk, for hunger and thirst, is the drink of choice.

(2) This has got different names in different countries. It is generally known as curds. The presence of acids in this helps the emulsification of fat in the digestive canal. It is prepared from cow's or buffalo's milk. This prevents auto-intoxication in the intestines and increases longevity.

KSHEERAM AND KSHEERA VIKRITI

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Large quantities of butter milk can be borne and easily digested than ordinary milk. It exerts a diaphoretic or diuretic action according as the external temperature is high or low. When taken exclusively some patients often gain weight. It also shows signs of increased blood formation

॥ तत्रे तु मधुरम् कषायानुरसमुपशोथं कषु रुक्मि-
दीपनं.....इत्यभ्यासिकहरं मधुरं विपाकं इत्ये मृज्जह
स्नेह स्वापद् प्रसमनं भवत्ये च-

Indications for sour milk. (i) in health, (ii) in those in whom the thick curd of milk can not be digested (iii) in flatulence in diseased conditions, (iv) in enteritis from any cause, (v) intestinal disorders of children, (vi) in Sanni-patha and Vishama jwaram, (vii) in auto-intoxication from the intestines.

Contraindications:—(i) in patients having repugnance for any form of milk, (ii) in constipation which is aggravated, (iii) in Kasam where the secretions get dried up, (iv) in Rheumatic states.

(3) It is milk from which both the fat and the protein have been separated. There are a number of ways of preparing this. Addition of vegetable acids e.g., fresh lime juice, or citric acid is one such. It is soothing and palatable.

(ii) Addition of cream of tartar i.e. Alum. This is constipating. By mixing the curd with water and stirring, it breaks the curd into small flakes and is then used after straining. The last one therefore contains lactic acid bacilli over and above that contained in whey. This is the most popular Ayurvedic method of preparation.

Though not a highly nutritious food by itself it is exceedingly useful in some

febrile and other conditions where milk is hardly tolerated or readily digested. It is also a pleasant beverage. Its nutritive value can be increased by the addition of meat-juice or yolk of egg. This can be used in Sannipatha jwaram and in Visuchika. Whey according to Ayurveda, increases appetite, helps digestion and is easily digestible. It is slightly acid, checks flatulence, good in dropsy, Piles Diarrhea, Jaundice and Rheumatism. It relieves nausea and vomiting. It is often medicated as follows:—

(i) with fried ginger and salt in Vatha rogas. (ii) Ajamoda, Saindhava, and Hingu—Pithasoolam, Adhmanam, (iii) with sugar—good for Pitha, (iv) with ginger and pepper—good for Kasam. (v) when taken hot Tamahaswasam and Kasam.

(4) Milk can be medicated in a variety of ways depending upon its use to help absorption or to bring about alkalinity or flavouring.

(5) Milk is generally mixed with peya vilapy or kanji or meat-juice or soups according to the digestive capacity.

तृणा कुमहरं मस्तु लोतोविशोधनं

असकं कषायं मधुर- मधुरं कषायानुरसु

प्रहाकदनं दीपनं च विमरवाद्यु सकं वतम्

Milk from different animals

The common animals from whom milk is generally drawn in our daily use are (i) the cow, (ii) the goat (iii) the ass, and these are easily available. Buffalo's milk is also used but in a restricted field. A study of buffalo's milk is therefore essential. In the dietary of infants the milk of different animals

are used as substitutes for mother's milk when sthanyam is either insufficient or positively injurious. There can be no equal to the mother's milk for an infant and a substitute, as far as possible, should be avoided.

नार्यास्तु सधुरं स्तन्यं कषायान् नुरसं हिमम्
नर्याभ्योतनं योः पथ्यं जीवन्तं कषुदीपनं ॥

Sus Srotho Chap 45.

The milk of the ass is nearly approximating to the human milk. If the infant taking mother's milk suffers from frequent attacks of vomiting which means that too much fat is present in the milk the and fat metabolism is upset. Then ass-milk should be substituted with advantage. It is known to us that milk of animals with uncloven hooves, is easy of digestion.

Goat's Milk

This contains less of carbohydrates than human milk. Whenever we find infants suffering from frothy stools and indication of the upset in the Carbo hydrates metabolism, Goat's milk must be substituted. Infants suffering from diarrhoea with colicky pain, it is advisable to give diluted ass-milk.

Goat's and deer's milk contain more of Calcium Phosphates than mother's milk and therefore is useful in Tuberculosis.

Cow's Milk

This contains more protein than mother's milk but less of sugar, while the quantity of fat is the same. It forms the basis of all artificial foods of infants.

