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Review :

Corelation between Ashtonindhith and Endocrine Disorders

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Abstract :

Ashtonindhith is a unique concept described in ayurveda these articles deals with the critical review of ashtonindhith and some of the major endocrine disorders in Ayurvedic science. Ashtonindhith is described in Charkas Samhita Sutrasthana. It includes eight types of undesirable physical constituents which are closely related to some of major endocrine disorders. Ashtonindhith represent dual states of pathogenesis hyperactivity and hypo activity in different dhatus and related strotas. Manda guna leads to the hypofunctions and tikshna guna leads to the hyper functions. In the same way we found that there are dual states of pathogenesis in endocrine diseases which occurs commonly due to hypo or hyperactivity of particular hormones and glands. This article tries to narrate the modern perspective of ashtonindhith in terms of endocrine disorders and also helpful in prognosis of endocrine disorders for medical practitioners.

Keywords:

Ashthonindhith, dhatus, endocrine disorders, hormones, mand guna, strotas. tishna guna.

Reference 14

Introduction :

In Ayurvedic science Ashtonindhith is described in Charka Samhita Sutrasthana. Ashtonindhith are eight types of undesirable constituents, which are explain after giving information about Rogchatushka (Types of diseases) and Bheshjchatushka (Types of medicines) and before giving information about Yojanachatushka (Plan of treatment). As treatment can be given to human body, hence identification of normal physical constitution is necessary for successes of treatment. Therefore charka has explained these eight undesirable physical constitutions of human body¹. In ashtonindhith there are Bijdushti and Dathugatha Stages. Impairment of Datwagni negatively affects Dhatusarta of the body and this process ultimately leads in inappropriate Dathu formations. Metabolic processes are deeply affected in these diseases leading to inappropriate Dhatu functions. Sanga and Atipravrutti of various Srotuses results in yogya or atiyogya in certain physiological parameters.²

Ashtonindhith represent dual states of pathogenesis hyperactivity and hypo activity in different

Dhatus and related Strotas. Manda guna leads to the hypo functions and tishna guna leads to the hyper functions.

Vata being vishma and yogvahi in nature associates with both conditions hence clinically vata pitta stages are ashukari with hyperactivity and vat kapha stages are chirakari with hypo activity. Such an interesting vyadhiswabhava is evidence in certain endocrine disorders.³

Eight types of Ashthonindhits

Atidirgha – It is too tall than normal. This type of person has more height than normal human beings having less weight. They are vata- dosha dominants. In modern it can be compare with Gigantism.

Atiraswa – It is to short than normal. These types of person are unable to do excessive work. In this type of person all physical parts of the body developed in appropriate proportion to one another, but rate of development is greatly decreased. In modern term, it can be compare with dwarfism⁴.

Atisthoulya - Overweight persons. As obesity is very hard to treat and it is the main cause for many fetal diseases, so called as Nindiniya, here kapha medha dushti is prominent with srothorodha .

Atikarshya - Underweight person. Here vata dominant conditions are common with kshaya to soumya bhavas⁵

Atiloma - To much hairs on skin according to the Accharya human body has 3 ½ carror loma and hair root, by this hair root metabolic waste material are excreted from the body, loss of excessive hair excretion procedure is hampered.

Aloma - Very few or no hairs on skin. In aloma as there is less number of hair roots, sweating is also less. Hence waste products excreted from the sweat will also reduce and causes various skin diseases which will make the person unhealthy, hence so they are nindhniya⁶.

Atikrishna - It is too much black complexions of skin in this type of person melanin pigments are excessive.

Atishweta – It is too much white complexion of skin. This person having with pitta dosha dominant due to hypopigmentation, they cannot bear sunlight in summer season. This type of person need shit –vriyatmak - drvya for pacification purpose. According to the modern concept the type of skin in which it is totally white and photophobia sign is seen, such condition can be compare with Albinism.⁷

Endocrine system is one of the coordinating and control systems of body function. It in coordination with nervous system controls body function and maintains the homeostasis of the body .endocrine glands are ductless gland. They secrete their secretion directly in the blood. Chemicals secreted by endocrine glands are called as hormones. Hormones act on targeted tissue in the body to influence their activity is specific way. Action of some hormones is

limited to particular organ and action of some hormones will affect whole body. Endocrine diseases also occur commonly due to hypo or hyper activity of particular hormones and glands. Endocrine system includes the various glands. Pituitary gland is the master gland present below the hypothalamus. Endocrine disorder is the inappropriate functioning of the gland.⁸

Pituitary gland –pituitary gland present below the hypothalamus it secretes 7 hormones from anterior portion and secretes two hormones from the posterior portion.

1. Pituitary gland –

Anterior pituitary - GH Prolactin TSH, FSH, LH, ACTH, MST.

Posterior pituitary –Oxytocin, ADH, Vasopressin

GH Growth hormone –

Over secretion of GH (in childhood) - Gigantism

(In adult)- Acromegaly

Deficiency of GH (in child) -Dwarfism

ACTH (Adrenocorticotropic hormone)

Hyper functioning (male) Cushing disease

(Female) Cushing disease and virilism

Hypo functioning (young age) Laurence Biddle moon syndrome,

(Adult age) Frohlich syndrome.

Panhypopituitarism –Simmonds disease⁹

Posterior pituitary –

Hypo ADH secretion – Diabetes insipidus,

2. Thyroid gland -

Hyperthyroidism – Goiter, thyrotoxicosis

Hypothyroidism-(in child) cretinism, (adult) myxoedema

3. Parathyroid -

Hyperparathyroidism-Excess osteoclastic activity

Hypoparathyroidism –Tetany¹⁰

4. Adrenal cortex

Primary Hyperaldosteronism –Conn's disease

Secondary Aldosteronism – Cushing syndrome

Over secretion of cortisol – Cushing syndrome

Chronic adrenal insufficiency –Addison disease

5. Adrenal medulla -

Tumor –over secretion of nor adrenationpheochromocytoma¹¹.

6. Sex hormones disorders – Gonadal dysgenesis

Androgen insensitivity syndromes

Hypergonadism- Gynecomastia (Enlargement of breast)

Hypogonadism-Reduction and function of active Gonads¹²

Inherited (genetic and chromosomal) disorders- Klinefelter

Syndrome Turner syndrome¹³

Acquired of puberty –delay puberty, precocious puberty.

Menstrual function or fertility disorders –Amenorrhea, Polycystic ovary syndrome¹⁴

Comparisons -

Athisthoola - In Athisthoola kapha medo dushti is prominent with srothorodha and srotho uplepatha it can compare with Cushing's syndrome, hypothalamic syndromes, Hypotharoidism, PCOD, obesity is associated with delayed puberty in children.

Athikarsha – here vat dominant conditions are common with kshaya to soumya bhavas it can compare with weight loss in DM, Thyrotoxicosis, and Addison's disease.

Athiraswa – Athihraswa can be compare with Hypothyroidism, hypopituitarism,gonadal dysgenesis ,hypothalamic syndromes ,Cushing 'syndrome¹⁵.

Athidheegha - Pituitary disorder – Growth hormone increases, abnormalities of adrenal, ovarian or testicular hormones. Hypogonadism –with eunuchoidism, marfan's syndrome.

Athikrishna and Athiswetha – Here it can compare with hyper pigmentation in skin folds pressure points and in oral mucus membrane is seen in Addison's disease. Skin color changes are seen in hypopituitarism hypothyroidism etc.

Athiloma and Aloma - Increased hair is seen in following endocrine pathologies

Hirsutism, hyperandrogenism. Secondary hirsutism-hyper function of adrenal, pcod, testicular and ovarian tumors.

Loss of hair seen in hyper function in adrenal cortex and androgenic tumors-frontal baldness

Myxoedema –generalized loss of hair overhead and eyebrows

Absences or loss of facial, axillaries and pubic hair hypopituitarism and hypogonadism. Its can compare with athiloma and Aloma.¹⁶

Conclusion –

From above discussion we come to know that sign and symptoms present in the ashtonindhit is near about similar to the hypo and hyper secretions of various endocrine gland.Gingitism can be correlated with Atideergha, Dwarfism can be correlated with Atiraswa Obesity can be correlated with Atistholya ,Diabetic mellitus, thyrotoxicosis can be correlated with Atikarsha.

Hirsutism, pcod can be correlated with Atiloma,
Myxoedema can be correlated with Aloma Addison s disease can be correlated
With Atikrishna, Albinism can be correlated with Atishwet.

Result -

As per ayurvedic textual references Ashthonindhith is very difficult to cure (kashtsadhya) sometimes they are not curable (yaapya). In the case of endocrine disorders are also very difficult to cure and some of disorders are not curable. Patients have to take medicines through out the life for control of disease. Hence from above all discussion we can conclude that endocrine disorders can be compared with ashthonindhith and treatment given in ayurvedic compendia for ashtonindhith may get helpful for the clinician to treat the patients of endocrine disorders

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Review :

CLINICAL UTILITY OF 'KALA SHAREERA'



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Abstract :

Kalâs are some of the most briefly described concepts in Âyurveda. As concise is its description, equally understated is their importance in pathogenesis and treatment. Nevertheless taking cues from the classical texts the Kalâs can be understood in detail, physiologically and pathologically. A study of their interdependence and relation amongst them is also crucial in understanding certain vyâdhis like, Grahaði, Sthoulya etc. and their upadravas; as well as analyzing pathologies of other vyâdhis in depth. (Ref. 10)

Key words : Kalâ, Membranes, Dhâtu âvaraòa, Strotas, Strotas du^opi.

Introduction :

Studying a concept without an understanding of its utility is like leading a blind path. Úâreera is the substratum of the Indriya, Satva and Âtmâ, which make the vital components of 373 ÇÂyu Ç. (C.Su.1) it is, but the most cognizable entity of the living human, exhibiting vivid changes both physiological and pathological. Hence perhaps it was studied and elaborated in details, and was considered as marker for the evaluation of pathological states.

No fundamental principle of Âyurveda, no matter how brief or elaborate its description provided is not sans clinical utility. It also stands true for the Kalâs. From all that which has been elaborated on Kalâ in the classics, one fact remains clear that it is not only an object of anatomical significance but has multiple physiological functions to perform as well. It thence has its place of importance in the pathological conditions as well.

What is Kalâ :

"Kalâ" as a word, have varied meanings in different fields. Here in this context it is understood only as an anatomical structure in the body and can be defined as follows:

a) Kalâ is like the subtle garment of silk, uniformly spreading, enveloping the Âúrayas in various body tissues, Mâmsa, Asthis etc. (Pratyak^oa ŒÊâreeram, pg. 6)

The limiting membrane between the Dhâtu and the Âúaya is called Kalâ.

In the modern context of Anatomy and Physiology, Kalâ has been compared to the membrane by the Âyurvedic experts of the yore years and is an opinion still supported by the scholars of today in unison.

CHRONOLOGY OF KALÂS :

The number of Kalâs described in the various texts differ greatly. Only Suúrutâcârya, has emphasized on their number and authenticity by using the word 374 D-ÇKhalu D-Ç in his elaboration. (Su.Úâ.4/4, Dr. Ghanekar Commentary)

- Suœrutâcârya have mentioned the number seven in Úâreera Sthâna, but later when explaining the Vi^oa vegas of Sarpa visa, i.e. in the fourth chapter of Kalpasthâna, Dalhaòacârya explains two more Kalâs, i.e. the Asthidharâ and Majjadharâ.
- Among the Laghutrayees, though restricted to the number, has substituted the CÊle^omadharâ Kalâ by Yak^ota Plihâ Dharâ Kalâ.
- Mahâmahopâdhyâya Gaòanâth Sen has added the Udarya Kalâ, which is said to envelope the abdominal cavity, synonymous to the Peritoneum.
- Dr. P.S. Varier, in B^ohatúâreeram, has described seventeen Kalâs.

All the above references imply one thing in common that the number of the Kalâ can never be certain. With the context and applicability the number is variable. But only the basic Kalâs remain to be seven on the basis of which the rest can be evaluated.

Role of Kalâ in Pathogenesis of diseases in general :

The cause of all diseases is Agnimândya or decrease in the digestive capacity. (Ast.Hr.Ni.12/1) This sutra is the foundation of pathogenesis in Âyurveda. The Agni in the body is controlled by the Japharâgni, whose seat is the Grahaòì. This Grahaòì is synonymous with the Pittadharâ Kalâ. Hence vitiation of Grahaòì is synonymous to the vitiation of Pittadharâ Kalâ.

For any disease to occur it requires a vitiated Dhâtu i.e. a kha vaiguòya: which are vulnerable Strotas wherein the Do^oas come and lodge. A Kha-vaiguòya can only be created if the Âkâúa in it is compromised and the Agni in the Strotas is Manda.

All diseases which are Au^oada Sâdhya originate from Strotas Du^opi, where the Pooœaka Amœa is vitiated; anatomy of the Dhâtu is not. If the anatomy of the Dhâtu is disturbed it leads to the disease being CÊastra Sâdhya. This Strotas is also lined by the Kalâ, which envelops the Âkâúa of the Strotas.

Considering the Swarupa of the Kalâs, they will be affected by the Snigdha, Picchila, Drava, Úîta and Manda Guòas of drugs or its opposites as they are Viœœ^oa to it. Since they are Âpya Pradhâna, increase in Âpya Guòas will increase its secretions causing them to clog the Strotas, but if the Hetus are Rukœa, U^oòà Guòà predominant they dry the Kalâ. But this phase lasts only for some time and the Kalâ will secrete in excess after some time lapse, when the body will try to compensate for the dryness. Hence it either way effects its respective Strotas, Âúaya or Dhâtu. These two conditions are seen in every disease, and is the all pervading pathology in this point of view.

When describing Sthânsamœraya, as the fourth ^aatkriya Kâla, Suœruta has elaborated Vyâdhis where in an underlying involvement to Kalâ can be analyzed. (Su.su.21/33)

When the Do^oas are lodged in the Udara, the symptoms seen are Vidradhi, Gulma, Udara, Agnidagdha, Anâha, Viçucikâ and Atisâra. Vidradhi is the vitiation of the Mâmsa dharâ Kalâ of the organ involved. In Udara the ÇEle^omadharâ specifically called the Udarya Kalâ by M.M. Gananath Sen is vitiated. Agni mândya, Viçucikâ, involves the Pittadharâ and Anâha, Gulma Atisâra involves the Pittadharâ Kalâ.

In the Basti again the Mutradharâ Kalâ or specifically the Puricæadharâ Kalâ is affected; as the diseases Prameha, Aœmari, Mûtraghâta and Mûtra Do^a are caused due to improper Sâra-kiçpa vibhâjana which occurs in the Pakwâûaya. It is interesting to note here that the Mutrâûaya gata Aœmari is a symptom seen in Guda gata Vâta. (C.chi.28/) In Medhra and V^oana gata v^oiddhi, ÇEukradharâ Kalâ is involved. In Bhagandara and Arœa, Mâmsadharâ Kalâ is involved. In Pâdagata Vâta, also in the symptoms seen in the diseases such as ÇElipada and Vâtakaòpaka, the ÇEle^omadharâ Kalâ is affected whereas in the smaller joints Medodharâ Kalâ is affected.

Indepth analysis of the role played by each Kalâ :

Considering the similarities established between the Kalâ and the various membranes in the body, a brief attempt will be made to unfold the clinical picture of these membranes along with the pathologies concerning individual Kalâ's;

1. Mâmsadharâ: Since it harbours the Sirâs and Dhamanis etc. its pathology will be evident in abnormality in the Sirâs etc. and the Mâmsa Dhâtu proper. Apart from the K^oaya, V^oddhi or Samatâ in the Mâmsa Dhâtu, which involves the Kalâ; it also harbours the Strotas through which the Po^oaka amœa is taken in. Thence having an important role to play in the pathologies related to the Po^oaka amœa as well.

Mâmsadharâ is the seventh layer of the Twacâ; the diseases specified for this layer are Bhagandara, Vidradhi and Arœa. In the Samprâpti of diseases like ÇEotha, and Udara, the diseases are said to have lodged in Tvak-Mâmsântara, where in lies ÇEle^omadharâ Kalâ or deep facia.

In the Twacâ, the Mâmsadharâ is compared to the Dermis. The colour of the Dermis is a maker for various diseases, like Jaundice, erythema occurring due to the engorgement of capillaries in the Dermis, reversely Anaemia or shock or even cyanosis. (Tortora pg151).

To understand their utility, individual Kalâ s needs to be assessed.

2. Raktadharâ Kalâ:- One of the most vital Kalâ; and one that is incorporated in all Dhâtus of the body. At the clinical level the specific examination that can be done of the Kalâ is the Nâdi Parikœa. On the basis of the volume and character of the pulse, the patency of the Raktadharâ Kalâ can be assessed. Also cyanosis, redness or pallor at the finger tips, tongue, conjunctiva or for that matter anywhere in the body speaks volumes of the condition of the Dhâtu and Kalâ in the body. Among the laboratory tests, bleeding time, clotting time, will indicate the patency of the RaktadharâKalâ.

In the heart endocardium can be assessed by doppler method. ECGs, ECHO, Trans oesophagial echo- cardiography, catheterization, Radionucleide scanning etc.

Some fatal diseases involving damage the Raktadharâ Kalâ are Cerebrovascular accidents, in which a tear in the Kalâ causes bleeding. Artherosclerosis, wherein Âma or plaque encroaches the Raktadharâ Kalâ and proliferates to block the lumen of the Strotas. Aneurysms are typical examples of the Kalâ losing the Dhâraòà kârya causing lack of patency of the walls of the blood vessels. Kha-vaigunya in this Kalâ provides a nexus for the growth of vegetation, Bacterial, viral etc. This later may lead to valvular diseases, Rheumatoid arthritis etc.

Non fatal conditions like varicose veins also share the same pathology.

In the disease Rakta-Pitta, as the Samprâpti is stated, the Tikúòà, U^òà and Ruk^òa Guòà of Pitta is increased, which is Raktâúrita. To compensate for these Guòà the Kalâ secretes excess Apa Dhâtu into the lumen. But instead of balancing the Guòàs it results in Âmlata, (increase of Âmla, synonymous to kleda) leading to the manifestation of Raktapitta. Here again the Raktadharâ Kalâ plays an important role.

3. Medodharâ Kalâ:- Vrddhi or K^òaya of Meda Dhâtu leading to Sthaulya or Kâr^òya is the most important pathology in relation to the Medadharâ Kalâ. Clinical parameters for this Kalâ would be that of the Dhâtu itself, i.e. BMI ratio, Cholesterol levels, Triglycerides, HDL, LDL levels in the blood etc.

This Kalâ when vitiated affects the like Kalâs ; e.g. the ÇEle^òmadharâ Kalâ with which it has its closest resemblance to. Hence in Sthaulya, the patient will be more prone to obstructive cardiopathies eg. MI, CHD, etc. It also affects the ÇEle^òmadharâ Kalâ in the joints, hence the symptom of early arthritis in obese people.

Loss of libido. Infertility etc. are again symptoms seen in the obese, which indicate an involvement of the ÇEukradharâ Kalâ.

In Sthaulya, the etiology for the increased hunger is the Âvaraòà of Vâta which triggers the Agni. This can also be practically interpretive as, due to the Meda Dhâtu Vrddhi, the Po^òàòà to the other Dhâtus is not done well, hence leading to their Kœaya. The body then to replenish these Dhâtus sends impulses to the Pittadharâ Kalâ in the Ko^òp̄ha to increase their secretion as to digest food better and the Majjâdharâ Kalâ to increase hunger; thus resulting in increased hunger.

4. ÇEle^òmadharâ Kalâ :- Lies in close proximity with Medadharâ as both are Âpa and P^òthvi dominant and hence both have common vitiating factors. Since all Kalâs are primarily Âpa and P^òthvi dominant organs, we may say that all of these are the extensions of the ÇEle^òmadharâ Kalâ itself only with specific functions. Âcâryas have also underlined its importance by placing it right in the centre of the seven Kalâ's. Hence an abnormality in the ÇEle^òmadharâ Kalâ can vitiate the other Kalâs as well.

The Sthâna of this Kalâ, is Sandhis. The H^òdaya and Phupphusa included. Hence it is seen in pathologies like Rheumatic fever, wherein post the heart the joins are affected. Similarly, in chronic pleural diseases the heart is also affected.

The ÇEle^òmadharâ Kalâ also lines the respiratory as well as the upper GI tract. Here again it

not only performs the functions of protection but also secretion. In normal circumstances all is fine but when the external environment is very dry or very humid we can invariably see the change in the secretions of the respiratory mucosa. Hence Hetus like sleeping directly under fan or traveling sitting beside an open window or for that matter even cold & dry climate as in Āeoirā °tu we see excess of secretions in the respiratory epithelium which is attributed to the histamine secretion by the modern pathy. In such cases the total state of Kapha in the body is important to be assessed as much as the drying of the ĀEle°madharā Kalā. For treating the condition therefore Snigdha & Madhura drugs are selected which will act upon & moisten the Kalā, restoring its normal state.

The secretions of the gastric mucosa decide the digestion of the food taken in. To provide the right kind of environment for these secretions, have the Ācāryas advised the specific rules for drinking water during meals. Here too the underlying aim is to maintain the Kalā and its secretions.

In the joints again the Synovial membrane, bursa in tendons secretes the synovial fluid or ĀEle°aka kapha, which lubricates the joints facilitating the movements. This the Ācāryas have very categorically illustrated with the e.g. of a cart wheel oil is applied for lubrication as seen before. Here again if the Āpyamœa of the ĀEle°aka kapha secreted by the ĀEle°madharā Kalā increases, it can cause increase in synovial fluid accumulation in the joints or swellings. If the Ruk°atā increases it causes a reverse kind of pathology e.g. Sandhigata Vāta.

The treatment primarily in the first case is Pācana i.e. conversion of excess of Kleda secreted by the Kalā. In the second case dryness has to be decreased by facilitating increased secretion by the Kalā.

If this Kalā is hampered, it causes the erosion or thinning of the Dhātu covered by it or the Sirā Dhamani embedded in it lies exposed; hence causing V°aòa at times leading to bleeding if there is a rupture of Sirā or Dhamani. Treatment here would be Skandana & Ropaòa with Snigdha, M°du & Picchila Guòa dominant Dravya to replenish the eroded Kalā.

5. Puri°adharā Kalā: - Present throughout the body with its main Sthāna being the Pakvāúaya, hence at subtle levels when Phagocytic action of the cells or removal of the cellular toxins is hampered it can be considered as Puri°adharā Kalā Vikrti. Secondly all the diseases of the large intestines are essentially related with the Kalā. Clinical examination of the Puri°adharā Kalā is according to the stools passed, its quality and quantity along with symptoms like Ādhmāna, Ātopa, Ānāha etc. Tests done like X-ray examination, USG, Barium meal, colonoscopy reveal the condition of the Kalā.

Secretion of enzymes and mucous, maintaining the water balance in the feces & absorption are the functions of Puri°adharā Kalā, which if vitiated, is deranged. A common pathology seen in this region is that of Atisāra. In this the vitiated Do°as are brought to the Puri°āúaya (C.Ci.19/5,6,7). (The Āúaya cannot be separated from the Kalā as it encapsulated by it.) If this Samprāpti is analyzed, the Úākhagata Vāyu will only enter the Ko°pha via Strotas. Hence we may say that the Do°as & the Mūtra and Sweda which the Vāyu brings in the

Ko^opha have oozed out from the minute Strotas of the Kalâ. Which liquefy the Mala & is excreted by the force of Apâna Vâyu via the Anus causing Bahudrava Mala. If the normal secretion of this Drava by the Kalâ is hampered it will lead to Puri^oa Vi^oṣambha. This order of occurrence is similar to the Samprâpti wherein the normal Âpyamûa in the respective Kalâ diminishes as described before in Āle^omadharâ Kalâ. This Samprâptis are all pervading & applicable to the vitiation of every Kalâ. In the second Samprâpti Pittadharâ Kalâ is also involved.

In women during the menstrual flow, Atiprav^otti of the Puri^oavaha Strotas is seen. Here the Ârtava that is accumulated in the Garbhâûaya is now considered as Mala and excreted, therefore the involvement of the Puri^oadharâ Kalâ. Thence probably during the menstrual flow activation is seen of the Pakawâûaya as well.

At the cellular level also identification of toxins or foreign organisms, i.e. Malas and their elimination is the function of Puri^oadharâ. Hence accumulation of the free radicals and toxins in the blood, also derangement in the immune system signifies a vitiated Puri^oadharâ Kalâ. Therefore it is categorically stated by the Âcâryas that Puri^oa in the Prâk^ota state does the Bala Dharâna in the body.

The appendix is also a part of the Puri^oadharâ Kalâ; the inflammation of the Kalâ here leads to appendicitis, usually seen as a surgical emergency.

If Āeithilya is developed in this Kalâ along with the overlying Mamasa Dhâtu it again leads to a surgical condition, diverticulosis leading to diverticulitis, wherein inflammation of the Kalâ occurs. Certain abnormalities are seen in the Puri^oadharâ Kalâ due to Beeja Do^oa e.g. Garderner's syndrome.

Not only as a manifestation of disease but also as potent route of administration of drug, is the Puri^oadharâ Kalâ important. It is not only a secretory organ but also has a high absorption capacity of water soluble molecules. Therefore in diseases wherein the oral route a parenteral route is ruled out, the drugs are administered via the anal route. E.g. In Vomiting, hypovolaemic shock etc. Certain diseases where side effects are feared especially in children the rectal route is preferred e.g. Diazepam given in convulsions, in children.

Moreover the Basti cikitsâ which is considered to be half of the treatment in Âyurveda is also administered in the Pakwâûaya. V^oddha Vâgbhata, when describing the action of Basti, states that it is absorbed from the Pakwâûaya and spreads throughout the body, just as the sun evaporates the water on the earth, and then taken to all the parts of the body as the water is taken to all the parts of the field via channels, to cure the most complicated of the diseases.

As elaborated before, the Mûtradharâ is also considered to be a part of the Puri^oadharâ Kalâ. The Nephrons, wherein the Sâra-kiṣṣa vibhâjana occurs is lined by the Puri^oadharâ Kalâ. Though the Sâra-kiṣṣa vibhâjana is seen in the Pakwâûaya, selective absorption of the Mûtra from the Rakta is observed here. The Mala here is Âpa pradhâna and has a particular degree of dilution, which has to be maintained by the Puri^oadharâ Kalâ during the absorption of Mûtra.

Or conditions like renal calculi, chronic renal failure or acute renal failure or any other abnormality in the urine as seen in Prameha is seen.

6. Pittadharâ Kalâ: - It is said to be Grahaò Bala (Dehadhâtvagñi Vijñânam-Haridatta Sastri). In this Kalâ reside all the types of Agni. Cikitsâ is also called as Kayacikitsâ, where Kaya is the Agni. Abnormality of this Agni is described under the context of Grahaò Do^oa cikitsâ. Grahaò Do^oa also depicts the state of Pittadharâ Kalâ whether there is over secretion, Malsecretion or discontinuity in its structure as in ulcer formation.

- A congenital abnormality is the absence of the lumen, called intestinal Atresia.
- When the Kalâ as well as the underlying Mâmsa Dhâtu undergoes Atrophy its narrow lumen is called Intestinal Stenosis. Other Physiological deformities include Intestinal obstruction, Intususception, Volvulus, Ischaemia, Enterocolitis.
- Peritoneal (Udarya Kalâ) adhesions with the intestines usually post Peritonitis are seen. Inflammatory bowel diseases e.g. Crohn's disease – wherein irritation of the Pittadharâ Kalâ due to increase of U^oò, Tikúò & Ruk^oa Guò causes ulceration. This condition is closely related with the Psychiatric conditions, proving the direct coordination of **Majjâdharâ Kalâ** with that of Pittadharâ Kalâ. Secondly, if the person is in a deep thought or constant anxiety or fear, he either feels very hungry or no hunger at all. This is but another indication which proves the relation between the Pitta and Majjâdharâ Kalâ.

7. Œukradharâ Kalâ: - Present all over the body especially in the Male & Female Genital system, wherein Beeja for the progeny is formed. At the cell level its function is to produce new cell from existing cell. Homeostasis is maintained when there is a balance between cell proliferation & cell death. The enzymes called cyclin dependent Protein kinases (Cdk's) whose activation & deactivation is crucial for the initiation & regulation of DNA mitosis & Cytokinases. This function is at times seen deranged for e.g. in Cancer where there is uncontrolled proliferation of the cells or A.I.D.S. wherein from the Œukradharâ Kalâ the vitiated Do^oas spread all over the body causing proliferation of abnormal cells and drastically dropping the multiplication of vital cells in the body.

Therefore in regulating the Œukra, its Kalâ i.e. limiting membrane has an important role. In cases of infertility again, this Œukradharâ Kalâ which lines the genital organs has a role to play. In conditions wherein the female vagina develops antibodies towards the Sperm or obstruction of Fallopian tubes or incompetent endometrium for embedding may be accounted to the malfunctioning of Œukradharâ Kalâ.

In males lack of seminal volume & number is the main abnormality of Kalâ unless attributed to other factors. Excess of secretions of the Œukradharâ Kalâ leads to the liquidity of the Œukra and is a cause of premature ejaculation or nocturnal emission of semen. Suçrutacarya also accounts the Stana in Œukradharâ Kalâ it is one of the secondary sex organs. A condition of Stana, Mastitis is due to the vitiation of this Kalâ.

CONCLUSIONS :-

The other Kalâs described are no different to the ones described as yet. That described for these Kalâs hold true for all the Kalâs with the same character and function. Before initiating

the treatment though a thought needs to be given. As Hutchison's clinical methods puts it, "Diagnosis should precede treatment wherever possible!"

It is said, "Theories without facts to support them are more useless than facts without theories to support them". Thankfully in Âyurveda we have theories and we have facts. We, have a correlation between them too. But it remains that our theories, our facts and our correlations are most of the time untenable to the western mechanistic world-view. This tends to unnerve the traditional practitioner living under the impression that the test of validity of his science lies in its conformity with the western conceptual understanding to the extent that he hastens to make imaginative correlations to fit that conceptual understanding. Âyurveda has formulated quite a number of original theories, which have stood the test of time. Some of which are explored and others yet left to be.

The Kalâ is one such less explored theory, deprived of its facts. Though of profound vitality was usually kept in the dark, with only a handful of time tested learned Vaidyas proficient in its understanding. Here in this work a critical analysis of the Kalâ Úârîra is attempted with efforts done to take to the desks of the common Âyurvedic practitioner.

The Âyurvedic treatises are but the oceans of knowledge, the deeper one delves, more the pearls he collects. There are still many such treasure caskets waiting to be revealed. All that it requires on the part of the scholar is the wanting for more.

To end this work there is an earnest wish to quote Cakrapâòì,

"For the learned, who hold the undying thirst for knowledge which the oceans cannot satisfy; If this miniscule effort of mine is even considered worth a hearing, it will be worthy of the efforts."

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Review :



Physiological review of disease 'Grahani' with respect to Agni & Tridosha

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ABSTRACT :

Now days, due to fast and westernized life style, eating habits of every person are being changed which are affecting digestive system and Jatharagni badly.

According to Ayurveda, Jatharagni (Digestive power) is a principle of digestion. Jatharagnicarry out it is function through Pachakapitta. Whenever Agni gets deranged due to wrong food habits and lifestyle, it should be understood that along with Agni, Pachaka Pitta has also getsdisturbed.

If a person continues to follow wrong food habits and life style, later on location of Jatharagni also get affected which may result in manydigestive disorders.

Grahani is the critical digestive disease in which main location of Jatharagni gets affectedwhich reflects on digestion, absorption and feces formation. Hence, in this article attempt has been made to analyze and correlate patho - physiology of disease Grahani with respect to Physiological analysis of Agni and disturbed doshas.

(Total reference no-10)

KEYWORDS - Agni (Digestive Fire), Grahani, PachakPitta, Samana Vayu, Pittadhara Kala.

INTRODUCTION :

Grahani is an organ of gastrointestinal tract, located in between Amashaya and Pakvashaya, anatomically Grahani is small intestine. From inside Grahani is lined with Pittadhara Kala. Function of Pittadhara Kala is digestion and absorption of food and release of digested food towards Pakvashaya¹. Food stimulates Pittadhara Kala to secrete (Udiran) Pitta which is very hot in nature, heat of Pitta enhances digestion.

AIM :

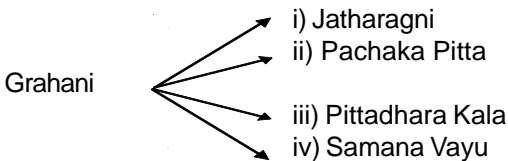
1. Compilation and elaboration of organ Grahani and itsphysiological relation with Jathargni, Pachaka Pitta, Pittadhara kala and Samana vayu.
2. Analysis of etiological factors and symptoms of disease Grahani and its relation with imbalanced state of Jathargni, Pachaka Pitta, Pittadhara kala and Samana vayu.

OBJECTIVES :

1. Collection of references in Samhitas.
2. Relation of Grahani with Jathargni and Dosha.
3. Analysis of etiological factors of disease Grahani.
4. Symptoms of Grahani and its correlation with imbalanced physiological factor.

MATERIAL AND METHODS :

Grahani is an important organ of gastrointestinal tract. It is located between Amashaya and Pakavashaya and from inside Grahani is lined with Pittadhara Kala². The most important function of Grahani is digestion of food with the help of Jathargni, Pachaka Pitta, Pittadhara Kala and Samana Vayu.



The fire element present in human body at microscopic level is called Agni. The exact structure of Agni is not known and its function being very important, it is compared to God³. Agni inside the body digests food, gives strength and maintains complexion and health. It also regulates body temperature and keeps the person active. Balanced state of Dosha, Dhatu, Mala and Agni is important for maintenance of health. On the basis of location, Agni is divided into below three types⁴-

- I. Jatharagni
- II. Dhatvagni
- III. Panchabhutik Agni.

Jatharagni keeps control over Dhatvagni and Panchabhautik Agni. Agni do not have physical existence in body. Pachaka Pitta is the medium of Jathargni which carry out all functions related with digestion and absorption⁵. Jatharagni is located in the organ called Grahani, which is comparable with small intestine.

Jatharagnicatalyzes process of digestion through Pachaka Pitta and it needs assistance of Samana Vayu for digestion to take place properly.

Vata Dosha is a principle of movement, type of Vata Dosha which regulates movements of Grahani is Samana Vayu. Main role of Samana Vayu is to ignite Jathargni. Samana Vayu is located near Jathargni and controls peristaltic movements of small intestine (Grahani), To hold food for particular time (Dharana), Digestion (Pachana), Absorption (Vivechana) and to release food in forward direction (Munchana) are functions of Samana Vayu⁶, which directly affects digestion and absorption.

Once food is completely digested, Samana Vayu helps in absorption of Aahar Rasa from intestine into blood. For this process it assists Pachaka Pitta and Jatharagni. After absorption of chime (Ahara-rasa) unabsorbed food (Kitta) is released forwards towards Pakvashaya⁷.

So, digestion (Pachana), absorption (Shoshana and Vivechana), peristaltic movements (Munchana) depends on balanced state of Jatharagni, Pachaka Pitta and Samana Vayu.

These three physiological constituents are essential to maintain proper physiology for small intestine (Grahani).

Predisposing factors like wrong food habits and life style triggers imbalance of Jatharagni, Pachaka Pitta or Samana Vayu which in turn affects physiology of small intestine badly.

If this continues, accelerates vicious cycle of digestion which may result in disease called Grahani.

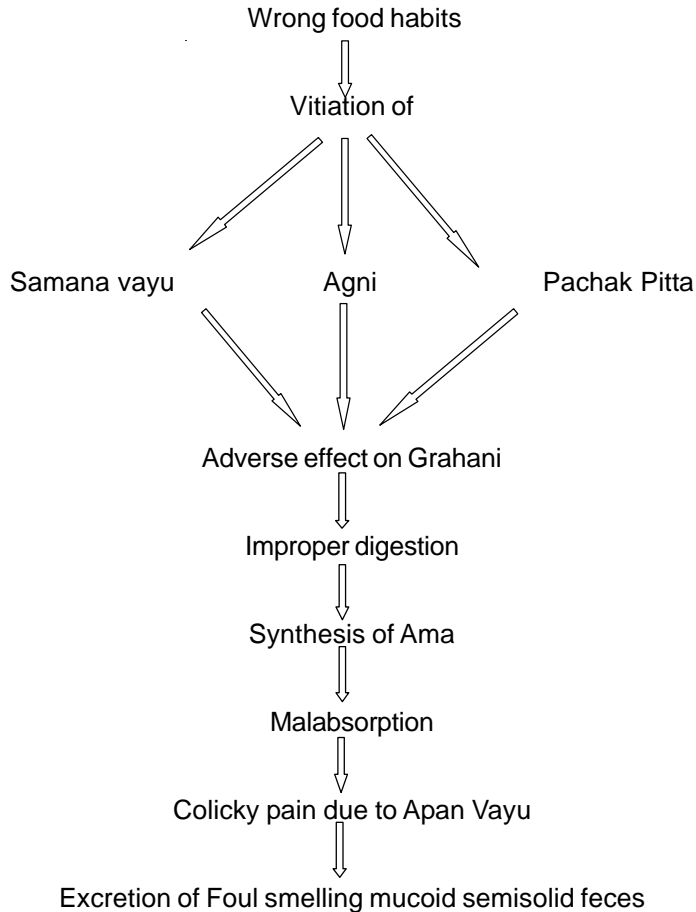
Etiological factors of disease Grahani are-⁸

i) Abhojanat	Excessive Fasting
ii) Ajeernatibhojanat	Excess eating in spite of indigestion
iii) Vishamanashna	Irregular and unequal eating
iv) Asatmya	Intake of unsuited food
v) Guru, Sheeta , Atiruksha Sandushta Bhojan	Intake of excess heavy, cold, unctuous and unhygienic food.
vi) Vireka, Vaman, Snehan Vibhramat	Improper management of Vaman, Virechan and Snehan therapies.
vii) Vyadhikarshanat	Debility due to other diseases
viii) Desha, Kaal Vaishamya	Environmental and climatic changes
ix) Vegavidharanat	Suppression of natural urges.

DISCUSSION :

Etiological factors induces imbalance in Jatharagni, Pachaka Pitta, Pittadhara Kala and Samana Vayu. Prolonged imbalanced state weakens Pittadhara Kala of Grahani which results in disease Grahani.