It is considered as a constipating food for meat eaters, but it is a laxative for vegetarians.

Buffalow's Milk

This contains more Protein and Fat and less of Carbo hydrates than in human milk. It is the principal source of ghee. It is difficult to digest and it is constipating.

महानिच्यन्दि सधुरं मादिरे बहिनाकन्य
निद्राकरं कीदतरं गन्धाल्लिखनं पुन

Disadvantages of milk as an invalid's diet.

(i) Formation of large clots in the stomach. But as whey it is preferred. An excess of acidity forms larger and firmer clots in the stomach, to be neutralised by alkalies. (ksharams)

(ii) This causes biliousness. Butter milk is a better substitute.

(iii) Harm of over feeding by indiscrete nurses

(iv) Idiosyncrasy in certain individuals (क्षीरेनापि विरिष्यते)

It is believed therefore that the choice of liquid foods within the easy reach of an average middle class man could easily be chosen and with advantage, by utilising the hints given in this article. He can include other similar articles of diet and then enlarge the armamentarium of the dietetics.

PARIBHASHA PRAKARANAM

By

V. V. RATNAM, L. I. M.
ADDANKI.

After a discussion on Dravya and Dravyaguna Vignanam we now proceed to study Paribhasha Vignanam which explains the various technical terms used by Ayurvedic Physicians in the study of Pharmacology.

Mana Paribhasha: There are two systems of measure and weights namely (1) Kalingamana which was more in use in South India and the other (2) Magadha system. Though Magadha system of measurements were the first known and used in practice, after a lapse of many centuries some of the then existing scholars recognised the necessity of reduction in dosage by observing the debility and similar constitutional changes and nirveeryathvam of herbs (which they thought to be 'Adharma Pravarthana') and thus invented another system in 'Paribhasha' namely 'Kalinga Mana' which is suited to present day.

Susruta was the foremost to step forward to conceive of the Kalingamana and recorded it, in which he reduced the doses in quantities (ex. 1 Pala = 4 tolas is reduced to 1 Pala to 3 tolas) using the same names to the units of measures to avoid possible confusion.

Magadha Mana:

30 Paramanus	1 Vamsi or thrasarenu.
6 Vamsis	1 Marichi.
6 Marichis	1 Rajika.
3 Rajikas	1 Sarshapam.
8 Sarshapams	1 Zena (1/3 gr.)
4 Zenas	1 Gunja.

6 Gunjas	1 Masham or 1/16 tola or 1 black gram wt.
4 Mashams	1 Sanam or Dharamam or Tankam (1/4 tola.)
2 Sanams	1 Kolam or 1/2 tola.
2 Kolams	1 Karsam or 1 tola.
2 Karsams	1 Sukthy of 2 tolas 1/2 palam.
2 Sukthies	1 Palam of 4 tolas or fistfull.
2 Palams	1 Prasruty or 8 tolas.
2 Prasruties	1 Kudanam or 16 tolas or 2 hands full.
2 Kudanams	1 Saravam of 32 tolas.
2 Saravams	1 Prastham or 1 viss 64 tolas.
4 Prasthams	1 Adhakam.
4 Adhakams	1 Dronam or 25 1/2 lbs. or 16 viss.
2 Dronams	1 Surpam.
2 Surpams	1 Drony.
4 Dronams	1 Khory.

Kalinga Manam: In this we want to state the different items only and the remaining may be understood to be equal to the Magadha mana in weight.

30 Paramanns	1 Vamsi.
6 Vamsies	1 Marichi.
6 Marichies	1 Rajika.
3 Rajikas	1 Sarshapam.
12 Sarshapams	1 Zavam.
2 Zavams	1 Gunja.
2 Gunjas	1 Palam.
8 Gunjas	1 Masham.
4 Mashams	1 Sanam.
6 Mashams	1 Gadyanam.
10 Mashams	1 Karsham.

4 Karshams 1 Palam.
4 Palams 1 Kudanam.

N.B.—From here all the other measurements are same as in those of Magadha manam.

III. Other measures and weights that are in use now.

(a) 5 Tolas 1 Chataku.
4 Chataku 1 Pavuseru (1/2 Measure.)
4 Pavaserus 1 Seer.

(b) 12 Paddy grain 1 Piry.
2 Piry 1 Kani or 1/2 Anna.
4 Karies 1 Visam or 1 Anna weight.
4 Visams 1 Pavula or 1/2 Rupee.
4 Pavulas 1 Tola or 1 Rupee weight.

(c) 24 Tolas 1 Ounce.
16 Ounces 1 Pound weight.

1 Nishkam or one Mada 7 1/2 Grains.
1 Vallam 2 Gunjas weight.
1 Gingu 2 Grains.

English Weights and Measures:

60 Grains 1 Dram
8 Drams 1 Oz.
16 Ozs. 1 Pound.
112 Pounds 1 Hundred weight.

Volumetric Measures:

60 Minims 1 Dram.
8 Drams 1 Oz.
16 Ozs. 1 Pound.
20 Ozs. 1 Pint.
8 Pints 1 Gallon.
1 Minim 1 Drop.
1 Tea spoonful 1 Draum.
1 Table spoonful 1/2 Oz.
1 Tola 180 Grs.
1 Oz. 437 1/2 Grs.

Table showing Magadha mana and equivalent weights in other systems: Magadha Manam and other equivalent measurements.

Magadha Paribhasha.			Its equivalent.				
No.	Least.	Greatest.	Total.	Tolas.	Maunds.	Sava-saers.	Gallons.
1	Paramanu	1 Yama	180 Paramanu				
2	Vamsa	1 Marichi	1080 "				
3	Marichas	1 Rakta	180 Vamsa	1/24 Yava			
4	Rakhas	1 Sahasapam		1 tola			
5	Sahasapam	1 Yavam or Pady grain					1/2 M. M.
6	Yava	1 Gunja	32 Sahasapam	4 tolas			
7	Gunjas	1 Masham or Black gram	2 Yards	1/16			2 M. M.
8	Mashams	1 Senam or Tankam	24 Gunjas	1 tola			48 M. M.
9	Senams	1 Kolan	6 Mashams	1 tola			1 1/2 Drs.
10	Kolams	1 Karsham	4 Senams	1 tola	1 tola		3 1/5 Drs.
11	Karshams	1 Sukthi	8 "	2 tolas	2 tolas		6 1/2 Drs.
12	Sukthis	1 Palam	4 Karsham	4 "	4 "		1 Oz 1 1/2 Drs.
13	Palams	1 Prasruty	8 "	8 "	8 "		3 Oz 1 1/2 Drs.
14	Prasrutis	1 Kudabam	4 Palams	16 "	16 "		6 Oz 3 Drs.
15	Kudabams	1 Saravam	8 "	32 "	1 Seer 8 tolas		12 Oz
16	Saravams	1 Prastam	16 "	64 "	3 Seers		6 1/2 Drs.
17	Prastams	1 Adhakam	64 "	256 "	16 tolas		1 Pint 5 Oz
18	Adhakams	1 Dhanam	256 "	1024 "	2 Vis		6 1/2 Drs.
19	Dhanams	1 Sarvam	512 "	2048 "	16 tolas		
20	Saravams	1 Droni	1024 "	4096 "	1 Maunda		
21	Dronis	1 Khoti	4096 "	16384 "	4 "		

"Gana Paribhasha"

After a thorough research over many a drug, both herbal and mineral in origin, our Acharyas arranged the drugs into a number of groups or vargams not only according to their action on Vatha, Pitha and Kapha but also according to their karma or therapeutical actions, as digestives, purgatives, diuretics, antepiridics, etc., Deepana and Pachana, Rechana, Muthrala and Jwarahara, etc.

Some of them were arranged also into other classifications, whose therapeutical actions as well as their Rasa contents are similar and the collectable part or parts, (ex. Trikatu, Triphala, Dasamulam) are the same. Susruta arranged them into 37 groups.

(1) Pralepa (plastic) guna drugs used for plasters.

(2) Quatha: Decoction.

(3) Thaila: Medicated oil.

(4) Ghritha: Medicated ghee.

(5) Panaka: Syrup.

Each group contains one or more drugs that are present in the other according to their indications. Susruta also described another variety of classification into 6 groups as:—

Vamana gana (Emetic), Virechana (Purgative), Vasti (Enemata) Vathahara,

Pithahara and Kapahara. The former 3 groups can be grouped as a Thana gana and the latter two as Samana gana. Vagbhata school of thought too adopted the same principle as Susrutha and arranged drugs in 335 groups. He arranged them as Sodhana type and Samana type and Doshahara, a type which can be prepared in various forms of Pharmaceutical preparations as Kalka, (Paste) Kwatha (Decoction) Sneha (Medicated oil and ghee) Lehya (confection), etc., to be used externally or internally or both according to the conditions.