Pathophysiology of disease Grahani⁹



Improper diet and lifestyle leads to hypo functioning of Agni(Agnimandya) which results in indigestion. If process of indigestion repeatedly takes place it ultimately weakens organ Grahani. When Grahani become weak, Pittadhara Kala fails to digest food properly, Samana Vayu cannot coordinate peristaltic movement and Jatharagni cannot catalyze through Pachaka Pitta. Imbalanced Samana Vayu, Jatharagni and Pachaka Pitta no more coordinate physiology of digestion due to Ama which get synthesized in Grahni. As Ama is heavier, it cannot get absorbed from Grahani into blood. So, this unabsorbed Ama becomes feces, which manifests in the symptoms of disease Grahani. Main manifestation of disease Grahani is a mucoid, foul smelling feces and defecation is accompanied with colicky pain.

Associated symptoms of Grahani are anorexia, nausea, emesis and puffiness which shows

involvement of deranged state of Pitta Dosha in Grahani¹⁰.

Correlation between pathophysiology of Grahani with physiological constituents :-

Symptoms of Grahani	Activated /Imbalanced constituents
Improper digestion	Jathargni, Pachaka Pitta and Samana Vayu.
Synthesis of Ama	Jathargni and Pachaka Pitta.
Malabsorption	Jathargni, Pittadhara kala,Pachaka Pitta and Samana Vayu.
Colicky pain	Apan Vayu
Foul smelling mucoid feces	Jathargni, Pachaka Pitta and Samana Vayu, Apan Vayu.

CONCLUSION :

- Grahani is the most important organ of gastrointestinal tract as it carries out process of digestion and absorption of food.
- Health of Grahani entirely depends on balanced state of Jatharagni, Pachaka Pitta, and Pittadhara Kala.
- Wrong food habits, incompatible food weaken Grahani which induce imbalance of Jathargni, Pachaka Pitta and Samana Vayu.
- Imbalanced physiological factors lead to synthesis of Ama and give rise to disease Grahani.
- Foul smelling feces, defecation with colicky pain, anorexia, blotting of stomach indicate derangement of Jathargni, Pachaka Pitta, Pittadhara Kala and Samana Vayu.
- It is important to analyze symptoms of Grahani on the basis of physiological constituents like Jathargni, Pachaka Pitta, Pittadhara Kala and Samana Vayu.
- This type of analysis is important for perfect diagnosis and better therapeutic treatments.

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Review :



A Drug Review of Kapikacchu (Mucuna Pruriens)

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ABSTRACT :- *Kapikacchu* plant is one of important herbs in the ancient *Ayurvedic* literatures. This review highlighted importance of *Kapikacchu (MucunaPruriens)* in various *samhitas, Nighantus* and various texts of modern texts. The reviewed summarized history, classification, *Rasa –Panchak*, Classical *Ayurvedic* formulation containing *Kapikacchu (Mucunapruriens)*, tradition medicinal uses in various country, pharmacological activities and clinical trials. The literature survey shoes that in various country *Kapikacchu (MucunaPruriens)* are widely used to treat the patients of various disorder since ancient times. (Ref. - 13)

KEY WORDS :- *Kapikacchu, MucunaPruriens, Kampavata, Vatashamaka*

INTRODUCTION :- *Kapikacchu (MucunaPruriens)* is tropical legume also known as velvet bean, cowitch and cowhage. it is a constituent of more than 200 indigenous herbal formulations. it has been used since ancient times in *Ayurvedic* medicines, most commonly as a Parkinson's Disease treatment and for overall neurological health. *MucunaPruriens*, the primary compound is known as Levodopa, or L-dopa, a precursor to dopamine, adrenaline and nonadrenaline. Dopamine is often associated with pleasure, yet it plays a critical role in muscle control. it is responsible for many function including movement, memory. Pleasurable reward, behavior and cognition, attention, sleep, mood and sexual dysfunction.

History^(1,2,3,12,13)

Vedic Period :-

Veda: No reference has been mentioned in Vedic literature regarding the drug *Kapikacchu*

Samhita Period :-

Charak Samhita: Acarya Charak included this drug in different Balya and Vrsyayogas total 29 reference are treated in this *Samhita* regarding this drug.

Susruta Samhita: Property of *Kapikacchu bija* was mentioned first time separately by Acarya Susruta (*Su.Su- 46/36*), in total 9 reference are found in *Samhita*.

AstangaSangraha&AstangaHrdaya : Both these *Samhita* has included the drug under *VidaryadiVarga (AS.Su-16/2: AH.Su-15/9)* They also used this drug in different Vrsyayogas.

Nighantu Period : -

DhanwantriNighantu : This *Nighantu* described the drug under *AusadhiVarga* with its synonyms and *Vrsyadi* property along with other action.

KaiyadevNighantu : This *Nighantu* described the drug under *AusadhiVarga* with its synonyms and *Vrsyadi* properties.

SodhalaNighantu : *Sodhala* has mentioned *Vrsya* property of *Kapikacchu*.

BhavaprakasaNighantu : This *Nighantu* included it under *GuducyadiVarga*, along with different synonyms, *Vrsya* property of *Kapikacchu bija* has been accepted by this *Nighantu*.

Raj Nighantu : It also mention *Vrsya* property of the drug.

SaligramaNighantu : *Vrsya* property with synonyms is mentioned in this *Nighantu*.

NighantuRatnakara : In this synonyms and properties of *Kapikacchu* are mentioned.

AdarsaNighantu : *Vaidya Bapalaji* explained the drug with different synonyms and therapeutic action under *PalasadiVarga*.

CLASSIFICATION :- The classification of the drug *Kapikacchu* is tabulated below.

Texts	GANAVARGA	REFERENCES
<i>Charak</i>	<i>Balya</i> <i>Madhura Skanda</i> <i>PurisaViranjaniya</i>	<i>Ca.Su-4/7</i> <i>Ca.Vi-8/139</i> <i>Ca.Su-4/32</i>
<i>Susruta</i>	<i>Vidarigandhadi</i> <i>Mudgadvarga</i> <i>Kakolyadi</i>	<i>Su.Su- 38/4</i> <i>Su.Su- 46/36</i> <i>Su.Su- 37/26</i>
<i>AstangaSangraha</i> <i>AstangaHridaya</i>	<i>Vidaryadi</i> <i>Vidaryadi</i>	<i>A.S. Su-16/2</i> <i>A.H. Su-15/9</i>
<i>DhanwantriNighantu</i>	<i>Guducyadi</i>	<i>46/159</i>
<i>KaiyadevNighantu</i>	<i>Ausadhi</i>	<i>154/11</i>
<i>BhavaprakasaNighantu</i>	<i>Guducyadi</i>	<i>57/131</i>
<i>Raja Nighantu</i>	<i>Guducyadi</i>	<i>50/52</i>
<i>AdarsaNighantu</i>	<i>PalasadiDrayaguna</i>	<i>166/453</i>
<i>Viyganam (PVS)</i>	<i>Sukrajanaka</i>	<i>Page -569</i>

RASA PANCHAKA

To explain the rationality of the drug action its *Rasapanchaka* must be known the *Rasapanchaka* of *Kapikacchu* are mention in table.

Table :- Rasa Panchaka of Kapikacchu & References.

RASA PANCAKA	D.N.	M.N.	K.N.	B.N	RN	S.N
<i>RASA</i>						
<i>Madhura</i>	+	+	+	+	+	—
<i>Tikta</i>	—	—	—	+	+	+
<i>GUNA</i>	—	—	—	—	—	—
<i>Guru</i>	—	—	—	+	—	+
<i>Shigdha</i>	—	—	—	+	—	+
<i>VIRYA</i>	—	—	—	—	—	—
<i>Sita</i>	+	—	—	—	+	—
<i>VIPAKA</i>	—	—	—	—	—	—
<i>Madhura</i>	—	—	—	—	—	+
<i>DOSA</i>	—	—	—	—	—	—
<i>Karma</i>	+	+	+	+	+	+
<i>Vatahara</i>	—	—	—	+	—	—
<i>Kaphara</i>	+	+	+	+	+	+
<i>Pittahara</i>	—	—	—	—	—	—

Classical Ayurvedic formulation containing Kapikacchu (Mucunapuriens). ^(1,2,3,12,13)

DRUG AND REFERENCES	MODE OF USE	INDICATIONS
<i>Mashatmguptadi Kashay Y. T. Chap. 9</i>	<i>Nasya</i>	<i>Pakshaghat Sakampanam</i>
<i>Mashashalvan Yoga Y. T. Chap. 6</i>	<i>Svedan</i>	<i>Svedan Srva- Anilartijit</i>
<i>Atmaguptadi Yoga R. T. Pg. 481</i>	<i>Oral</i>	<i>Kampayakti Paksha Vadham.</i>
<i>Mash Taila B.R. Chap 6</i>	<i>Abhyang</i>	<i>Bahu Kampavata</i>
<i>Maha Masha Taila B.S. Pg. 358</i>	<i>Abhyang</i>	<i>Hast-shir-aatrakampa.</i>
<i>Mash Taila B.S. Pg. 355.</i>	<i>Abhyang</i>	<i>Hast shirkampa</i>
<i>BrihatMashadi Taila B.S. Pg. 355</i>	<i>Basti Nasya,</i>	<i>Hast Shir Kampa</i>
<i>Mash Taila</i>	<i>Basti , Paan</i>	<i>Hast-shir Kampasabhujkampshirah</i>
<i>Mashadi Taila S.Y. Pg. 281</i>	<i>Basti, Nasya, Paan,</i>	<i>Abhyang, Parkampam</i>
<i>Mashadi Taila S.Y. Pg. 281</i>	<i>Basti, Nasya, Paan, Abhyang</i>	<i>Hast-Shir-Kampa Panipadhirogreena</i>
<i>Mashadi Taila S.Y. Pg. 281</i>	<i>Basti, Paan, Abhyang</i>	<i>Bhramanme Mandchan-Krame</i>
<i>Rasna Taila Bhe/Chi. Pg. 364</i>	<i>Basti, Nasya, Paan, Abhyang</i>	<i>Gatrakampe</i>
<i>Mashadhya Taila Y.R. Pg. 445</i>	<i>Basti, Nasya, Parishek</i>	<i>Sabhujshirah -Parkampam</i>

B.S.: - Bang Sen,
B.R. Basavarajiyam,

R.T.: - Rasa Tarangini,
Y.R. : Yoga Ratnakar,

S.Y. SahastraYog,
Y.T.: Yoga Tarangini.

Analysis of seed of *Mucunapruriens* gave following value (Wealth of India)

Calcium - 0.16% ,Ether - 2.96% ,Fiber - 6.75%,Iron - 0.02%,Mineral Matter - 3.95%, Moisture - 9.1%,Protein - 25.03%,Sulphar and magnesium - present.

While the seed kernels yield 5.9% of deep brown viscous fatty oil with the following characteristic.

Specific gravity - 0.907,N -1.472, Acid Value- 22.37, Sap Value-150.1, Iodine Value-95.4, Acet.Value-110.0, R.M.Value- 0.60 ,Polenske Value- 0.4And unsapon matter- 10.5%

The fatty acid composition of the oil is follows –

Saturated (stearic and palmitic) 22.4 unsaturated (oleic and linoleic) 76.7% the unsaponifiable matter contain Bsitosterol Defatted Kernels contain 10% lecithin. (Ref–Naiv and Pillai Bull. Res. Inst. UnivTranscore 1954 3A (1)83 Pillai and Anataraman ibid 1955–4A (1)41).

CHEMICAL CONSTITUENTS : (2,3,4,5,6,9,13)

From the seeds (Sd) Leaf(Lf), Stem (St), Fruit(fr), Shoot (Sh)

1 - Methyl - 3 - Carboxy -6, 7-dihydroxy-1, 2, 3, 4-Tetrahydroisoquinoton, Sd.,
5- Hydroxytryptamine, Sd, podtrich, Fr, It, St.,5- methoxy N-N-dimethyltryptamine , If 25, St.fr.5- Oxyindole-3- at Kylamine, Sd , 6- Methoxyharman , If, DopaSd, 0.24 – 4.80%,Alanine, Sd 0.54 – 1.16%,Arachidic acid, Sd 65-1,385,Arginine, Sd 1.24-2.6%,Ash, Sd 3.0-4.4%,Aspartic acid, Sd 1.99 – 4.21%,Behenic acid, Sd 140-2,265,Beta carboline, Sd, Beta Sitosterol, SdBufofenine – It,St,fr, Calcium, Sd 1320-1600, Carbohydrate, Sd 52.9 – 66.7%Choline, It, Sd, Sh, St, rt, Cis –12, 13-epoxyoctade- trans- 9-cis-acid, Sd, Cis –12, 13-epoxyoctade- trans- 9-enoic-acid, Sd, Cis-12-1-octadec – trans- 9-enoic, Sd01.0%,Cysteine, Sd 1,400-2695 , Fat, Sd 0.7 –6.3%., Fat, Sd 0.7- 6.3%, Fiber, Sd 4.6-9.5%,Gallic acid, Sd , Glutamicacid 1.91-4.04 ,Glutathione, Glycine, Sd 0.72-1.53% ,Histidine, Sd 0.33 – 0.69%, Iron, Sd 200,Isoleucine, Sd 0.75 – 1.59% ,Kilocalories, Sd 0.34 –0.40%, Lecithin, Sd 10%,Leucine, Sd –1.18 – 2.52%, Linolieic acid, Sd 751-30680, Linolenic acid, Sd 265-5800,Lysine, Sd 0.97-2.10 , *Mucunapruriens* alkaloid P Sd27,Macuna puriens alkaloid Q, Sd , Macuna prurient alkaloid R.Sd, *Mucunapruriens* alkaloid S , Methionine, Sd 1,875-3,975 ,Mucunadine, Sd , Mucunain,Sd, Mucunine,Sd, Myristic Acid, Sd 15-125, N.N. Dimethyltryptamine, Sd. St, fr , N.N. Dimethyltryptamine – N- Oxide, Niacin, Sd 17-34 ,Nicotine, Oleic acid ,Palmitic acid Sd 0.14- 3.38% ,Palmitoleic acid, Sd, 0.75-1.59 ,Phenylalanine, Sd 0.75-1.59 ,Phosphorus Sd 0.32 – 0.47%,Proline, Sd 0.92 -1.96%,Protein, Sd 15.5-33.1%,Prurienidine, Sd 10,Prurieninine,Sd-11, Riboflavin, Sd 1.1 –2.7, Saponins , Sd 2.1%, Serine, Sd 0.77 – 1.62%,Stearic acid, Sd 390-12, Thiamin, Sd 1.4- 5.7,Threo -12-Octadec-trans 9 enioc acid, Sdol ,Threonine, Sd 0.63 – 1.33%, Tryptamine, Sd.,Tyrosine, Sd 0.798 - 1.691%,Valine, Sd 0.86 -1.82%,Vernolic acid – Sd of 4.0%, Water, Sd 9.1 - 11.4%

TRADITION MEDICINAL USES :- IN VARIOUS COUNTRY FOLLOWS- (2,3,4,5,6,9,13)

Brazil:- Alcoholic extract of dried seed is taken orally as nerve tonic. Alcohol and water extract are taken orally as aphrodisiac.

Guadeloupe: - Seed crushed and mixed with syrup is given orally to infants as a vermifuge

India :-

- 1) Hot water extract of dried fruit administered orally is children in Case of stomach warms.
- 2) Water extract of leaves is taken orally as nerve tonic, in dysentery. As an Aphrodisiac and for scorpion stings.
- 3) Powdered pod trichomes are taken orally as an antihelminitic. About four to five hairs are taken along with milk or buttermilk hot water extract of root is taken orally as emmenagogue.
- 4) Hot water extract of dried root is taken orally for delirium in Ayurvedic and Unani medicine
- 5) Dried powdered root is taken orally with honey as a blood purifier, diuretic and dissolve kidney stone.
- 6) Seed are taken orally by male human adult to cure night dreams and impotency, to promote fertility and aphrodisiac to increase fluid and mainly Vigor.
- 7) Fresh root is taken orally to relieve dysmenorrhoea, paving the way for effective conception in future menstrual cycle. Paste made from Macunapruriens, Pygaeopremanaherbacea, Tephrosiapurpurea, and Gardenia turgida roots, plus a few cloves of Allium sativum is given. Twenty grams of the paste is given on day three of menstruation
- 8) Male human adults take hot water extract of boiled seed as an aphrodisiac.
- 9) Hot water extract of seed is taken orally as Nervine.
- 10) Seed taken orally is used as aphrodisiac in Ayurvedic and Unani medicine.
- 11) Decoction of dried seed is taken orally for abortion, as an aphrodisiac and sexual debility.
- 12) Dried root is used for rheumatism & gout roots of Mucunapruriens & Hymendictyon excelsum heated in mustard oil, which is then rubbed on the affected area.
- 13) Cold decoction with honey can be proved effective cholera.
- 14) Doush of root decoction is used in vaginal disorders.
- 15) Early morning administration of seed powder with honey and milk may be effective in bronchial asthma.
- 16) For persistent coughs, seeds are placed overawed hot plate or burning charcoal and the fumes inhaled through the mouth.
- 17) Fresh seed cooked in goat's milk are taken orally as an aphrodisiac and for seminal weakness and impotence.
- 18) Powdered seed, taken with milk (5 gm three time a day with sufficient quantity of milk) is used for diarrhea.
- 19) An aphrodisiac, two seeds are powdered and taken with cup of cow's milk.
- 20) Decoction of seed in taken orally for scorpion stings and snake bite.
- 21) Decoction of derived seed together with Terminaliaarjuna and Sidaretusa is taken orally for pulmonary tuberculosis.

In Nepal, Pakistan Madagascar, Haiti country : - Using Decoction of dried fruit is taken orally as an aphrodisiac.

Philippines: -Fresh stem sap is used to treat sore / wind burns. A fresh stem is cut off on both ends, and the sap is blown from one end to the other over the mouth of the child.

Thailand: - Dried leaves and stem are used for burns & cuts. Oroxyllum indicum bark and Mucuna pruriens leaves are pounded, together and applied to burns and cuts.

Virgin Islands: -Hot water extract of the entire plant is taken orally for worms.

Trinidad: - Crushed seed are taken orally with molasses for intestinal worms

Guinea- Bissau: - Plants juice is taken orally as an emmenagogue seed is taken orally as an aphrodisiac.

Ivory Coast: -Hot water extract of the entire plant is taken orally as an emmenagogue.

Mozambique: - Hot water extract of seeds is taken orally as an aphrodisiac.

PHARMACOLOGICAL ACTIVITIES AND CLINICAL TRIALS. ^(2,3,4,5,6,9,13)

Anabolic activity :- Plant administered orally to castrated adult and young male mice at dose of 7.70 mg/ml. Animal was active. Animal were pretreated with testosterone over a period of four days. The plants was mixed with Lactucascariola, Hygrophilaspinosa, parmelia and Leptadeniareticulata. When administered to infant mice at a dose of 22.0 mg/animal, the mixture was active. There was increased maltase activity of dorsoventral prostate and increase in fructose content of seminal vesicles.