Charaka, the oldest author differed from both the classifications and arranged them in groups according to their therapeutical actions. He arranged them into 50 ganas of which 7 are to be used for Pancha Karma, 5 for Sodhana, 2 for Snehana and Sweda Karma. His arrangement is as follows:—Muthrala or Diuretics, Swedopaga (Diphoretics), Sthanysavardhaka (Galactagogue), Srothastambhana (Haemostatics), or (Anthelmintics), Kanduhara (Anti-Pruritus), Jwarahara or Anti Pyoretics, Hridyam (Cardiotonics), etc. The drug in each group will be explained later on. Let us now explain in detail the third variety of classification, which is based on Rasa composition and collected partly in it.

A table showing the name of Gana, its contents along with its group action.

No.	Name of the Gana.	Drugs contained in each.	Its action and therapeutics.	How distinguished.
1	Dwiksharams	Sadya Ksharam and Yava Ksharam	Relieves Gulman	By salts.
2	Three Phala	Haritaki, Vibhitaki and Amalaki	Relieves Kapha and Pitha, acts on Diabetes, Leprosy, Ap diseases and acts as Deepanam and Pachanam and increases taste	By fruit.

JOURNAL OF INDIAN MEDICINE				
No.	Name of the Gana	Drugs contained in each.	Its action and therapeutics	How Distinguished
17	Thrina Panchamulam (or grass group)	Kusa grass, Kasa grass, Ikshu grass, Kaka-masha and Dursa	It is a good urinary antiseptic and alleviates Pitha and the diseases caused by it	
18	Pancha Gavyam (the five excreta of cow)	Cow dung, urine, milk, ghee and butter	It alleviates Kapha and acts on all Kapha diseases, fever Hysteria alleviates indigestions; good for Hysterical patients	
19	Pancha muthams (the five urines)	Urine of cow, buffallow, sheep, goat and donkey	All these act as diuretics and Purgatives relieves Anasarca	
20	Shadarushnams	Pippali, Pippalinulam, Chavyam, Chithrakam and Maricham	This group contains Ruksha guna and Ushna Veeryam, acts as Deepana and Pachana, good for poisons	
21	Sapta Dhatu (or seven Minerals)	Gold, Silver, Copper, Zinc, Tin, Lead and Iron	This group acts on diseases if given with a proper care after proper purification and Bhaami-karanam (Reduction to ashes) This group will be dealt with digestion	
22	Sapta Upa dhatu	Swarna, makshikam, Tora, makshikam, Mayurathutham, Kankustam, Girish-dhutam, Kaphari and Manduram	The action of this group is identical as that of the Dhatu group	

PARIBHASHA PRAKARANAM				
No.	Name of the Gana.	Drugs contained in each	Its action and therapeutics	How Distinguished
23	Ashtha Gandhams (the eight scents)	Hirna Karpuram, Sree-gandham, Musta, Kunkama, Dinah-yama, Naga Kesar-am, Veesuram and Gorojanams	Relieves all the complaints caused by excess of Kapha Pitham and Rak-tham, gives good smell and increases complexion	
24	Navarathnams (the nine precious stones)	Vajram, Viduryam, Neelam, Gomedha-kam, Pushparagam, Marakafam, Manik-yam, Moukthikam and Pravalam	When properly purified and prepared Bhaamam act on diseases of cough and T. B. Lungs	
25	Dasa Ksharam	Sigru, Mullangi, Palasam, Tinthrini, Chitrakam, Ginger, Nimba, Vidari, Apamarga and Kanta-kari	This group acts on Spleen and Liver disorders, Anasarca and diseases of abdomen	
26	Dasa Mutrams	Urine of Cow, Elephant, Buffallow, Camel, Goat, Sheep, Horse, Donkey, Man and Woman	This group is a good diuretic and acts on Liver and Spleen disorders Relieves Anasarca addition of any origin and on Digestive diseases	
27	Dasa mulam	Maha Pancha Mulams and Laghu Pancha Mulams	Good anti pyretics act on Sannipatha fever Respiratory diseases and acts as Deepana and Pachana alleviates Vata and Kapha	

Putra paribhasha and Yantra paribhasha

Putam: This, as per Ayurvedic system is the product in which the given medicine after properly purifying is reduced to ashes by a combustion process as to have a physical and chemical change to form a different substance without losing its original properties or actions.

I. They are (1) **Mahaputam:** It is the process in which the given medicine after proper purification is to be put in a glass bottle whose water surface is reinforced with a protective cover with red clay and thin cloth all round or in earthen dishes reinforced with proper covering as stated above and to be burnt amidst the dried cow-dung cakes which are half filled in a pit, dug in earth with 1 yard breadth, length, and depth (i.e., 1 yard culu) and the medicine is to be taken after it is completely cooled down in the pit itself.

II. **Gajaputam:** In this the pit has the dimensions as 27 inches (or 3 Janas) length, breadth and depth and all the other processes are to be carried out as stated in Mahaputam.

III. **Varahaputam:** In this process the pit being $\frac{1}{2}$ yard length, breadth and depth all the remaining processes are to be done as in Mahaputam.

IV. **Kukkutaputam:** In this all the processes being the same as in Mahaputam the pit has to be dug as 9 inches culu.

V. **Kapothaputam:** is the process in which the process being the same as above and pit being 9 inches culu and cow-dung cakes are to be 9 in number and has to be burnt.

VI. **Gouraputam:** is the process in which the given medicine has to be burnt amidst the dried cow-dung cakes without any pit.

Yantra paribhasha

In preparing some of the Ayurvedic preparations especially Rasa preparations, our scientists have invented some Machinery viz., Yanthrams which they used to prepare with earth in various forms with fitting names for each one of them (eg). Dhamarukam or Drum shape, Dolayanthram or floating machinery, etc. They used to utilise these yanthrams while purifying and reducing into ashes the Maharasas, Shadharanarasas.

They are I. **Dolayanthram** or floating machine.

Here they put the prescribed decoction or free extract of drugs into an earthen pot half filled, two small pieces of apparatus on either side of its neck with or without, a piece of thin strong wooden rod suspended to the above wooden rod with a cloth tied to it half immersed into the fluid.

II. **Swedana Yanthram:** In this an earthen pot half filled with the decoction or fresh extract prepared out of drugs with a clean cloth covered to the mouth in which the drugs which have to be purified is put and covered by an earthen dish well packed around according to the yoga and made air tight and is to be buried.

N.B.—The detailed description of these yanthrams with model figures will be described in the chapter Rasa Vignanam.

Paribhasha of pharmaceutical preparations

In this we deal with the general principles and methods of preparations of different forms of pharmaceutical preparations in Ayurveda. They are as follow.

1. **Churnam or powder:** In this there are two types (1) fine powders which are prepared out of a single drug or by taking two or more drugs and powdering them in a stone mortar previously dried. It is then filtered through a fine cloth or seve. This is generally used internally (eg.) Ashta churnam, Thaladi churnam, Triphala churnam.

2. **Kwatha churnam:** This is obtained as a gross powder by crushing into pieces, the raw drugs and is used to prepare decoctions (eg.) Drakshadi kwatha churnam, Dasamula Katuthrayadi Kwatha churnam, Panchatiktha Kwatha churnam.

The more common place Kwatha-churnam and Slakshma churnams are given below:

Slakshma churnams:

1. Ashta churnam.
2. Aswagandha churnam.
3. Arka Lavana churnam.
4. Avipathikara churnam.
5. Bhaskaralavanam.
6. Danthadhavana churnam.
7. Drakshadi churnam.
8. Dadimaasthaka churnam.
9. Eladi churnam.
10. Gangadhara churnam.
11. Gokshuradi churnam.
12. Jathiphaladi churnam.

13. Karpuradi churnam.
14. Kapithasthaka churnam.
15. Katavi churnam.
16. Laksha churnam.
17. Madhusnuhi churnam.
18. Mahasudarsana churnam.
19. Pushyanuga churnam.
20. Rasnadi churnam.
21. Sithopthaladi churnam.
22. Sudarsana churnam.
23. Salmali churnam.
24. Tankana churnam.
25. Triphala churnam.
26. Thrivriith churnam.
27. Thrikatu churnam.
28. Theagaraja Maricham.
29. Thaladi churnam.
30. Usiradi churnam.

Kwatha churnams:

1. Bharnyadi K. churnam.
2. Chinnarnhadi K. churnam.
3. Dasamula K. churnam.
4. Dasamula Katuthrayadi K. churnam.
5. Manjishadi K. churnam.
6. Nimbadi K. churnam.
7. Panchatiktha K. churnam.
8. Maharasnadi K. churnam.
9. Muthrasangraha K. churnam.
10. Muthra Virechana K. churnam.
11. Shadanga K. churnam.
12. Sthanya Sodhana K. churnam.
13. Sthanya Vardhak K. churnam.
14. Thrilapha K. churnam.
15. Rasnadi K. churnam.
16. Gandhawalagha K. churnam.