Analgesic activity :- Ethanol (95%) extract of dried fruit trichomes administered intragastrically to rats at a dose of 2.0 gm. / kg. Was active Vs acetic acid- induced writhing 1.0 gm/kg was active Vs hot plate method. Ethanol (95%) extract of dried leaves administered intra-gastrically to rats at a dose of 1.0 gm/kg was active Vs hot plate method and acetic acid induced writhing.

Anticoagulant activity :- Water extract of dried leaves at a concentrations of 1.0 mg./ml. was active on a human whole blood.

Anti-galactagogue effect :- Seed taken by human adult orally at a dose of 15.0 gm./animal was inactive. The subject had hyperprolactinemia and galactorrhea. Both subjects had history of secondary amenorrhea and primary sterility. Daily dosing (divided doses) for 24 weeks in one subject and 10 weeks in a second subject.

Antihypercholesterolemic activity :- Decoction of dried leaves administered intragastrically to rats at a dose of 5gm./Kg was active Vs diet and triton-induced hypercholesterolemia.

Antihyperlipidaemic activity :- Decoction of dried leaves administered intragastrically to rats at a dose of 5.0gm/kg was active Vs diet and Triton induced hypercholesterolemia.

Anti-inflammatory activity :- Ethanol(95%) extract of dried fruit trichomes administered intragastrically to rats at a dose of 3.0 gm/kg was active Vs carrageen induced pedal edema Ethanol(95%) extract of dried leaves administered intragastrically to rats at a dose of 1.0 gm/

kg was active Vs carrageenin induced pedal edema.

Antiparkinson activity :- Methanol extract of dried seed administered intraperitoneally to rats at a dose of 200.0 mg/kg was active. An alcohol insoluble methanol extract. Free from L-Dopa was tested seed administered by gastric incubation to rats at a dose of 400.0 mg/kg was active. Seed taken orally by human adult at dose of 15-40 gm./person was active.^(7,8)

Antipyretic activity :- Ethanol (95%) extract of dried fruit trichomes administered intragastrically to rats at a dose of 1.0 gm/kg was active Vs yeast – induced pyrexia. Ethanol (95%) extract of dried leaves administered intragastrically to rats at a dose of 1.0 gm/kg was active Vs yeast-induced pyrexia.

Anti-radiation activity :- Methanol extract of dried prothallus administered intraperitoneal to mice at a dose of 100 mg/kg was inactive Vs soft x-ray irradiation at lethal dose.

Antispasmodic activity :- Ethanol/ water (1:1) extract of fruit was active on guinea pig ileum Vs Ach and histamine induced spasm. Ethanol/water (1:1) extract of root was active on guinea pig ileum Vs Ach and histamine induced spasms.

Aphrodisiac activity :- Plant administered orally to male human adult was active. A clinical trial involving 133 subjects ranging in age from 18-46 years presented case of improper erection, night emission, premature ejaculation, spermatorrhoea, functional impotence and or oligospermia. Of all patients 71.4% claimed to be aided by the drug with no side effect. Seed taken by male human adults at variable dosage levels was active product contained a mixture of bismacula, Hygrophilaspinosa, Lactucacariola, mucunapruriens, Parmeliaparalata, Argyreia –speciosa, Tribulusterrestris and leptadeniareticulata (Known as speman). Their study involving 21 infertile oligospermic Patients in the age group of 25-35 years. Dosing with speman was two tablets three times daily for four weeks. Semen and blood samples were collected for analysis. Fifty percentage of the subjects showed improvement of prostatic function as assessed by the activity of maltase and the by the citric acid content, with increase in the activity of amylase and maltase and a decrease in post-treatment level of glycogen in seminal fluid No marked change in seminal vesicular function was noted. Ether and Ethanol (95%) extract of seeds administered intraperitoneally to rats were inactive. No effect on social behavior, including homosexual mounting. Shiffling lying over one another & so forth was observed.

Bronchodilator activity :- Hot water extract of dried seed administered intravenously to guinea pig at dose of 1.5 ml/ animal was inactive.

Cholinesterase inhibition :- Methanol extracted of seed administered intraperitoneally to rats a dose of 200.00 mg/kg was inactive. An alcohol – insoluble methanol extract, free from L-dopa was tested.

Cytotoxic activity :- Ethanol / Water (1:1) extract of fruit in cell culture was inactive on Ca-9kg Ed 50>20.0 mg/ml Ethanol / water (1:1) extract of root in cell culture was inactive on CA-9KB ED>20.0 mcg/ml.

Embryo toxic effect :- Water extract of seeds administered intra-gastrically to pregnant rats at a dose of 175.0 mg/kg was inactive.

Fertility promotion effect :- Dried entire plant extract taken orally by male human adult at dose of 96.0 mg/day. Total sperm count and sperm motility improved. The product contained mixture orchismacula, Hygrophilaspinoza, Lactucascariola, Mucunaprurions, Prmeliaparalata, Argyreiaspeciosa, tribulusterrestis and leptadeniareticulata (Known as speman) Dosing was two tables three times daily for four days.

FSH release inhibition :- Seed lake orally male human adults at variable doses level was equivocal

FSH Synthesis stimulation :- Seed taken by male human adult orally at variable dosage level was equivocal

Genito urinary effect :- Water extract of entire plant administered orally to mice at a dose of 5.0 mg/l was active.

Hypocholesterolemic activity :- Seed in the ration of rats was active.

Hypoglycemic activity :- Ethanol / Water 1:1 extract of fruit administered orally to rats at a dose of 250.00 mg/kg was active more than 30% drop in blood sugar level was observed.

Ethanol / Water 1:1 extract of seed administered orally to rats at a dose of 250.00 mg/kg was inactive. Less than 30% drop in blood sugar level was observed seed in the reaction of rats was active.

Gondotropin release stimulation & Gondotropin synthesis stimulation :- Seed taken by male adult orally at variable dosage level was equivocal. The product contain mixture of orchismacula, Hygrophilaspinoza, Lactucascariola. Ucnapruriensparmeliaparalata Argyreiaspeciosa, Tribulusterrestis, and leptadeniarettculata (Known as speman) Dosing was two tablets three times daily for four week.

Penis erectile stimulant :- Extract of dried seed taken orally by human adult was active. Improvement in erection. Duration of coitus and posterior satisfaction has been observed in 56 cases treated for four weeks.

Prostate treatment :- Hot water extract of the entire plant administered orally to human adult was active. Forty-five patients with prostates were given the test preparation and 10 more served as untreated control of 38 patients with benign hypertrophy in the test group. 28 improved and did not need surgery.

Spermatogenic effect :- Seed taken orally by human adults at variable dosage level was equivocal. A group of 30 oligospermic infertilities in the age group of 30 oligospermic infertilities in the age group of 24-46 year were studied over four month dosing was three times daily. Increases in magnesium content and in sperm count were reported.

Teratogenic activity :- Water extract of seed administered intragastrically to pregnant rat at a dose of 175.0 mg/kg was active.

Toxic effect :- Water extract of seed in the ration of rat at variable weight loss active. Feeding caused weight loss unless supplemented. With L-methionine and L-tryptophen. The protein fraction of the seed was incorporated into the experimental ration.

Effect of smooth and skeleton Muscle :- The aqueous extract of seed of *Mucunapuriens* were investigated against the skeletal muscle and against smooth muscles of the gastro-intestinal tract the extract (3×10^{-3} to 3×10^{-2} g/ml) increased the twitch response of the rat diaphragm to direct and indirect stimulation. The blocking effects of King cobra (*Ophiophagus Hannah*) venom and d-tubocurarine at the neuromuscular junction were reversed. In the rabbit jejunum and the guinea pig ileum, the extract produced dose dependent contractions, which were antagonized by atropine. The involvements of muscarinic receptors were suggested.

Nematocidal activity :- Decoction of commercial sample of seeds at a concentrations of 10.0 mg/ml was inactive on *Toxacaracanis*. Water extract of dried seed at concentration of 10.0mg/ml was inactive on *Toxacaracanis*. The methanol extract at concentrations of 1.0 mg/ml showed weak activity.

Prolactin inhibition :- Seeds taken orally by female human adult at a dose of 15 gm/person was inactive. Subjects had hyperprolactinemia and galactorrhoea. Both subject had a history of secondary amenorrhoea and primary sterility. Daily dosing (divided doses) for 24 weeks in one subject and 10 week in a second subject. Inhibition of prolactin response to chlorpromazine injection in five subject was positive.

Taenicide activity :- Ethanol (95%) and water extracts were active on *Taeniasolium*.

Toxicity assessment :- Ethanol / water (1:1) extract of fruit administered intraperitoneally to mice tolerated a maximum dose of 1.0 gm/kg (Indian J. Exp Biol 1968 6:232-247) and Ethanol and water (1:1) extract of root when administered intraperitoneally to mice the maximum tolerated dose was 250.00 mg/kg (Indian.J. Exp. Biol –1968:6:232-247).

Mucunapuriens is an ingredient of several commercial preparation claimed to have beneficial effects in the management of various sexual disorders. One such preparation is Tenex forte, which has other constituents like musk, saffron, yohimbine hydrochloride, nuxvomica, pulvis, makardhwaj, shilajeet, orchismacula, withaninsominifera, sidacordifolia, Bomaxmalabaricum, *Argyreia*, *speciosa* and *swarhamakshikbhasma*. As well as mustong, which contains *somnifera*, *tribulusterrestris*, *myristicafragrans* and *Tinospora*.

Cardiovascular effect :- When tests on frog prurinesinine slow down the heart, dilates the blood vessels depress the B.P. & increase the peristaltic action of the intestine. Prurindine has also similar effect on blood vessels but there is no action heart (Sarker Ann. Biochem 1945; Damodaran and Ramaswamy Biochem J-1937, 31:214g, Pilli Resp. Dep Res university travancere 1939-46).

An infusion of hair is used in disease of the liver and gall bladder and applied externally as a local stimulant & mild vesican (Ref-santapau Reebot Surv India-1953, Chopra–1958, Quisumbing–416).

Antakar 1967, Prof manyam, Springfield Illinois, 1989, Katrak studied *Mucunapuriens* in Parkinson's disease with significant relief in all patient.

Tripathy and Singh 1982 studied that *Kapikacchu* (MP) remove depression due to mood stabilizing effect.

While Ramu et al , studied Kapikacchu role in neuronal degeneration with significant improvement in basic parameter MP seed enhanced serum 1gm. Value significantly (Hejmadi and Singh 1989).

DISCUSSION :- *Kapikacchu* is having *Dhatuvriddhikara* a *Vatashamaka* and *Sukraviddhikara* properties. So it also acts against the process of degeneration & may be beneficial in the condition of *Dhatukshaya* it also corrects the function of Indriyas, which are found impaired in *Kampavata* addition *Kapikacchu* (*Mucunapruriens*) having L-dopa which is having *antiparkinsonian* activity.^(7,8) Basically *Kampavata* (Parkinson's disease) needs the rejuvenation in therapy. Regeneration is the function of *SukraDhatu*, which found deranged in *Kampavata* (Parkinson's disease) too which can be promoted by *Vrsya*, *Balaya* and *Brmahanadrugs*. Because *Balya* and *Vrsya* drugs restore the body elements and promote the longevity.

CONCLUSION :- This articles gives knowledge of the *Kapikacchu* from ancient times to modern era. *Kapikacchu* is useful in *Kampavata* (Parkinson's disease) and various diseases due to its *Vatashamaka*, *Barya*, *Brimhana*, *dopaminergic properties*.⁽¹⁰⁾ Various *kalpa* of *Kapikacchu* being used to cured the disease in all over the world. Whole plants having potential medicinal properties. It is necessary to conduct clinical trial in by using various preparations of whole plants.

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Review :

A Comparative Pharmacognostical & Physico-chemical study of *Patola* (*Trichosanthes dioica* Roxb.) leaves collected from Field & Market.



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Abstract : -

The significance of drug assessment has increased manifold in recent times due to prevalence of spurious materials in the market. In ancient time, collection of drug was usually done directly by physician or learners, so there was no need for identifying plant parts. But in recent era, actual collectors are different than physicians, so there is confusion in identification of proper plant or plant part due to lack of exposure and prevailing controversies.

Screening of medicinal plant part for ensuring its quality is a need of time. Plant identification is the first step which gives access to entire information regarding the plant to felicitate qualitative estimation by comparison.

Trichosanthes, a genus of family *Cucurbitaceae*, is an annual or perennial herb distributed in tropical Asia, Polynesia, & Australia. Over 20 species are recorded in India out of which two namely *T. anguina* & *T. dioica* are cultivated as vegetable. Till now no work has been done from the pharmacognostical aspect of *Dravyaguna vigyan* on *Trichosanthes* species.

From ancient time "*Patola*" is most potent with widely practically applicable drug. In present situation the collection of authentic sample of "*Patola*" is very difficult as it differs from market to market, so adulteration is seen in various local markets.

Key Words :-

Patola , *Trichosanthes dioica* Roxb, *cucurbitaceae*, *Dravyaguna vigyan*

INTRODUCTION

The drug "*Patola*" is described by in classical literature by different names as *Patola*, *Patoli*, *Chichinda*, *Swadu* and *Tikta Patola*. *Trichosanthes dioica* Roxb. (*Cucurbitaceae*), called pointed gourd in English, *Potol* in Bengali, *Parval* in Hindi, and *Patola* in Sanskrit, is a dioecious climber found wild throughout the plains of north and North-East India from Punjab to Assam and Tripura states. It is particularly cultivated in Uttar Pradesh, Bihar, West Bengal, and Assam states of India, for its fruits, a common culinary vegetable in India. In India, all parts of this plant have been used traditionally for several medicinal purposes. According to Ayurveda, the traditional system of Indian medicine, its root is a purgative. The root has traditionally been used as a hydrogouge cathartic, tonic and febrifuge, and also in the treatment of jaundice,

anasarca, ascites etc. There are several species of *Trichosanthes* like *T. dioica*, *T. cucumerina*, *T. palmata*, *T. bracteata*, *T. wallichii* etc. Till now no work has been done from the pharmacognostical aspect of Dravyaguna vinyan on the species *Trichosanthes*. To fulfill this lacuna whole work is dedicated for pharmacognostical, physico-chemical study of field and market samples of *Trichosanthes dioica* leaves. As per Vaghbhatta – Patoli (*Trichosanthes dioica* Roxb) is edible *Patola* which is used as a vegetable. For medicinal purpose, *T. cucumerina* Linn. known as “*vana Patola*” is used in South, which is bitter in taste.

However, there are no reports on the pharmacological studies on its root and rarely on leaf. Plant *Patola* (*Trichosanthes dioica* Roxb.), which is easily available and frequently found in market but rarely found in field of Maharashtra state and south India. So there is need to evaluate the adulteration and substitute of *T. dioica* in market.

MATERIAL AND METHODS

Collection of Sample :-

The field samples of *Patola* i.e. *Trichosanthes dioica* Roxb were collected from Varanasi Uttar Pradesh in flowering and fruiting season i.e. *Sharad Ritu*(June to October). The market samples of *Patola* were collected from Kottakkal in same season i.e. June to October.

Authentication of sample :-

The field sample of *Patola* i.e. *Trichosanthes dioica* Roxb were authenticated from the Botanical Survey of India, Pune.

Preparation of the Samples :-

Field samples of *Patola* were collected, foreign matters like soil, twig etc were removed i.e. the extraneous matter were removed. Leaves are separated from stem, well dried under shadow. In market sample foreign matter as sticks, feather, other plants leaves, etc were removed.

PANCHBHAUTIK PARIKSHAN (ORGANOLEPTIC STUDY)

MACROSCOPY

Characters	Field Sample	Market sample
<i>Shabda</i> (Fracture)	Short	<i>Short</i>
<i>Sparsh</i> (Touch)	<i>Khar</i>	<i>Alpa Khar</i>
<i>Roop</i> (Shapes) Colour	Cordate	Palmatifid
Light Green	Yellowish Green	Brownish Green
Greenish white	Greenish White	Greenish White
<i>Rasa</i> (Taste)	<i>Tikta</i>	<i>Tikta</i>
<i>Gandha</i> (Odour)	Non Specific	Non Specific

PHYSICO-CHEMICAL ANALYSIS

Moisture Content (Loss on Drying)

The moisture content of drug should be minimized to prevent decomposition of crude drugs either due to chemical change or contamination. Deterioration time of the crude drugs depends upon the amount of water present in formulation or crude drug. If the water content is high, the crude drugs can be easily deteriorated due to fungus.

Ash Values

The results of Ash values signify the purity of drug that is the presence or absence of foreign matter such as metallic salt or silica present in the raw material.

Elemental Ash Analysis

Elemental Ash analysis were performed while using various reagents for detection of copper, sulphur, potassium, magnesium, chlorine by using following techniques

1. Detection of Copper

a. O.S. + NH_4OH bluish white ppt of $\text{Cu}(\text{OH})_2$ soluble in excess forming deep blue color.

2. Detection of Magnesium

a. O.S. + NH_4OH White gelatinous ppt of $\text{Mg}(\text{OH})_2$ soluble in excess of NH_4Cl

3. Detection of Chlorine

a. O.S. + AgNO_3 white ppt insoluble in dil. HNO_3 .

4. Detection of Sulphur

a. O.S. + BaCl_2 white ppt of BaSO_4 insoluble in acids

5. Detection of Pottasium

O.S. + Picric acid Yellow ppt of K- picrate (vigorously shaking the mixture helps in formation of ppt.

EXTRACTIVE VALUES

Considering the diversity and chemical nature of drug, two different solvents viz. water, ethanol, was used for determination of extractive values. About 5 g of powdered leaf material was subjected for cold maceration extraction with 100 ml of above solvents. Determination of extractive values of a crude drug is beneficial in its evaluation process wherever evaluation of chemical components in drugs is not possible by any other means. After extraction, the extracts are concentrated in vaporizer and dried in vacuum desiccator. Then the extractive values are calculated as percentage w/w of solvent soluble extractive with reference to the air dried drug.

- A) **Water soluble extractives** - this method is applied to the drugs which contain water soluble constituents like sugars, plant acids, mucilage, glycosides etc.
- B) **Alcohol soluble extractives** - Method is applied to the drugs which contain alcohol soluble constituents like resins. Alcohol is an ideal solvent for extraction of various chemicals.

Fluorescence analysis.

In Fluorescence analysis, the samples Aqueous and Alcohol extract were mixed with various reagents like Alcohol, Ethyl acetate, benzene, methanol, fluroglucinol, pet.ether and observed under UV light as visual , 245 nm,365 nm for microchemicals analysis.

High Performance Thin Layer Chromatography (HPTLC)

Different chromatographic and instrumental methods of analysis are also physical methods of evaluation. Chromatography represents a group of methods for separating molecular mixtures that depend on the differential affinities of the solute between two immiscible phases. HPTLC is applied to obtain quantification of active ingredients and also detection of adulteration.

OBSERVATIONS AND RESULTS**Microscopy :-**

Field sample (Varanasi) :- The cells of epidermis are tangentially elongated covering trichomes 1-2 celled short are present, outer cortex is parenchymatous or collenchymatous. Inner cortex is composed of parenchymatous cells with vascular bundle. In vascular bundle xylem cells metaxylem, protoxylem cells were seen. Above and below of vascular bundle the phloem cells were seen. Below the lower phloem cells the pericycle cells were present. Pericycle cells and vascular bundles covered with parenchymatous cells. After that there is layer of Collenchymatous cells on above lower epidermis. In lamina the layers of palisade cell, spongy cells vascular rays were seen.