(To be continued)

Maternity and Child Welfare

By

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WOMAN MEDICAL OFFICER,

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भगवद्गान् संभवसि हृदयवर्धयसि ।
मातासु पुत्राः तामासि सजीव शरद्वशात् शतायु
शतवर्षांसि दीर्घमायुरवाप्नुहि ॥

Mother's health, it is agreed on all sides, is responsible for bringing forth healthy children who grow to be strong and wise citizens, and in their turn make the nation strong. So it should be the aim of every expectant mother to bring forth strong and healthy progeny. To achieve this object, the mother, during her pregnancy should maintain her health with scrupulous care. The great sons of our country from Asoka to Gandhi, not to speak of the millions of ages and risings, have contributed to the glorious heritage of the land. But, to day, it is our task to carry on the glory and improve on the present fallen state, which is the result of neglect of duty of the present generation.

Maternal Hygiene

In India vital statistics relating to maternity and child welfare give very high figures of maternal and infant mortality a figure much higher than other countries. The deaths arising out of child-bearing and between birth and five years of age amount to over three million in each year. These appalling facts should be realised and handled in the right way, if we should not be condemned as having

fallen off our greatness in the past. Therefore, it is imperative that we institute schemes for the protection of the health of the mother and the child. Maternal mis-management and neglect or ignorance of the precautions to safeguard their health is due to illiteracy and poverty. To control these maternal and infant mortality and morbidity, the mother should be educated in the art of bringing up children. Besides better facilities for treatment of sick children, effective sanitary control of the environment, and food supply, scientific study and investigation of infant-hygiene and diseases, are highly essential. Improved medical and nursing education, and training in obstetrics, pediatrics and social medicine are also vital in reducing infant mortality. The control of maternal mortality and morbidity lies mainly in the provision of adequate pre-natal, natal, and post-natal care of the mother.

“..... अहिताहार विहारान् प्रजासंपदमि
अकृन्ती स्त्री विसेषेण वर्जयेत् । सखाचारव
शास्त्रानु पचरेत् दित्वाभ्यामाहारविहारव्यस्यम् ॥

Prenatal care :—This is the proper watchfulness of the mother in her capacity as a wife, expectant and nursing mother. Every woman should have a minimum of three medical examinations. The first should be between 8th & 10th

MATERNITY AND CHILD WELFARE

weeks of pregnancy to ensure that she can withstand the strain, to detect such fit to abnormalities as Syphilis, Tuberculosis, toxæmia and anaemia, and to institute appropriate treatment. The second examination should be between the 32nd and 36th week of pregnancy, to diagnose presentation, position, and to carry out any manipulations which may be necessary. The third examination should be by about the 38th or 39th week to detect of any disproportion between the head and the pelvis.

Provision is, therefore, necessary for prenatal clinics where urine could be tested, blood pressure taken, weight of the mother and the development of of pregnancy recorded every month and medical examination arranged.

The other activities of prenatal clinics should include collective or group teaching on the following points :—

(1) dress (2) diet (3) exercise (4) care of the skin (5) bowels (6) kidneys (7) breasts (8) teeth (9) journeys (10) amusements (11) mental and nervous conditions (12) sexual intercourse (13) symptoms of abnormalities.

Dress :—The garments should be free from offensive odour and should be washed daily and sunned. Tight garments should not be worn at all during pregnancy. They should be sanitary, of loose texture, have plenty of porosity and as far as possible of white colour to let the Sun's rays or diffused light act on the skin. The pregnant woman should always cherish a clear, joyful spirit in a clean body and should wear clean and white garments.

Diet :—The diet of a pregnant woman should be nourishing. It is not enough that a little better food than usual is given to her.

The foetus takes its due share of nourishment from the mother and goes on rapidly building itself at the cost of the mother. The foetus has no consideration regarding the capacity of the mother. The result is often a drain on the sources of the under-fed mother. The expectant mother should be fed very liberally to meet all the needs of herself and also some reserve for the great trial ahead besides what is needed to build the body of the foetus. The food must be substantial, sufficient in quality and quantity, and rich in all the vitamins, and minerals. Protein foods such as meat, fish and egg should be avoided, milk and milk products should be increased, fruits and leafy vegetables should be freshly taken and germinating pulses which are rich in vitamins should be taken raw. Fruits, nuts and vegetables such as cucumbers, coconut, green or ripe, baol brinjals, lady's-fingers and such as these should be taken plentiful. Roots and tubers should be rejected as they are not exposed to sun and defective in chlorophyll and further produce much constipation. The diet should be nutritious, easy for digestion and assimilation, and tasty. “It should be sweet, cooling, and abounding in fluids” **Saruta** :—It is advisable to reduce the quantity of rice and take as much vegetables and fruits as the digestive system will permit without being upset.

Two-thirds of food taken should be fruits and vegetables, at least half of it should be taken raw, if digestion permits. The rest of the food should be made of whole grains, cereals, dairy products, honey and pulses wholesome, unpolished and unrefined foods should be chosen. All types of food must be thoroughly chewed and eaten.

Drinks from fruits and vegetable juices should be taken between meals at least

half an hour before a meal and $2\frac{1}{2}$ to 3 hours after the previous meal. Highly seasoned foods, fried foods, fancy cakes and pastries are better avoided. Three meals a day, and no "pieces" between times should be the rule. Meals should be taken with pleasure. If the mother is tired or not hungry, the wisest plan is to omit the meal and just have a good drink instead. All intoxicating drinks such as alcohol, should be avoided. Even coffee and tea, it is better to be reduced to a minimum.

Exercise:—Some amount of exercise is necessary during the period of pregnancy in order to give health to the foetus and also to effect a normal healthy delivery for the mother with the least amount of pain, exertion or disturbance. It helps blood circulation, removes the impurities and increases the capacity to assimilate. Those who idle away and do no exercise, store trouble for the future. Exercise should be taken moderate giving no room for exhaustion. In our country ordinary house hold occupations provide ample exercise, if carefully chosen. Paddy husking, washing of clothes and such activities as these are harmful as they are severe and exhausting.

Skin:—This should be attended to. The skin is the excretory organ and its care should be taken during pregnancy to excrete waste products from the body and absorb light from the Sun's rays normally.

Bath:—Bath with oil massage is good. There should be two baths according to the capacity and temperament of the system. The water used should neither be too hot nor too cold, but it should be warm. Tub bath is not desirable as sepsis, might occur but shower or ordinary baths are safe throughout the whole course.

Teeth:—Care of the teeth is quiet necessary as certain amount of pyorrhoea is present in many. Local infection round about the teeth gives rise to many ailments and sometimes favouring puerperal sepsis. For this reason proper cleaning of teeth should be insisted upon. Lack of certain vitamins like vitamin C and D may be responsible for dental decay. Hence these should be supplied in the form of lemons, oranges goosier berries and green leafy vegetables like cabbage and lettuce. Milk and egg also have ample amounts of these and these should be freely supplied.

Bowels:—These should be kept freely moved as constipation at any time is bad, particularly so in pregnancy. Plenty of vegetables and myrobalans may be taken. Plenty of water should be taken during pregnancy as there is abundance of formation of toxins from the mother and the foetus and these should be got rid of.

Kidneys:—Urine should not be retained. The growth of the foetus reduces the space which was generally occupied by the bladder and hence the normal contents of the bladder could not be stored without strain. There is necessity to empty the bladder oftener. The kidneys should be relieved of as and when there is a call. Plenty of water has to be taken to eliminate toxins from the body. If the quantity of urine is less, it should be corrected.

Breasts:—The nipples should be kept clean by rubbing with a good towel. They should be well developed to feed the baby with ease. They should be massaged and kept soft with lubricating applications like gingelly oil.

Journey:—This should not be undertaken. The first three months are full of risks and hence journey should be avoided. If there is a history of abortions or miscarriage, it is better to avoid

them during the whole course. If journey is undertaken, it is better after the fifth month when the chances of abortion are less. Again, during the last three months there should be no journey. Smooth journey without jolting can be tolerated. All acts which cause strain on the abdomen should be avoided. Walking long distances and journeys by quickly moving vehicles are baneful.

Amusements:—Habit should be regulated with regard to hours of sleeping and waking. Waking up long hours at night and late rising are bad for health. Amusements requiring presence in crowded rooms such as in theatres, and cinemas, and the attendance to meetings etc., should be avoided. Excitement is harmful and amusements and meetings are places of excitement, vitiated atmosphere where people congregate is injurious to the system. The increase in the percentage of carbon di-oxide has a contracting property and, therefore, has deleterious action on the uterus. A pregnant woman should not be in a crowd or in a place where there is much noise or come into contact with unclean and deformed persons. She has to avoid foul smelling things, dreadful sights, and painful or agitating sounds. It is harmful to indulge in anger, mental emotions, and loud talk.

Mental and nervous conditions:—Cheerfulness should be maintained during pregnancy. Irritation, grief, shock, anger, disgust adversely affect pregnant women.