Market sample (Kottakal):- The cells of epidermis are tangentially elongated covering trichomes 2-5 celled long are present, outer cortex is parenchymatous or collenchymatous. Inner cortex is composed of parenchymatous cells with vascular bundle. In vascular bundle xylem cells metaxylem, protoxylem cells were seen. Below of vascular bundle the phloem cells were seen. Below phloem parenchymatous cell were seen after that there is layer of Collenchymatous cells on above lower epidermis. In lamina the layers of palisade cell, spongy cells vascular rays were seen.

Powder Microscopy

To study the presence or absence of various types of tissues or structures, the shade dried leaves are powdered using electric grinder, passed through sieve No. 60 and then subjected for microscopic studies.

Sample Findings	Field Sample	Market sample
Stomata	+	+
Crystals/calcium oxalate	+	+
Trichomes	+	+
Epidermal cells	+	+
Vascular Bundles	+	+
Phloem Fibers	+	+
Veinlets	-	+

PHYSICO-CHEMICAL STUDY

The values of physico-chemical studies are not mentioned in API. Foreign matter %, Ash value, Moisture %, Aqueous soluble extractive values, and Alcohol soluble extractive values as follow:-

Parameters	Field Sample	Market sample	API Values
Foreign matter %	-	5gm	-
Moisture %	7.86	9.73	-
Total ash %	16.61	22.84	-
Aqueous Soluble Extract %	6.60	51.84	-
Alcohol Soluble Extract %	7.13	4.67	-

Elemental Ash Analysis

Sample	Field Sample	Market sample
Copper	-ve	-ve
Magnesium	+ve	+ve
Chlorine	+ve	+ve
Sulphur	+ve	+ve
Pottasium	+ve	-ve

Ph of Aqueous Extract

Samples	Ph of Aqueous Extract
Field Sample	7.34
Market sample	8.12

Specific Gravity of Aqueous Extract

SAMPLES	SPECIFIC GRAVITY
Field Sample	1.0058
Market sample	1.00467

Micro chemical Testing of Aqueous and Alcohol Extract

Test performed	Reagents used	Aqueous extract of Field sample	Aqueous extract of Market sample	Alcohol extract of Field sample	Alcohol extract of Market sample
Alkaloids	Hager's	+Ve	-Ve	+Ve	+Ve
Glycosides	Mollisch	+Ve	+Ve	-Ve	-Ve
carbohydrates	Mollisch	+Ve	+Ve	-Ve	-Ve
Phytosteron	10% lead acetate	+Ve	+Ve	+Ve	+Ve
Saponin	Distilled water	+Ve	+Ve	-Ve	-Ve
Phenolics	Ferric chloride	+Ve	+Ve	+Ve	+Ve
Tanin	Ferric chloride	+Ve	+Ve	+Ve	+Ve
Protiens	Millon's	+Ve	+Ve	+Ve	+Ve
Amino acids	Ninhydrin	-Ve	-Ve	+Ve	+Ve
Reducing sugar	Benedict	+Ve	+Ve	+Ve	+Ve
Starch	Iodine	+Ve	+Ve	+Ve	+Ve

CROMATOGRAPHIC (HPTLC) STUDY

Sr. No.	Sample	Rf	Area at 254 nm	Area at 366 nm
1.	Field 5 µl	0.02	16765	19425
		0.88	23689	9657
2.	Field 10µl	0.02	23565	26737
		0.88	25941	16924
3.	Market 5µl	0.02	11996	11550
		0.92	31424	4851
4.	Market 10µl	0.02	17408	17239
		0.92	15820	5079

DISCUSSION

The present study entitled "**A Comparative Pharmacognostical and Physico- chemical study on Leaves of *Patola* (*Trichosanthes dioica* Roxb.) in Field and Market.**" were Planned to assess the controversies between the different species of *Trichosanthes*, which are used

in medicine. There is no reference regarding the drug *Patola* in Vedic period but lots of references are available in *Samhitas*. This drug has been mentioned as *Shamana*, *Shodhana* as well as *Swastha Hitakara Dravya* in *Samhita* period. According to Vd. P.V. Sharma and Vd. K.C.Chunekar shastri the authentic source of *Patola* is *T.dioica Roxb*. *Patola* belongs to Cucurbitaceae family.

Substitutes and Adulterants

T.cucumerina and *T. aguina* are used under the name of *Tikta Patola* and *Swadu Patola* respectively. Other species of *Trichosanthes* which shows similarity in morphological characters hence added as adulterants which are *T. palmata*, *T. cordata*, *T. cucumerina*. *T.tricuspidata/Trichosanthes palmate* is considered as *Vishala* or *Mahaindravani* as per wealth of India. In pharmacognostical study organoleptic examinations (panchbhuaatik parikshana), microscopic, macroscopic characters, Histochemistry were conducted. In pharmacognostical study Market sample don't show resemblance with field sample. Market sample shows resemblance of *T.cucumerina*. In physico chemical study foreign matter percentage, moisture content, total ash, elemental ash analysis, extractive study (aqueous and methanol), chromatographic study were conducted. From physico chemical study there is no resemblance in readings, so present field and market samples are different. In chromatographic study field sample and market sample, shows similarity in Rf value at 5 µ l; whereas at 10µl values are variable.

CONCLUSION

Some synonyms of *Patola* (*T.dioica Roxb.*), resembles with to *T.cucumerina Linn*. The pharmacognostical and physico-chemical study shows that chemical constituents in Field sample (*T. dioica*) and Market sample (*T. cucumerina*) are nearly same. The North field sample (i.e. Varanasi field sample) and market sample (i.e. Kottakkal Market sample) were not resembled with each other. The North field sample was of *T.dioica roxb.* and market sample was of *T.cucumerina*. However, from the assessment of textual references compared with the actual field work and analytical work *T. cucumerina* can be taken as *Tikta Patola* due to its extremely bitter taste of all parts of the plant and *T. dioica* can be compared with *Swadu Patola* though fruit is Sweet in taste. *T. Cucumerina* being more *tikta* with all parts, it should be used in medicine and *T.dioica* and *T.aguina* should be used in diet as *pathya shaka* for various ailments.

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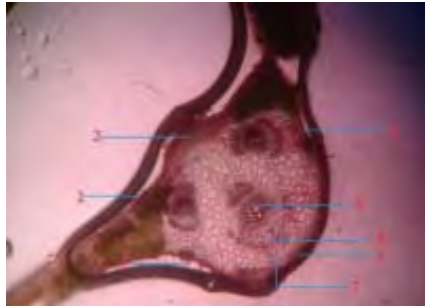
Macroscopy



Field Sample of *Trichosanthes dioica* Roxb.

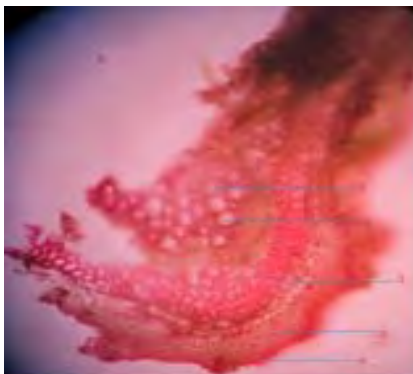


Market Sample from Kottakkal



Microscopy of Field sample

- 1 Upper epidermis
- 2 Collenchyma
- 3 Trichoms
- 4 Lower epidermis
- 5 Vascular bundle
- 6 pericycle
- 7 Parenchyma.



Microscopy of Market sample

- 1 Metaxylem,
- 2 Protoxylem,
- 3 parenchyma
- 4 collenchyma,
- 5 Lower epidermis



Microscopy of Market sample

- 1 upper epidermis,
- 2 collenchyma,
- 3 parenchyma,
- 4 Protoxylem,
- 5 metaxylem

Review : **Assessment of Pitta Dosha Functions
with the help of
Modern Investigations**



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Abstract :-

Ayurvedic treatment is based on proper understanding of vikruti vignyan (Ayurvedic pathology). Pathology is based on physiology. Ayurvedic samhitas have described the properties and functions of each dosha. Many of these functions are based on clinical examination and observations. In 21st century there is a tremendous progress in the field like Biophysics, Biochemistry and Bioengineering, etc. So medical science is now getting a support of this technical development. Ayurveda also should take the help of these technological developments for better understanding of pathophysiological concepts regarding dosha functions. This article is an attempt to explain how Pitta dosha functions can be objectively proved by modern investigations.

Total number of references :- 08

Key words :- Pitta dosha, Pachaka Pitta, pakti, gastric analysis, Ranjaka Pitta, Sadhaka Pitta, Bhrajaka Pitta, Alochaka Pitta, tissue metabolism.

Introduction:-

Ayurveda explains that physiology depends on samya avastha or balanced condition or homeostasis of dosha, dhatu, and mala. Because these three elements are basic functional units of the body.

Pitta is the bioenergy responsible for pachana or digestion or transformation or metabolism. Pitta digests the food and forms the simple molecules from the compound molecules. Molecules like amino acids from proteins and glucose from carbohydrates. Piita dosha also takes care of tissue metabolism like formation of muscles, bones, etc. Apart from food digestion Pitta dosha is also responsible for the digestion of information perceived from five senses like tactile, gustatory, optic sensations.

Now we will try to concentrate on the general functions of Pitta dosha and also on functions of types of Pitta dosha with the reference of A.H.Su.11:3^[3].

Common functions of pitta dosha^[3]:-

To get normal functions of any dosha, there is a need that body organs or structures related with the dosha should also be normal.

The following are the common functions of the Pitta dosha

1) Pakti (digestion) –

Pitta dosha has predominance of Teja mahabhut and Jala mahabhut. When both of these elements are combined together, they have the power to transform or convert any substance in different form. Teja and Jala mahabhut helps Pitta dosha to carry out its important function pachan, digestion^[5] or transformation.

This transformation theory of Pitta dosha is not only restricted to food digestion or metabolism but it also extends up to the cellular level in the body like digestion of sensory perception that is understanding and intelligence.

i. Stool examination- For assessment of digestive function of Pitta dosha the first simple test is stool examination. It helps to find the cause of symptoms affecting the digestive tract. Laboratory analysis includes microscopic examination, chemical tests, and microbiologic tests. The stool will be checked for its colour, consistency, amount, shape, odour, and the presence of mucus. The stool may also be examined for occult blood, fat, pus cells. pH and stool culture can also be done. Disturbance in digestion leads to Malabsorption Syndrome^[6]. In Malabsorption Syndrome one will have light coloured, foul smelling stools that are soft and bulky.

ii. BMI (body mass index)- can be checked at the level of tissue metabolism. When tissue metabolism is proper the physical development of a person will be normal. For this BMI test can be useful.

BMI for adults 20 years and older :

- BMI below 18.5 (shown in white) is considered underweight.
- BMI of 18.5 to 24.9 (green) is considered healthy.
- BMI of 25 to 29.9 (yellow) is considered overweight.
- BMI of 30 or higher (red) is considered obese.

iii. Liver function test (LFT)^[7] - Liver is the main organ with relation to digestion. So LFT can be done to find out the state of the liver of the patient.

iv. Structural deformity^[7]- These tests will check the normalcy of the organs with relation to digestion. USG can be done to rule out any deformity in liver, gall bladder, etc. X-ray abdomen and other imaging tests like Barium meal, Computed tomography scan (CT scan) of abdomen, Magnetic resonance imaging (MRI), Cholangiopancreatography (MRCP), Esophagogastroduodenoscopy (also called EGD or upper endoscopy), Gastric manometry. These tests help to show how the stomach is working, and if there is any delay in digestion.

2) Ushma (heat) –

The quality of Pitta dosha is ushna (hot). It maintains the body temperature. This heat is generated in the process of metabolism. As stimulation of Vata dosha is necessary to keep

the organs in motion in the same way heat is equally important to keep the body alive. Temperature regulation is the function of Pitta.

i. Temperature- Thermometer- In fever there is elevation of Pitta dosha which causes rise in body temperature. It can be checked with the help of Thermometer.

ii. Gastric analysis- HCl is present for the purpose of digestion in the amashaya (stomach) which also possesses the property of heat. Hence, in cases of hyperacidity gastric analysis can be done. Gastric analysis examines acids and other secretions which are found in the stomach. Some people, however, may secrete too much (called hyper secretion) or not enough, resulting in digestive disorders, such as ulcers.

iii. ABG (Arterial blood as) - Acidosis is the condition in which there is an increased acidity in the blood and other body tissue (i.e. an increased hydrogen ion concentration). It can be at respiratory level or metabolic level. In this ABG (arterial blood gas) can be done to check the level of CO₂ and pH balance. If this is maintained body temperature will also be maintained.

3) Darshan (vision) -

As vision is always correlated with fire or light which is also the property of Pitta dosha, hence vision is also the function of Pitta dosha.

Alochaka Pitta which is situated in the eyes carries out this function. Teja mahabhut which is located in the eyes with the help of refractive medium allows us to differentiate between shapes, colours, etc. Hence, we can conclude that problems of eye/vision are the problems of Pitta dosha located in eyes that is Alochaka Pitta.

i. Eye examination^[7]- It can detect eye diseases, ocular manifestations of systemic disease. Eye examination consists of tests for visual acuity, pupil function, and extra ocular muscle motility, as well as direct ophthalmoscopy.

ii. Specialized eye examinations-

i. Pinhole Testing- The pinhole testing device can determine if a problem with acuity is the result of refractive error (and thus correctable with glasses) or due to another process.

ii. Colour vision- Different people see the same illuminated object in different ways. This ability of organism to distinguish objects is based on the frequencies of light is colour vision.

iii. Structural examination-

a) Keratometry- It is a diagnostic instrument for measuring the curvature of the anterior surface of the cornea, particularly for assessing the extent and axis of astigmatism.

b) Gonioscopy- A gonioscope in conjunction with a slit lamp or operating microscope is used to gain a view of the iridocorneal angle, or the anatomical angle formed between the eye's cornea and iris. The importance of this process is in diagnosing and monitoring various eye conditions associated with glaucoma.

c) Ultrasound biomicroscopy- Is a type of ultrasound eye exam. It is useful in glaucoma, cysts and neoplasm of the eye, as well as the evaluation of trauma & foreign bodies of the eye.

4) Kshut (hunger) –

It means hunger. Pitta dosha initiates hunger. Anabolism and catabolism is the continuous cycle which requires nourishment from the food intake. The normal sensation of hunger indicates the normal metabolic process in the body. Disturbance in this cycle can cause anorexia.

Hunger is not a sign but it is a symptom. We can say that hunger has direct and indirect relation with the process of digestion. Hence, kshut (hunger) is depended on pakti (digestion). The investigations of digestion will also explain about the reason for disturbed hunger.

5) Trut (thirst) –

It is the sensation of thirst. When the water level in the body is decreased there is sensation of thirst. As we know Pitta is of ushna quality hence to control this heat in the body and to keep our body hydrated intake of water in adequate quantity is very important. Hence in fever due to increase in body temperature the sensation of thirst also increases.

i. Dehydration test- Thirst indicates dehydration which can be examined by loss of elasticity of skin. At the same time electrolyte study can be done to investigate thirst.

ii. Renal function tests and Glucose levels – They should be assessed to rule out chronic kidney disease and diabetes mellitus.

iii. Psychogenic Polydipsia- In this water deprivation will show the same changes as normal individuals, although occasionally urine osmolality will increase moderately. There is no response to exogenous ADH. Such patients may have considerable mental health problems and may not be prepared to tolerate prolonged periods of water restriction.

6) Ruchi (Taste) –

The proper differentiation of tastes is ruchi. Proper digestion of food in the stomach helps in this process. Feeling hungry at proper interval of time indicates proper functioning of pachan. If food is not digested properly one feels sour or bitter taste in their mouth.

Proper pakti or digestion will create normal hunger sensation then definitely taste will be normal. The investigations of digestion will also explain about the reason for disturbed ruchi.

7) Prabha (skin) –

Pitta, blood tissue and skin are interconnected. The skin texture, complexion and lusture are directly controlled by Teja mahabhuta of Pitta dosha.

Dhatu poshan is directly dependent on proper digestion of food. Pitta and Rakta are having ashrayi ashraya sambhandana. Whenever blood is normal it gives normal complexion and texture to the skin.

- i. Haemoglobin test-** Haemoglobin is related with the glow of the skin. Normal Hb is related with the normal glow of the skin. Hence, Hb test can be done.
- ii. Electrolytes-** Even electrolytes can be checked as imbalance in them can cause loss of elasticity, wrinkles, and dryness of skin.
- iii. Skin biopsy-** A skin biopsy is a tissue sample. It is the removal and histopathological examination of a sample of skin to identify the presence, cause, or extent of a disease or condition.
- iv. Dermoscopy-** The examination of the skin using skin surface microscopy. It is also called as 'epiluminescopy' or 'epiluminescent microscopy, which is mainly used to evaluate pigmented skin lesions.
- v. Electrical impedance spectroscopy-** A point of care portable device called Nevisense to objectively analyse lesions with suspicion of melanoma.
- vi. Laboratory tests for fungal infection-** In this testing skin sample is scrapped and send for culture.
- vii. Open applicaton test-** It is a test which is done to determine allergic dermatitis by applying solution to the open area of skin.
- viii. Optical coherence tomography-** Is a non-invasive optical imaging technique that uses low-power infrared laser light to image up to 2 mm beneath the skin surface. The clinician can obtain real-time images of the architecture of the skin without pre-treatment or gels. It can be used to detect early signs of skin cancer.
- ix. Patch tests-** It is done by the doctor to find out whether their skin condition may be caused or aggravated by a contact allergy.
- x. Prick tests-** Is useful in the diagnosis of other allergies such as hay fever allergy, food allergy, latex allergy, drug allergy and bee and wasp venom allergy.
- xi. Reflectance confocal microscopy-** Is a non-invasive imaging technique which enables in vivo visualisation of the epidermis down to the papillary dermis in real time.
- xii. Spectrophotometric analysis of skin lesions-** It refers to the use of a skin imaging device to help evaluate pigmented skin lesions and make it easier to identify and diagnose early stage of malignant melanomas.
- xiii. Tuberculosis screening-** This screening is done in the latent TB patients. The tuberculin skin test or Montoux test contains a purified protein derivative (PPD) of TB bacteria, so it is also called a PPD test. This test is done along with chest X-ray and blood tests.
- xiv. Tzanck smear-** Is a simple and cheap test that relies on viewing and interpretation of single cells (cytology). Tzanck smear is mainly used in an acute setting to rapidly detect a herpes infection or to distinguish Stevens- Johnson syndrome from staphylococcal scalded skin syndrome. It can also be used to diagnose a variety cutaneous infections and blistering diseases.

xv. **Wood lamp examination-** A Wood lamp is used to identify the extent of pigmented or depigmented patches and to detect fluorescence. This examination is a diagnostic test in which the skin or hair is examined while exposed to the black light emitted by Wood lamp.

xvi. **Blood tests-** Many patients will have blood tests. Blood count and antinuclear antibody are usually necessary. Blood, urine and faecal biochemical tests for porphyria may be required.