Attempts should be made to remove all sources of irritation. She should be kept cheerful by careful and delicate attention. She should be allowed to hear good stories, but thrilling and exciting ghost stories or stories of difficult labours should be scrupulously avoided as they have very bad effects.

Sight of cruelty, slaughter of animals house hold quarrels and disagreement affect adversely. It was said that a pregnant woman, was so shocked when a cruel boy stabbed a cat in the eye that though she delivered months after the incident, the child was a blind one. It is no wonder that such things happen.

A woman after the 16th week of pregnancy is said to be "doudhida", meaning double hearted. The foetal heart is said to function from the 4th month and it is endowed with consciousness. Thence the foetus expresses its desire for things of taste, smell etc., through the longings of the mother. Hence the longings of a pregnant woman are to be satisfied as far as possible. If her desires in this stage are duly fulfilled, it is said that the child to be borne is long lived, strong and victorious. Otherwise it is believed that a paralysed, lame, deaf, dumb, crooked, dwarf, or a blind child would be born. It is also said that non gratification of any sensual enjoyment by the pregnant women tends to affect the similar sense organ of the foetus. Thus, it is believed that the non-fulfilment of desires proves injurious both to the mother and the child. Hence a quiet, peaceful and cheerful life should be ensured for her. She should sleep alone in her bed in an open place with free access to fresh air. She should have proper sleep to keep her in a fit condition.

Sexual intercourse:—It is extremely injurious for the pregnant woman. The purpose of nature is served as soon as there is conception. *सिद्धेवार्ता पुत्रकामौ पुत्रवीरं दद्यातु मे* If coition is forced of her, it serves to jar her nerves and injures both the mother and the foetus. As the parts are so sensitive after

GLIMPSES IN AYURVEDIC SURGERY

to practice. That was the mode of the registration, then in vogue. Anybody who practised without such sanction was to be dealt with, with capital punishment. (यद्यं चरति.....)

In the preparation of the operation theatres, the process of fumigation with vapours of white mustard, nimba leaves and the like, is noteworthy. It bears testimony to the conception of the filth and foul air that have to be got rid of. Here comes the true conception of antiseptis and asepsis.

In the preparation of the patient for operation, the Surgeons of yore enjoined a light refreshment just before the operation. But the dictum of banning and the insistence of keeping the patient on fasting for operations of the mouth and abdomen are points that declare the far-sightedness of these Surgeons.

We find in the Samhita that ophthalmic, obstetric and other operations were performed with the utmost skill and caution.

Plastic and Rhinoplastic operations: Doctor Hirschberg of Berlin says, "The whole plastic surgery in Europe took a new flight when those cunning devices of Indian workmen became known to us." The transplanting of sensible skin flaps is also an entirely Indian method (Susrutha Sutra sthanam ch XVI). It is Susrutha who first successfully demonstrated the feasibility to clip the ear be with a patch of sensible skin flap scraped from the neck or the adjoining part.

To Susrutha is attributed the glory of discovering the art of cataract gouging which was unknown to the surgeons of Ancient Greece and Egypt. Limbs were amputated, abdominal

sections were performed, fractures were set, dislocation (hernia and ruptures) were reduced) haemorrhoids and fistula were removed, and we take pride in saying that the methods recommended in Susrutha Samhita some times prove more successful than those adopted by the surgeons of Modern Europe, as we shall have occasion to observe later on. In the case where the intestines are injured Susrutha advises that the protruded part should be gently replaced by following with the finger. A surgeon should enlarge the wound in it, if necessary, by means of a knife. In the case when the intestine is severed, the severed part should be held together by applying living black ants to their ends. Then their bodies should be cut off having only the heads to serve the same purpose which in modern improved European surgery, are animal tissue, like cat-gut is expected to fulfil and which can with advantage be adopted. After this the intestine should be fully replaced in the abdominal cavity, and the external opening stitched and properly dressed. We abstain here from a lengthy description of different methods recommended by Susrutha on cases of abdominal and peritoneal wounds. We only ask our readers to compare this chapter (II chikitsa stana) of Susrutha Samhita with the chapter on any work on surgery which deals with the same subject. Certain medicinal plasters were used to be applied to localise the shafts of arrows embedded in the wounds of wounded soldiers and their exact locations were ascertained from the swelling and inflammation caused by the application of such plasters with a precision which would be sometime welcome even in these days of Rontgen Rays.

(to be Continued)



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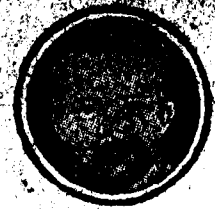
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