8) Medha (Intelligence) –

Dhi, dhriti and smrutis are the higher intellectual functions. Light is also compared with knowledge, as it takes away darkness / ignorance. Hence, all mental activities pertaining to intelligence are of Pitta Dosha. The person with Pitta body type has more of these mental features. Physical body and mind are functionally dependent on each other. Hence, when food digestion is proper it enhances good mental activity.

i. **Intelligence tests-** They are not a measure of how “smart” someone is. They measure intellectual potential. There are some of the intellectual tests which can be done with those with communication problems.

a) **Stanford-Binet Intelligence Scale**, Fifth Edition (SBIS-V) Age range = 2 – 90+ . An update of the SB-IV. In addition to providing a Full Scale score, it assesses Fluid Reasoning, Knowledge, Quantitative Reasoning, Visual-Spatial Processing, and Working Memory as well as the ability to compare verbal and nonverbal performance.

b) **Wechsler Intelligence Scale for Children**, Fourth Edition (WISC-IV) 6 – 16-11. An update of the WISC-III, this test yields a Full Scale score and scores for Verbal Comprehension, Working Memory, Perceptual Reasoning, and Processing speed.

c) **Woodcock-Johnson III Tests of Cognitive Abilities** 2 – 90+. This test gives a measure of general intellectual ability, as well as looking at working memory and executive function skills.

d) **Cognitive Assessment System (CAS)** 5 – 17. Based on the “PASS” theory, this test measures ‘Planning, ‘Attention, ‘Simultaneous, and ‘Successive cognitive processes.

e) **Wechsler Adult Intelligence Scale (WAIS)** 16 – 89. An IQ test for older children and adults, the WAIS provides a Verbal, Performance, and Full Scale score, as well as scores for verbal comprehension, perceptual organization, working memory, and processing speed.

f) **Comprehensive Test of Nonverbal Intelligence (CTONI)** 6 – 18-11. Designed to assess children who may be disadvantaged by traditional tests that put a premium on language skills, the CTONI is made up of six subtests that measure different nonverbal intellectual abilities.

g) **Universal Nonverbal Intelligence Test (UNIT)** 5 – 17. Designed to assess children who may be disadvantaged by traditional tests that put a premium on language skills, this test is entirely nonverbal in administration and response style.

h) **Kaufman Assessment Battery for Children (KABC)** 2-6 to 12-5. This test measures simultaneous and sequential processing skills, and has subscales that measure academic achievement as well.

ii. Group-administered intelligence tests- It involve a series of different problems and are generally used in mass testing situations such as the military and schools. Examples of group tests are: Multidimensional Aptitude Battery, The Cognitive Abilities test, Scholastic Assessment Test.

iii. Emotional quotient- It also has its scales and subclasses which are explained as follows:-

a) Intrapersonal (self-awareness and self-expression)

Self-Regard : To accurately perceive, understand & accept oneself

Emotional Self-Awareness: To be aware of and understand one's emotions

Assertiveness: To effectively and constructively express one's emotions and oneself

Independence: To be self-reliant and free of emotional dependency on others

Self-Actualization: To strive to achieve personal goals and actualize one's potential

b) Interpersonal (social awareness and interpersonal relationship)

Empathy : To be aware of and understand how others feel

Social Responsibility: To identify with one's social group and cooperate with others

Interpersonal Relationship: To establish mutually satisfying relationships and relate well with others.

c) Stress management (emotional management and regulation)

Stress Tolerance: To effectively and constructively manage emotions

Impulse Control : To effectively and constructively control emotions.

d) Adaptability (change management)

Reality-Testing: To objectively validate one's feelings and thinking with external reality

Flexibility: To adapt and adjust one's feelings and thinking to new situations

Problem-Solving: To effectively solve problems of a personal and interpersonal nature

e) General mood (self-motivation)

Optimism : To be positive and look at the brighter side of life

Happiness : To feel content with oneself, others and life in general

f) Currently there are three models which are used for the assessment of the emotional intelligence.

1. Ability model

2. Mixed model (usually subsumed under trait EI)

3. Trait model

iv. Other investigatory tests- are also used which are under research and proving boon to the science.

a) PET scan- Positron emission tomography detects gamma rays as they are emitted from a tracer that has been injected into the body. It is useful in neuroimaging because of the assumption that areas of high radioactivity are associated with high brain activity.

b) Brain event related potentials (ERCP'S)- they allow the sequencing of psychologically interesting processing. These potentials are measured, brain responses to specific stimuli events continuously.

c) Brain size- researchers are trying to acquire volumetric measurements of brain size. They have tried to find out the relationship between brain size and intelligence with respect to IQ. It has also been found that there is a strong correlation of brain size with full scale IQ and verbal IQ.

d) Nerve conduction velocity (NCV) – there is also hypothesis made that higher intellectual is associated with better neural efficacy. But this study is still a part of controversy.

e) Raven's progressive matrices- it is a test which consists of 60 MCQ's in which their difficulty level rises gradually. It is used to measure reasoning ability.

9) Shaurya (Courage) –

When dhatus are properly nourished from the metabolism it gives strength to the body. This gives courage to the person.

i. Psychological parameters- To measure these psychological parameters of personality- openness to experience, conscientiousness, extraversion, agreeableness and neuroticism can be tested by the doctor.

10) Tanu mardava (Soft skin) –

The mridu (soft) guna of Pitta dosha is responsible for good quality of skin.

ii. Electrolytes - In this we can find out the undirected measurement by testing the electrolytes as decrease in electrolytes shows the dehydration, losing the elasticity of the skin tone.

iii. The **investigations of prabha context** will also explain about the reasons for skin disorders.

Types of pitta dosha :-

There are five types of Pitta dosha –

Pachaka Pitta

Ranjaka Pitta

Sadhaka Pitta

Bhrajaka Pitta

Alochaka Pitta

a) Pachaka Pitta:-

This dominant type of Pitta is located between stomach and large intestine with predominance of Teja mahabhuta in it. It is called by the term Anala- fire because of its function of Paka – digestion and transformation of food materials.

i. Prashnapariksha - Digestion of food can be firstly ruled out by prashnapariksha like- Aruchi, uddgar, udargaurav, Malabsorption syndrome, Amoebiasis, Giardiasis are some of the disorders which can be evolved from the disturbances in Pachaka Pitta.

ii. Laboratory tests- To rule out these disturbances physician can carry out some pathological tests like – Serum enzyme, study for Pancreatitis Serum trypsin, for Anorexia (jaundice) - LFT's, LDH (lactate dehydrogenase) normal value – 90 -230 IU/m.

iii. Gastric analysis- It is not usually done now, but can also be done to rule out proper functioning of the Pachaka Pitta.

iv. OGD scopy- It can also be advised by the doctor to rule out pyloric stenosis, ulcer, etc along with the investigations mentioned for the general function of the pakti (digestion) are also applicable.

b) Ranjaka Pitta:-

This is situated in amashaya with predominance of Jala mahabhuta. Its main function is to give red colour to the blood. Hence in anaemia one has to rule out the possibility of pathology in Ranjaka Pitta.

i. Raktasarata parikshan- Clinically Ranjaka Pitta can be accessed by Raktasarataparikshan - Nails, conjunctiva, palm, tongue – its red colour indicates Ranjaka Pitta within its normal limits.

ii. Laboratory investigations- With modern laboratory investigations – Haemogram blood indices – MCV, MCH, Morphology of RBC , Serum bilirubin, Serum vit B12, folic acid, Serum iron , Iron profile – TIBC (total iron binding capacity), Serum ferritin, Serum erythropoietin, Serum thyroxine , Serum Vit. C, Protein content can be done. These tests will also help to determine the normal pathology of Ranjaka Pitta.

iii. USG- Doctor can even think of doing USG to rule out hepatomegaly, splenomegaly, which are affected due to disorders in Ranjaka Pitta.

iv. Bone marrow aspiration- It can also be suggested to rule out blood cancer.

c) Sadhaka pitta :-

The Pitta located in the mastishkasiddha hridaya or brain understanding problems. It attends to mental functions such as knowledge, intelligence, self- consciousness, etc, thereby helping the purpose of aims of life.

i. CNS examination- Manovaha strotasa can be examined by CNS examination to examine sensory system.

ii. Medha function test- Tests which are mentioned previously for assessing medha function are also applicable here.

iii. Imaging test- In road traffic accidents (RTA) due to injury to head sadhaka Pitta can be hampered. X-ray, CT scan, MRI can be advised to check out for hemorrhage, hematoma and skull fractures.

d) Bhrajaka pitta :-

Pitta which resides in skin is Bhrajaka Pitta which helps in exhibition of colour and complexions. Touch sensation is also properly digested due this type of Pitta.

Tests which are mentioned previously for assessing prabha context are applicable here.

e) Alochaka pitta :-

This type of Pitta is located in eyes. It is responsible for normal functioning of vision.

Eye examination is done to observe acuity of vision, field of vision, colour vision.

Tests which are mentioned previously for assessing darshana function are also applicable here.

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Opinion :

Assessment of Kapha Dosha Functions with the help of Modern Investigations

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Abstract

Ayurveda is an ancient science. The principles of Ayurveda are said to be immortal. Modern medicine has been extraordinarily developed science with the amalgamation of technology in the field of diagnostic, prognostic, and curative procedures. Newer technologies are being introduced each day for finer and precise understanding of human being and diseases. The integration of technologies has made this difference in the field of medicine too. Hence, it is a need for Ayurved to develop with the contemporary scientific trends for the benefit of the society and for nurturing Ayurved science. There are efforts being made to update the age old scientific wisdom in various aspects by focusing on its pharmacologic and therapeutic potential. As doshas are the prime pillars of Ayurveda, attempt is made to correlate Kapha dosha functions with the modern investigations in this article.

Total number of references - 06

Keywords - Kapha dosha, snehana, balakrit, Avalambaka Kapha, Kledaka Kapha, Bodhaka Kapha, Shleshmaka Kapha, Tarpaka Kapha.

The fundamental principles of Ayurveda have explained, the unique concept of Agni (digestive fire), Tridosha (three bio-humors), Dhatu (tissues) and Mala (excretory products) in normal physiological manner, and pathological states in diseases.

Kapha dosha is the bioenergy responsible for nutrition, union, maintenance and lubrication. Kapha dosha is responsible for anabolism. So, it is working antagonistically for the activity of catabolism of Vata and Pitta.

Now let us try to focus on the general functions of Kapha dosha along with its types, with the reference of Su.su.15/4.^[1]

General functions of Kapha dosha^[4]:-

1) Sandhi sanshleshana -

The amalgamation of two or more joints together can be termed as sandhi. In the same way we can explain that when two or more molecules unite together its joint is said to

be sandhi. Kapha is responsible for union processes which are taking part in the body because of its snigdha and picchila guna. In accordance to it Kapha also helps in smooth functioning of these joints.

a) BMI (body mass index)- Sandhi sanshleshana is necessary factor in the process of anabolism. So, doctor must try to check the anabolic functions of the body. Anabolism means proper stability, growth and development. So, growth and development can be examined through periodical checking if BMI.

b) Laboratory test- If the growth is found retarded then some hormonal test may occasionally needed. Blood test of growth hormone, testosterone, etc can also be performed.

c) Joint aspiration- It is the most direct and accurate way to determine whether joint pain and swelling is caused by an infection or crystal-related arthritis.

2) Snehana:-

The important function of Vata is movements and hence for the smooth functioning of these movements Kapha is equally important . Kapha counter balance vata activities.

The improper functioning of snehana of Kapha dosha it can be seen with some signs such as in stools constipation can be seen, crepetus in joints during movement, dysuria can be seen in urine, bronchospasm can be felt during respiration in asthamatic patients.

a) Lipid profile test- Lipid profile or lipid panel is a panel of blood tests that serves as an initial broad medical screening tool for abnormalities in lipids, such as cholesterol and triglycerides. These are very necessary for the smooth functioning of the body.

A lipid profile typically includes :

i. **Total cholesterol** — this test measures all of the cholesterol in all the lipoprotein particles.

ii. **High-density lipoprotein cholesterol (HDL-C)** — measures the cholesterol in HDL particles; often called “good cholesterol” because it removes excess cholesterol and carries it to the liver for removal.

iii. **Low-density lipoprotein cholesterol (LDL-C)** — calculates the cholesterol in LDL particles; often called “bad cholesterol” because it deposits excess cholesterol in walls of blood vessels, which can contribute to atherosclerosis. Usually, the amount of LDL-C is calculated using the results of total cholesterol, HDL-C, and triglycerides.

iv. **Triglycerides** — measures all the triglycerides in all the lipoprotein particles; most is in the very low-density lipoproteins (VLDL).

b) Inner body scan- This can also be suggested by doctor to rule out the right amount of fats, water content, etc in the body.

3) Ropana:-

As Kapha is interdependent on Rasa, Meda, Mamsa and Shukra dhatu (ashraya ashrayi sambandha). Wear and tear is the continuous process of the body. So, the damage to these dathus will affect the function of ropana.

a) Electrolytes- Imbalance in electrolytes will also affect the healing process as Kapha is interdepoended on Rasa. Electrolytes will show the proper functioning of rasa.

b) Hb (hemoglobin test)- When they are abnormally low they point to anemia. Anemia affects the body's ability to carry oxygen-rich hemoglobin to the cells and tissues that need it. Wound healing can be impaired in patients who have anemia.

c) Immunoglobulins- An immunoglobulins test is done to measure the level of immunoglobulins, which are also known as antibodies, in blood. They give the cause of the medical problem related to mamsa.

i. IgA- These antibodies are found in areas of the body such the nose, breathing passages, digestive tract, ears, eyes, and vagina. IgA antibodies protect body surfaces that are exposed to outside foreign substances.

ii. IgG- IgG antibodies are found in all body fluids. IgG antibodies are very important in fighting bacterial and viral infections.

iii. IgM- They are the largest antibody. They are found in blood and lymph fluid and are the first type of antibody made in response to an infection. They also cause other immune system cells to destroy foreign substances.

iv. IgE- IgE antibodies are found in the lungs, skin, and mucous membranes. They cause the body to react against foreign substances such as pollen, fungus spores, and animal dander. They are involved in allergic reactions to milk, some medicines, and some poisons.

d) Testosterone- This will give proper idea of ropana for the proper functioning of the Shukra dhatu.

4) Purana :-

As from the above mentioned function healing is for partial damage and filling is required after complete destruction of tissues.

a) Vitamin A- Vitamin A blood test can also be advised to rule out its deficiency. Epithelium damage is recovered by kapha dosha as a working medium of vitamin A. Normal values range from 50 to 200 mcg/dL.

b) Protein test- Proteins are important building blocks of all cells and tissues. Proteins are necessary for the body's growth, development, and health. Hence, this test can be advised. The normal range for total protein is between 6 and 8.3 grams per deciliter (g/dL).

5) Balakrit:-

Kapha provides nourishment to all dhatus, which in return increases the strength of the dhatus and gives stability.

a) Weight- Weight of the person can also give an idea about the strength of the person by comparing it with normal height weight ratio.

b) BMI- Body mass index can help to rule out the components of the body.

c) Grip dynamometer- It measures the maximum isometric strength of the hand and forearm muscles. Handgrip strength is important for any sport in which the hands are used for catching, throwing or lifting. Also, as a general rule people with strong hands tend to be strong elsewhere, so this test is often used as a general test of strength.

d) Cardiopulmonary endurance test- This can be checked by doing Harvard step test.

6) Sthairyakrit:-

Kapha due to its stable property prevents degeneration of body which brings stability in the body and helps in maintain the body weight.

a) Weight – Weight can be taken by the doctor to check for any weight loss due to degeneration. This can be correlated with the height weight chart.

b) BMI- The BMI is an attempt to quantify the amount of tissue mass (muscle, fat, and bone) in an individual, and then categorize that person as underweight, normal weight, overweight, or obese based on that value. However, there is some debate about where on the BMI scale the dividing lines between categories should be placed.^[2] Commonly accepted BMI ranges are underweight: under 18.5 kg/m², normal weight: 18.5 to 25, overweight: 25 to 30, obese: over 30.

7) Kshamadi :-

The gunas of Kapha not only keeps the body in stable position but also maintains the stability of mind. This can allow mind to think properly, develops tolerance, flexibility and develops the power of forgiveness in the person.

a) Emotional quotient (EQ)- It is the capacity of individuals to recognize their own, and other people's emotions, to discriminate between different feelings and label them appropriately. It also has its scales and subclasses which are explained as follows:-

i. Intrapersonal (self-awareness and self-expression)

Self-Regard : To accurately perceive, understand and accept oneself

Emotional Self-Awareness : To be aware of and understand one's emotions

Assertiveness: To effectively and constructively express one's emotions and oneself

Independence: To be self-reliant and free of emotional dependency on others

Self-Actualization: To strive to achieve personal goals and actualize one's potential

ii. Interpersonal (social awareness and interpersonal relationship)

Empathy : To be aware of and understand how others feel

Social Responsibility : To identify with one's social group and cooperate with others

Interpersonal Relationship: To establish mutually satisfying relationships and relate well with others.

iii. Stress management (emotional management and regulation)

Stress Tolerance : To effectively and constructively manage emotions

Impulse Control : To effectively and constructively control emotions.

iv. Adaptibility (change management)

Reality-Testing : To objectively validate one's feelings and thinking with external reality

Flexibility : To adapt and adjust one's feelings and thinking to new situations

Problem-Solving: To effectively solve problems of a personal and interpersonal nature.

v. General mood (self-motivation)

Optimism : To be positive and look at the brighter side of life

Happiness: To feel content with oneself, others and life in general

Types of Kapha dosha-

There are five types of Kapha dosha explained:-

- a) Avalambaka Kapha
- b) Kledaka Kapha
- c) Bodhaka Kapha
- d) Shleshmaka Kapha
- e) Tarpaka Kapha

a) Avalambaka Kapha :-

Avalamban can be explained as to give strength and to help normal functioning of that organ. Avalambaka Kapha is situated in the trik pradeshi. It hydrates, nourishes and replenishes the organs present in this region for heart, lungs and mediastinum. Some Ayurvedic scholars have compared this Avalambak Kapha with pericardial fluid and pleural fluid. Heart and lungs functions can be tested with these tests.

i. Chest X-ray- Chest radiographs are used to diagnose many conditions involving the chest wall, including its bones, and also structures contained within the thoracic cavity including the lungs, heart, and great vessels. Pneumonia and congestive heart failure are very commonly diagnosed by chest radiograph.

ii. 2D echo- An Echocardiogram (Echo) is a non-invasive test that uses sound waves to make pictures that look at the structure and function of the heart (two dimensional Echo or 2D Echo). A transducer or ultrasound probe is held against the chest wall with special ultrasound gel to help get good transmission of the sound waves.

iii. Stress test- An exercise stress test usually involves walking on a treadmill or riding a stationary bike while heart rhythm, blood pressure and breathing are monitored. The doctor may recommend an exercise stress test if suspected for coronary artery disease or an irregular heart rhythm (arrhythmia).

iv. Pulmonary Function Testing (PFT)- The primary purpose of pulmonary function testing is to identify the severity of pulmonary impairment. Pulmonary function testing has diagnostic and therapeutic roles and helps clinicians answer some general questions about patients with lung disease.

v. Pericardial and Pleural effusion Tapping- Tapping can be done SOS by the doctor in the cases of effusion.

vi. Pleural biopsy- Pleural biopsy is carried out where pleural fluid aspiration (Thoracentesis) and other investigations have not revealed the cause of a pleural effusion.

b) Kledaka Kapha:-

Kledaka Kapha exits in amashaya. As Pitta serves as a fire element in the stomach in the same way Kapha helps in oleation of the food in stomach for smooth digestion. When Pachaka Pitta, Kledaka Kapha and Saman Vayu are normal in the stomach, the digestion process is normal.

i. Laboratory tests- To rule out these disturbances physician can carry out some pathological tests like – stool examination, Serum enzyme, study for Pancreatitis, Serum trypsin. For Anorexia (jaundice) - LFT's, LDH (lactate dehydrogenase) normal value – 90 -230 IU/m.

ii. Gastric analysis- It is not usually done now, but can also be done to rule out proper functioning of the Pachaka Pitta, Kledaka Kapha.

iii. Liver function test (LFT) - Liver is the main organ with relation to digestion. So LFT can be done to find out the state of the liver of the patient.

iv. Structural deformity- Kledana function is depended on normal structure hence, to check the normalcy of the organs with relation to digestion these test can be done. USG can be done to rule out any deformity in liver, gall bladder, etc. X-ray abdomen and other imaging tests like Barium meal, Computed tomography scan (CT scan) of abdomen, Magnetic resonance imaging (MRI), Cholangiopancreatography (MRCP), Esophagogastroduodenoscopy (also called EGD or upper endoscopy), Gastric manometry. These tests help to show how the stomach is working, and if there is any delay in digestion.

v. Histology- As kledana provides moisturization then according to modern science Histology can be done to check proper functioning of Kledaka Kapha –Mucus glands examination, Goblet cells – large intestine (increase in number).

c) Bodhaka Kapha:-

It is present in tongue and mouth. It helps to differentiate between the tastes consumed. It also protects the buccal mucosa from very hot, spicy food.

i. Gustatory Pathway examination-

- 1) **Sip-spit-rinse test-** This may involve a simple “sip, spit, and rinse” test, or chemicals may be applied directly to specific areas of the tongue.
- 2) **Electrogustometry-** An electro-anodic stimulation with a continuous current causes hydrolysis of the saliva, stimulating the gustative chemoreceptors and giving a sour, sometimes metallic, taste recognised by the patient. Results are reported as non-detectable or increased thresholds on the area of the tongue tested.
- 3) **Chemical gustometry-** It may be applied in drops to the tongue, by oral rinsing, or by new technologies based on rapidly dissolving taste strips: Solutions in increasing concentrations are usually applied to the surface of the tongue (with a dropper or a taste strip) with the 4 fundamental tastes: citric acid (sour), glucose (sweet), sodium chloride (salty), and quinine (bitter). In some cases, monosodium glutamate may also be tested. Results are reported as any decrease of taste sensation on the area of the tongue tested.

ii. Salivary Gland Examination -

- 1) **Dental X-ray-** The doctor may want to see the blockage to diagnose a salivary gland obstruction. Taking a dental X-ray of the affected area can help to pinpoint the obstruction.
- 2) **CT scan And MRI-** If there is need to finely target the salivary glands, an MRI or CT scan can provide more in-depth images.
- 3) **Biopsy-** A biopsy to remove salivary gland tissue can aid in diagnosis, particularly if doctor suspects of an autoimmune disorder that affects salivary glands.

d) Shleshmaka Kapha:-

Sandhi means union of any two elements like bone, tendons, muscle, etc. the snigdha and picchila properties of Kapha binds the two elements of sandhi together. This good binding helps in smooth functioning of the joints.

This can be compared with the synovial fluid of the synovial joints.

i. Laboratory tests-

- 1) **ESR (Erythrocyte sedimentation rate)-** It is a test that measures the rate at which red blood cells settle to the bottom of a test tube containing blood. It is usually increased when inflammation is present.
- 2) **Serum creatinine-** The level of creatine kinase (a normal muscle enzyme that leaks out is released into the blood stream when muscle is damaged) may also be tested.

Levels of creatinine kinase are increased when there is widespread ongoing destruction of muscle.

- 3) **Anti CCP antibody-** In the rheumatoid arthritis, a blood test to identify rheumatoid factor or anticyclic citrullinated peptide (Anti CCP) antibody is helpful in making the diagnosis.
- 4) **HLA-B27** – A blood test can be done to identify people who have a certain gene (HLA – B27). People who have this gene are at increased risk of developing spondyloarthropathy, a group of disorders that can cause inflammation of the back and other joints.

ii. **Imaging tests-**

- 1) **X-rays-** They are most valuable in detecting abnormalities in bone. Often, x-rays can help doctors to diagnose fractures, tumours, injuries, infections and deformities.
- 2) **Arthrography-** it is an x-ray procedure in which radiopaque dye is injected into a joint space to outline the structures, such as ligaments inside the joint.
- 3) **Dual energy x-ray absorptiometry (DXA)** – it is a most accurate way to evaluate bone density, which helps screening for or diagnosing osteoporosis or osteopenia.
- 4) **CT scan and MRI** – These are more relevant tests and give exact detail of the damage.
- 5) **Ultrasonography-** It is being used more frequently to identify inflammation in and around joints and tears or inflammation of tendons
- 6) **Bone scanning-** It is imaging procedure that is occasionally used to diagnose a fracture.
- 7) **Joint aspiration-** It is the most direct and accurate way to determine whether joint pain and swelling is caused by an infection or crystal-related arthritis.

iii. **Tarpaka Kapha:-**

This type is present in head which protects the centre of sense organs in the brain. Akshatarpan is its main function. Aksha in Sanskrit means sensory and motor organs. Many scholar have compared the function of tarpaka with the cerebrospinal fluid. If there is deformity is nourishment of sensory organs then we can say that tarpaka kapha is hampered.

- i. **CSF examination-** This test is done by lumbar puncture, which is also called as spinal tap, is the most common way to collect this sample. CSF analysis is a group of laboratory tests that measure chemicals in the fluid that surrounds and protects the brain and spinal cord. The tests will look white blood cell count red blood cell count, chloride, glucose, or blood sugar, glutamine, lactate dehydrogenase, which is a blood enzyme, bacteria, antigens, or harmful substances produced by invading microorganisms, total proteins, oligoclonal bands, which are specific proteins, cancer cells, viral DNA, antibodies against viruses. This examinations can be done for the sensory pathway.
- ii. **Structural deformity-** Damage to brain will also hamper Tarpaka kapha. These structural deformity can be found out by CT- scan, MRI, X-ray head, etc.

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Opinion :

Assessment of Vata Functions by Clinical Examination and Modern Investigations

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Abstract –

According to Ayurveda, there are three vital bioenergies which are called *doshas*. They are *Vata*, *Pitta* and *Kapha*. In the present article, main focus is given on the functions of Vata dosha. The functions of Vata dosha can be assessed by clinical examination of the patient and by using modern investigation tools so as to get a diagnostic framework for each function of Vata dosha. Ayurvedic principles when correlated with modern parameters can be fruitful to know the exact pathophysiological states in the body and the treatment can be given accordingly.

Total number of references – [8]

Keywords – Vata dosha, pravartak chesta, niyanta praneta, Prana vayu, Udaan vayu, Vyaan vayu, Samaan vayu, Apaan vayu.

Introduction –

According to Ayurveda, there are three vital bioenergies which are called *doshas*. They are *vata*, *pitta* and *kapha*. In the present article, main focus is given on the functions of Vata dosha.

Vata is responsible for all sorts of movements in the body; physiological, psychological and pathological. These are external muscular movements as well as internal rhythmic movements of the heart, respiratory movements, peristaltic movements and conduction of nerve impulses.

The functions of Vata dosha can be assessed by clinical examination of the patient and by using modern investigation tools so as to get a diagnostic framework for each function of Vata dosha. Also along with the functions of Vata and its Types, it is important to understand their pathological states which are to be investigated.

Ayurvedic principles when correlated with modern parameters can be fruitful to know the exact pathophysiological states in the body and the treatment can be given accordingly.

Now we will try to concentrate on the general functions of Vata dosha and also functions of its types.

Vata Dosha –**The General Functions of Vata Dosha is**

1) **Pravartak Cheshta – Ucchavachanam** in Sanskrit, i.e to stimulate all major & minor activities in the body .This function can objectively tested by noting heart rate, pulse rate, respiratory rate of the patients which are major or vital functions of the body. doctor also has to examine muscular movements & gait to assess the minor functions of the body.

2) **Niyanta Praneta Cha manasaha** in Sanskrit means stimulator & controller of mind. To assess this function, doctor can note grasping or understanding capacity of the patient. In the children suffering from Attention deficit problem or In Hyperactive children, this function of Vata Dosha is found defective.

To test Stimulation function of Vata, Audio or Visual reaction time machine can be used.

3) **Sarvendriyanam Uddyojalaha** in Sanskrit, which means Vata Dosha is responsible for Stimulation to all motor & Sensory organs. To test this function, doctor can perform Nervous system examination. For Dnyanendriya – sensory system Examination is helpful like testing for Fine sensations and Crude sensations.

Karmendriya can be tested by motor system Examination, which includes Nutrition, Tone of muscles, Muscle power grade, Coordination, Involuntary movements.

For Dnyanendriya and Karmendriya — doctor must examine the organ i.e Anatomical structures of ear by Otoscope, Nose by Nasal Speculum, Eyes by Slit Microscope etc (Physiology or functions depends on Anatomy.) and also Pathways like Tactile, Optic, Olfactory, Gustatory and Auditory.

Some details are as follows —

For skin – Texture, complexion and tactile sensations are tested.

E.g. In Leprosy or Hansen's disease, touch sensation is lost.

For Eyes, normal vision, colour vision is tested. Optic nerve is tested by acuity of vision. For this Snellen's chart is used to rule out myopia, Jigar's chart is used to rule out hypermetropia, Ishihara's chart is used to test colour vision. Field of vision is tested by confrontation test, manually or with perimeter. Eye ball pressure is examined with tonometer (to rule out Glaucoma). Fundoscopy is done to rule out diabetic or hypertensive retinopathy.

For testing Rasanendriya or Gustatory organ, doctor must examine Tongue & note structural & Functional changes. Bald Tongue indicates

Vit B12 deficiency. Sensations are tested on various parts of Tongue.

For Testing Ghranendriya or olfactory organ, nose, doctor can use Camphor like substances for smelling purpose.

For Testing Shrotrendriya or Auditory organ, Ear, doctor can perform Test of hearing like Rinne's , Weber & Schwabach Tests or Computerised Audiometry to rule out conditions of deaf and dumb.

4) **Kseptā Bahirmalā** in Sanskrit means, excretion of waste products –

Due to peristaltic movements of Apān vāyu, waste products like Urine and Stool are thrown out of the body.

Clinically, abdominal examination like Inspection, Palpation, Percussion and Auscultation can give idea about the status of Apān vāyu. In the patients of diarrhoea, excessive peristalsis can be heard by stethoscope. Sometimes post – operatively, condition like paralytic ileus can be noted while auscultation (no peristalsis).

5) **Kartā Garbhā Krutīnam** in Sanskrit means Vata dosha is responsible for development and growth of foetus. In this, if embryological development is hampered due to vitiated Vata those congenital anomalies are seen which can be diagnosed by clinically after birth and by USG, before birth. e.g. Cleft lip and cleft palate, Patent ductus arteriosus, septal defect, fistulas, urethral stenosis, rectal stenosis and hydrocephalus, etc.

Types of Vata Dosha –

1) Prānā vāyu –

Main sites of Prānā Vāyu – Murdhā means head (brain), Kanthā means throat, Jivhā means tongue, thoracic region, organs of oral cavity, Nasikā means nose.

a) Head injury or cerebrovascular accidents, cause strotovāigunya which hampers the normal functioning of Prānā vāyu. For this, CT scan of the patient is done to rule out any structural deformity or infarction and bleed.

b) Throat region and organs of oral cavity can be examined with the help of torch by inspection method. E.g. observe the tonsils for congestion or enlargement, patches like in Diphtheria, Leukoplakia.

c) Tongue examination can be done by inspection for its colour and appearance. E.g. dry tongue in dehydration.

d) Nose to be examined for congestion, DNS or nasal polyps with the help of Nasal speculum and torch.

Functions of Prānā vāyu are –

i) **Nishwas** in Sanskrit means control over inspiration. To examine this function Doctor should examine Respiratory system by inspection, palpation, percussion and auscultation. It gives Respiratory rate, shape of thoracic cavity, respiratory sounds to check the air entry.

The patient of head injury or respiratory failure, in which hypoxia occurs main investigation is Arterial Blood Gas (ABG) to rule out Metabolic Acidosis or alkalosis or Respiratory Acidosis or alkalosis.

ii) **Annapravesh** means control over deglutition. This function is hampered in Prānavāha Strotasā dushti. OGD scopy is done to rule out oesophageal varices or oesophagus cancer.

iii) Hrudaydharan in Sanskrit means control over heart rate. Doctor should examine the Heart rate of the patient. Pulse should be examined for rate, rhythm, regularity, volume, tension. Pulse can be recorded by sphygmograph. Arrhythmias like condition can be diagnosed. Heart sounds examined by stethoscope. Any abnormal heart sounds i.e. murmur can be well heard and differentiated. This helps in understanding Hrudaydharan function of Prana vayu.

iv) Buddhidharan in Sanskrit means control over intellectual functions. This can be assessed by Intellegient Quotient (I.Q.) testing.

v) Chittadharan which means controls functions of mind. Emotional Quotient (E.Q.) to assess function of the mind.

2) Udaan vayu -

Main sites of Udaan vayu are - Urasthana means chest or thoracic region, nasika means nasal cavity, nabhipradesh means abdominal muscles required for respiration and galapradesh means pharynx.

a) Urasthana includes lungs, trachea and larynx.

Pulmonary function test are done to assess the functions of Prana and Udaan vayu. PFT's like tidal volume, inspiratory reserve volume, expiratory reserve volume are recorded. These are mainly done to differentiate between obstructive pulmonary disease and restrictive lung diseases.

Chest X – ray is done to know any pathological condition of lungs as well as heart. Conditions like Pulmonary Koch's, Pneumonitic patches, Pleurisy, Cardiomegaly, Millary Tuberculosis, Interstitial lung disease can be well diagnosed with help of Chest X – ray. In these diseases, physiological functions of Prana and Udaan vayu are getting disturbed.

Bronchoscopy is indicated in cases of persistant Coughing, COPD patients, emphysema, etc. to know the structural deformity of bronchial tree. Likewise if any abnormal tissue is seen in bronchoscopy, biopsy can be used for histopathological examination to rule out malignant growth.

Functions of Udaan vayu –

i) Vaakpravrutti in Sanskrit means origin of speech.

Laryngoscopy – Direct or indirect examination of larynx is done to rule out Laryngeal Cancer which can explain the defect in function of Vaakpravrutti of Udaan vayu.

ii) Bala – is another function of Udaan vayu. This Bala we are considering as cardiopulmonary endurance – which can be tested by Physical Efficiency Index (PEI) by Harvard step test.

iii) Uchswaas – i.e. Expiration function of Udaan vayu. When Carbon dioxide is not properly thrown out the body, it starts accumulating in the body and this will form Cyanosis. This cyanosis can be examined by the doctor in ways – Central cyanosis on the tip of tongue and peripheral cyanosis on the fingers of hands and toes.

iv) Pulse oxymeter – is for both Prana vayu and Udaan vayu. Oxygen carrying capacity in blood is proper due to the balance of inspiration and expiration. This reading can be determined by pulse oxymeter.

3) Vyaanvayu –

Main sites of Vyaan vayu is – Hruday i.e. Heart.

According to Charakacharya and Sushrut, the function of Vyaan Vayu is Rasa-Rakta samhana i.e. blood circulation.

Functions of Vyaan Vayu –

CVS Examination includes Systemic examination of Heart and blood vessels. Also, Inspection, Palpation, Percussion and Auscultation methods are used to examine the heart.

i) Pulse Rate – done by Palpation method to check the normal rate and rhythmicity of an individual. Conditions like tachycardia, bradycardia, and irregular pulse can be detected. It gives the idea of function of Vyaan vayu. Pulse is examined at Radial Artery, Brachial Artery, Femoral Artery, Popliteal Artery and Dorsalis Pedis.

Peripheral pulsations are absent in peripheral vascular diseases like wet or dry gangrene, Raynaud's disease.

Raised Jugular Venous Pressure is seen in CCF, Portal hypertension, pulmonary hypertension.

ii) Blood Pressure – Vyaan vayu is determined by blood circulation. This circulation can be assessed by Blood pressure. Blood pressure is the lateral pressure exerted on the walls of blood vessels. When the BP is normal, the blood can be thrown in the body properly from head to toe and to maintain the capillary circulation. This is the function of Vyaan vayu.

iii) ECG – Resting Electrocardiography is a graph recorded of an electrical conduction of heart. Vyaan vayu is responsible for the electrical activity from SA node à AV node à Bundle of His à Right and Left bundle branches à Purkinje fibres. Because of this electrical impulse, mechanical activity of heart is also controlled by the Vyaan vayu i.e. Contraction and relaxation of heart. So by doing ECG, we know the electrical activity of Heart and make inference about the mechanical activity of Heart.

E.g. if QRS complex is normal, doctor can say that the ventricular contraction of the patient is normal. Also, if T wave is normal doctor can say that the ventricular relaxation is normal.

iv) Stress Test (Trademill Test – TMT) –

Vyaan vayu is responsible for Rasa samhana and also cellular oxygenation takes place in the body. Sometimes while exercising there is less oxygen supply to the cells because in that exertional condition the heart cannot work properly. This is the weak function of Vyaan vayu. Chala guna of Vyaan vayu acts differently in exertion state or in resting state. Resting ECG cannot rule out total function of Vyaan vayu. Stress test will give the functioning of increased Chala Guna of Vyaan vayu. Stress test can determine the organ damage or cardiac muscles weakness. Exercise testing is useful in diagnosis of Ischaemic Heart disease.

v) 2 - D Echo –

Echocardiography is done to know the condition of heart. Strotovaigunya affects the functioning of Vyaan vayu. 2-D echo is done to find out the structural, valvular defects of the heart i.e. Strotovaigunya in the valves

Ejection Factor (LVEF) is of importance 20 – 40% weak heart,
>60% normal heart functioning.

vi) Coronary Angiography –

Technique used for Diagnosis of IHD.

Note: By following investigations, when Strotorodh in Coronary arteries is noted that Strotorodh can be treated by Ayurvedic medicines or to remove this strotorodh of Thrombosis by CABG. (Coronary Artery Bypass Surgery).

4) Samaan vayu –

Main site is – Grahani i.e. intestine.

It is responsible for peristaltic movements in intestine.

Functions of Samaan vayu -

Samaan vayu helps in Grunhaati (assimilation), Pachati (digestion), Vivechayati (separation in sara and kitta parts), Munchayati (Absorption of nutrients and excretion of waste products).

Samaan vayu examination can be done by examining Abdomen (inspection, palpation, percussion and auscultation methods).

To examine the Strotorodh of Samaan vayu, **USG of abdomen** can be done for any structural changes in GI tract like Tumor, Ascites, intestinal obstruction, volvulus, intusseption, etc.

To examine Strotovaigunya GI Tract, **OGD Scopy and Colonoscopy** can be done to rule out conditions like oesophageal strictures or varices, achalsia cardia, GERD, Gastritis, Peptic or Duodenal ulcers, pyloric stenosis, stomach cancer, ulcerative colitis, colon cancer.

Samaan vayu is concerned with digestion function. It controls the peristaltic movements, which reflects the bowel regularity.

Conditions like constipation in old age occur due to sluggish peristalsis.

In post operative patients, absence of peristaltic movements causes Paralytic ileus leading to absolute constipation. So after the operative, the doctor should examine the peristaltic movements or ask the patient for passage of gases and motion. This explains the function of Samaan vayu.

5) Apan vayu –

Main locations – shroni – katipradesh (pelvic girdle), basti – mutrashaya (urinary bladder),

medhra (male genitals), uuru (thigh region).

In females – Garbhashaya (uterus), antaphala (ovaries), yonimarga (vagina), mutramarg (urethra), guda (rectum), adhoguda (anal canal).

The locations of Apaana vāyu should be examined by inspection, palpation, percussion and auscultation –

- a) General examination of the patient – to look for CNS and CVS examination.
- b) Examination of the abdomen
- c) The external genitals.
- d) Examination of pelvic organs by P/R or P/V.

All these examinations can help in finding out any Strotorodh or Strotovaigunya affecting the function of Apaana vāyu.

Functions of Apaana vāyu -

i) Shukra nishkramaṇa i.e. erection and ejaculation of semen.

To test the function of Apaana vāyu, doctor should ask the patient do you get proper ejaculation or is your sexual act proper?

Penile Doppler (papaverine induced colour duplex Doppler) is an excellent and highly accurate means of assessing patients with erectile dysfunction. In flaccid state, monophasic flow is seen with absent/minimal diastolic flow. With onset of erection, systolic and diastolic flow both increases. With further increase in pressure, 'dicrotic notch' appears with dip in diastolic flow. End diastolic flow may go down to zero or reversal may be seen. Then, monophasic flow is seen with sharp systolic peak, corresponding with visual full erection. This investigation can be used to determine the Shukra nishkramaṇa function of Apaana vāyu.

ii) Artava nishkramaṇa i.e. menstrual flow.

Doctor should examine the female patient by interrogation, asking the patient about her menstruation history. If the patient tells about irregular menses, dysmenorrhoea, menorrhagia, scanty menstruation – strotovaigunya has to be ruled out.

- a) Investigations like USG abdomen + pelvis helps in detecting fibroid, polycystic ovary, tumor, etc. USG can also be done transvaginally to assess pelvic organs, to diagnose and manage gynecologic problems including endometriosis, leiomyoma, adenomyosis, ovarian cysts and lesions, to identify adnexal masses, including ectopic pregnancy, to diagnose gynecologic cancer
- b) Salpingography – is done evaluate the patency of fallopian tubes.
- c) Hormonal assay – Many hormones can be measured (assayed) in the blood, to give an indication of metabolic processes and conditions, or hormone imbalance. These include male and female sex hormones (oestrogen, progesterone and testosterone) and hormones

secreted by other glands such as parathyroid and adrenal glands.

d) Ovulation study is done to know the ovulatory phase of menstrual cycle.

iii) Shakrut visarjan i.e. control over defecation.

Defecation reflex initiates the process of defecation. **Anismus** (or dyssynergic defecation) refers to the failure of the normal relaxation of pelvic floor muscles during attempted defecation. Anismus can occur in both children and adults, in both men and women (although it is more common in women).

a) Anorectal manometry

The measurement of pressures within the rectum and anus with a manometer (pressure-sensing probe).

b) Evacuation proctography

Defecating proctogram and MRI defecography - This graphy helps to determine the relaxation of anal sphincters and passing of stools. Normal Defecation reflex allows to understand that there is no any strotorodh in anorectal region.

c) Balloon expulsion test

For severe constipation which has not responded to laxatives, dietary supplements or other lifestyle changes. Measures the patient's ability to propel a stool through the anal canal. A simulated stool (balloon) is inserted into the rectum with the patient lying on his/her side, and the patient is asked to push the balloon out as they would a stool. Used to assess muscle strength and coordination.

iv) Mutra visarjan i.e. control over micturition.

Micturition reflex requires relaxation of external and internal urinary sphincters along with contraction of detrusor muscle. **Bladder control study** is done to recoerd the impulse carried out from stretch receptors in wall of bladder to pelvic nerves of spinal cord. **Urodynamic testing or urodynamics** is a study that assesses how the bladder and urethra are performing their job of storing and releasing urine. Urodynamics will provide the physician with the information necessary to diagnose the cause and nature of a patient's incontinence.

Investigation of urethral sphincter with simultaneous electromyography and micturition urethro-cystography is used to rule out any Strotovaigunya in the function of micturition..

v) Garbha nishkraman i.e. helps expulsion of foetus.

The expulsion of the foetus is by coordinative rhythmic contractions of uterine and abdominal muscles explained by optimal distension theory and ferguson reflex mechanism(weak uterine contractions of uterus caused due to over stretching of cervix - neurogenic reflex to hypothalamus – oxytocin - intensifies the contractions - neurogenic reflex to hypothalamus - oxytocin production - it is a positive feedback mechanism which continues till the delivery of the baby.

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Abstracts from Ayurved Galaxy

Conceptual study of the effect of Mocharas in Procedural Pain Management of Neonate

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ABSTRACT

Recognition that both premature and full-term infant experience pain has led to increasing appreciation of the prevalent problem of under treatment of stress and pain of infants who are hospitalized in the Neonate intensive care unit(NICU). Both humanitarian considerations and scientific principles favor improved management strategies to prevent pain and stress whenever possible and when discomfort is unavoidable, to provide prompt and appropriate treatment. The prevention of pain is important not only because it is an ethical expectation but also because repeated painful exposures can have deleterious consequences. Procedural pain causes physiological changes in the body of a neonate, where an inflammatory response to the damaged tissues is initiated, while a stress response induces hormonal and metabolic changes affecting stability of the homeostasis. So principles of prevention and management of neonatal pain and stress has to be considered.

Modern science has shown, via various research papers and publications as Sucrose a better analgesic drug on pain management of neonates. An ayurvedic approach should be considered in the field of kaumarbhryta for vedanasthapan in Neonate as an alternative or better medicine than common available modern drugs.

According to ayurveda the elevated Vata is the root cause of Vedana. Hence, the Gunas of Mocharas like Guru, Ushna, Snigdha which are complimentary to the Laghu, Sheet and RukshaGuna of Vata can be used to conquer the Vata and hence act as Vedanasthapan. Mocharas is being used in Ayurveda for relief of pain in adult population. Hence, it can be used in neonate.

Dhatu Shaithilya And Its Components

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ABSTRACT :-

Dhatu Shaithilya is a structural and functional deformity. Shaithilya is an incompact type of union. Dhatus will acquire Shaithilya at different degrees of Anibidasamyoga. Shaithilya is of two types Physiological and Pathological. Unless the pathogenesis of Shaithilya is understood the treatment of same is not possible. In this study the compositional changes in the sharir bhavas causing Shithilatwa are focused. Shaithilya can be explained on the basis of the guna, karma and sharir bhavas associated with the Panchamahabhuta. Compositional changes in Medo dhatu and pathogenesis of Shaithilya in Prameha are discussed here. Shaithilya in Kaphaja Prameha is due to saturation of kleda in body i.e. Aap Mahabhuta. Shaithilya in Pittaja Prameha is due to ushna, Tikshna guna i.e. Aap, Teja Mahabhuta. Shaithilya in Vataja Prameha is due to decreased Drava guna and increased Ruksha guna i.e. Vayu, Akash Mahabhuta.

Comparative study of Kamala

Dr. Suvarna Kande , Dr. Anand More , Dr. Pallavi Dand ABSTRACT

Kamala is described elaborately in ancient Ayurvedic texts, in the context of panduroga. Kamala is the condition which affects the lustre of body to yellow due to vitiation of Pitta dosha. Signs and symptoms of Kamala have great resemblance with the jaundice of modern medical sciences. Normally, in body liver plays a major role in the maintenance of metabolic homeostasis. The textual and pathological classification of Kamala has a vast significance in diagnosis of diseases. In Jaundice (Haemolytic, Hyper-bilirubinaemia, Obstruction Jaundice) - Yellow appearance of the skin, sclera and mucous membranes resulting from an increased bilirubin concentration, Dark urine, pale stool, Xanthelasma, malabsorption, weight loss, osteomalacia found and Fever, Rigor, pain, white coloured stool in obstructed jaundice. So, the liver disorders are explained in both sciences among them Kamala is correlated with jaundice. As per Kamala, appearance, pathogenesis, types of Kamala and its clinical features are having resemblance with jaundice. Bahupitta kamala, Ruddhpatha kamala, and chronic stages of kamala can correlate with haemolytic, hepatic and obstructive jaundice.

Therefore we can say that kamala and jaundice are same diseases.

Ayurvedic Management Of Madhumeha

Dr. Sandeepsingh Tiwari,, Dr. Anand More.

ABSTRACT

History of dietetics is very old, which is essential factor for the maintenance of life. It is described in the samhita, the intake of Hitakar Ahara results shubha (advantageous) effect and Ahitakar Ahara creates ashubha (harmful) effect. According to Charaka, body as well as

disease are caused by diet. The ancient prophets gave much importance to intake of proper ahara and proper vihar for leading a diseases free life. Prameha is characterized by profuse urination with several abnormal qualities due to doshaj imbalances. The main causes of prameha are lack of exercise and improper food habits, excessive food intake of category snigdha and guru guna, milk products, jiggery and the food which causes vitiation of kapha dosha are the primal causes of disease. Vagbhata described prameha as a frequent and copious urine with turbidity i.e. "Prabhutavila mutrata ". If Prameha is not treated earlier or not properly, then all types of Prameha turns into Madhumaeha which includes in the Vataj Prameha category. According to signs & symptoms of

Madhumeha, it can be correlate with diabetes mellitus of modern medicine. In Ayurveda the line of treatment of Madhumeha is strictly on individual's constitution. It is based on an entire change in the lifestyle of the person, along with medication and diet, the patient is also advised to lead a healthy lifestyle and live an active life, rather mental aspects of the disease are stressed. Madhumeha can be controlled by various measures like Shodhan chikitsa, Shaman chikitsa and Yoga chikitsa .

Role Of Vatsakâdigafa In Sthaulya (Obesity)

Dr. Shital. S. Patil, Dr. Mrs. Savita. S. Nilakhe

ABSTRACT

Obesity is the most common nutritional disorder in affluent societies. The incidence of Diabetes mellitus, hypertension, angina pectoris, and myocardial infarction etc. is higher among obese individuals. Commonly obesity is due to excessive eating and sedentary lifestyle. Âcârya Carak has quoted a Sthaulya under the eight varieties of impediments (Acm - Nindît Puruc). There are some new researches, some new efforts and some new paradigm in the path of solution of the disease Sthaulya. In the pathway of this solution some create milestones. This research work is a paradigm in the pathway of solution of the disease Sthaulya. A trial has been made in the present study to make some new dimensions in respect to weight loss and overall effect of treatment were obtained based on clinical evaluation. 30 patients of Sthaulya have been selected between the age group 18-50 years. Clinical examination done with the help of assessment criteria. Necessary blood investigation done before and after treatment. Vatsakâdi GaGaVa mî given to patients after proper consent. Observations were noted. Stastical evaluation is done from collected data. Sthaulya is caused due to vitiation of Kaphadôc a and Mçdo, MÂ sadhâ tu. So the treatment should require which stabilise these vitiated ducyas. Vatsakâ diGaGa is selected for treatment as in benefits of it given that it cures Vât, Kapha, and Mçda. Observation was made after the follow up and final result is obtained. Sthaulya is produced due to over nourishing dietary, behavioral and mental type of causative factors. These factors vitiates MÂ sa, Mç da, along with Kapha and Sthaulya is developed. Vatsakâdi GaGaVa mî has significant role in reduction of MÂ sa and Mçda Dhâtu. It also cures Mârgâvarôdhajanya Vât prakopa.

Ayurvedic Concept Of Stress

Dr. Vaishnavi Tupe, Dr. Anand More, Dr. Pallavi Dand

ABSTRACT

Ayurved science is designated as advantages & disadvantages as well as eternal science of healthy living treasures. It deals with physical, psychological well being of human being & covers all aspect of human life. The urge to act in the presence of stress has been with us since our ancient ancestors. But in today's corporate dominated world, the response to stress is simply inappropriate & may be a contributor to Stress. What is Stress?, and what does it means to us people or more specifically what does it means to the Ayurvedic Practitioner? Stress is the anxiety, depression, tension, fear, worries & pressure etc. Life stressor involves changes in your environment that central nervous system must adapt to the course of daily living. Stressor includes either positive or negative life events e.g. death, divorce, new job, new house, new baby that requires you to adapt to these changes in your life. Stress can manifest itself in physical, emotional or behavior symptoms.

Stress is mentioned in various Vedic Scriptures like Riga-veda, Yajurved, Atharvaveda. Stress has also been mentioned in first chapter of Shrimad Bhagvata Geeta. In ancient period Acharya Charaka, Sushruta, and Vagbhata contributed about Mana, Manasroga, and its management according to their own view. The term Chittodvega can be compared with stress (Anxiety disorders), is one of the Vikara of Manodosha. Ayurvedic view of Chittodvega (Stress), its etiopathogenesis and management is described elaborately in Samhita. It helps to understand the concept of stress and its effect on mana in ayurved.

Healthy Food - Nine Recipes

Farida Irani & Hina Patel

Recipes by Farida Irani

1) Parsi Sev :

One packet Ahmed roasted vermicelli from Pakistan available in spice shops.

2 Tablespoon ghee or butter

2 tablespoons brown or raw sugar or in winter one tablespoon ghor (Jaggery) or tablespoon honey

5 to 6 cardamon pods freshly ground

Pinch of nutmeg freshly ground

or Pinch of Mace freshly ground

Half teaspoon himalyan salt

Tablespoon rosewater or half a teaspoon of organic Vanilla essence

Dozen or so sultanas or raisins and a dozen slivered almonds

Fry the sev in ghee or butter for five minutes and break the sev up into small pieces with a wooden ladle as you are frying it. Make sure it does not burn so keep stirring it through out. Then add sugar or Jaggery and stir it a bit. If you are adding honey then wait till sev is cooked and then add the honey a few minutes after you have switched it off.

Add water that is up to the level of the sev, not over it and after a few minutes when the water heats up, cover the pot and let it simmer on low heat for five minutes. Open the pot and stir the sev. Separate it out a bit and if it appears soft and fluffy switch the stove off.

Add the cardamon and nutmeg and salt. Mix it in. Add the Rose water or Vanilla.

Fry the slivered almonds and the raisins or sultanas in a little ghee or butter and garnish the sev with it. You can also decorate it with Fresh red Rose petals which are edible.

This dish is cooked on auspicious occasions in Parsi households for breakfast. It is normally served with homemade sweet curds and boiled eggs. It is also sent to neighbours and friends on birthdays with a box of sweets.

It is all the six tastes to it and is very tridoshic. Gives a feeling of festivity, joy, warmth and nourishment.

The cardamon is bitter and astringent, rose water is sweet and slightly astringent, vanilla essence is sweet bitter and astringent, Raisins are sweet and astringent and all are cooling so excellent for pacifying Pitta. Ghee is cooling and has a very special prabhav where it actually balances the metabolism, virtually good for all doshas.

Sev is nourishing and made from wheat so this would be very good for pacifying the appetite (good kapha) and to ground the Vata.

Other communities in India make the sev with raisins and serve it in milk for breakfast or as a sweet dish.

The mace and nutmet is again astringent and slightly pungent so good for Kapha and also for Vata.

The Himalayan salt is great for Vata.

Raisins will give us the sour taste missing which will help pacify Vata again.

So this dish is extremely satisfying to the senses and the elements.

2) Okra Bhindi light fried :

300 gms. cut okras (Bhindi cubes)

1 teaspoon turmeric powder

1 onion finely chopped

1 teaspoon coriander and cumin seeds freshly ground

1 teaspoon cumin seeds whole

2 tablespoons olive oil

2 green chillies whole

Less than quarter teaspoon himalayan salt

Lime freshly cut

A small bunch of fresh coriander leaves chopped

Heat the oil a little. Add the onions and saute till slight brown. Add the jeera (cumin) seeds and brown them. Add turmeric powder, cumin and coriander seeds powder, Himalayan salt and just saute it for less than a minute.

Add the green chillies whole.

Add the bhindi (okra) and toss them around the mix them with spices.

Turn stove down and let the okra simmer on low fire with a little water for say 10 to 15 minutes

Serve piping hot garnished with coriander leaves.

Bhindi is a very tridoshic vegetable. It is excellent for digestion and bowel movement.

The turmeric powder is warming and great for Kapha and Vata besides being highly therapeutic

with the curcumin content, specially for respiratory and digestive disorders. Cumin is warming, coriander seeds are cooling as per their rasa thereby creating the perfect synergy for helping with digestion and balancing the Jathar agni and the metabolism rate. Pitta can increase the coriander leaves.

Cooked Onions are Sweet in Taste, Hot in Energy and Sweet in Postdigestive Effect. They satisfy hunger with their Sweet Taste and promote anabolism with their Sweet Postdigestive Effect, but their Hot Energy does not permit Kapha to be disturbed by their Sweetness.

Limes are sour and Bitter in Taste, Cold in Energy and Sweet in Postdigestive Effect. Being Bitter they tone the body and prevent Kapha increase; being Sour, they increase digestion and appetite and relieve Vata. Their Cold Energy, prevents Pitta from being disturbed and their Sweet Postdigestive Effect means they assist in tissue nutrition. The substances which most effectively balance the organism are usually those which are most unique in their pattern of qualities.

The coriander leaves are Cooling and Sweet, good for Pitta pacification, balancing excess heat and also good for cleansing excess salts. It leaches out heavy metals as well.

Chillies being pungent helps the Jathar agni at the same time creating a synergy which is warming and satisfying to the palette.

3) Moong Dal and Rice :

3 cups Moong lentil

1 tablespoon ghee

1 teaspoon Turmeric powder

1 teaspoon cumin seeds

1 teaspoon mustard seeds

Few leaves of curry leaves

2 whole green chillies

1 bunch fresh coriander leaves

1/4 teaspoon Himalayan salt

Wash the Moong Dal three times.

Pour six cups water, add turmeric powder, salt and ghee and let it boil. Water should be half fingers above the level of the lentils.

When it boils for five minutes then lower the heat and let it cook on low fire for another 20 to 30 minutes till dal is finely blended.

Take half tablespoon of ghee and saute the mustard seeds, cumin seeds, curry leaves, chillies and add to the dal. Garnish with the fresh coriander leaves ready to serve with Basmati rice.

Optional : You can also add the Persian herbs to the dall which makes it more delicious and gives a different flavour.

Rice :

4 cups Rice

6 cups water

1/4 teaspoon Himalayan salt

1 tablespoon ghee

You can either :

Put the rice in boiling water and strain the rice and then add the salt and ghee and let it simmer on low hear

Or

Cook the rice in a pot with the water adding the salt and the ghee. When all the water has evaporated and is just in level; with the rice and put on low heat, cover the pot and let it simmer till rice is nice and fluffy.

Serve the Dal and Rice together as that makes it into a complete protein.

4) Khichari :

1 cup rice 1/2 cup moong daal split beans

1/2 teaspoon cumin seeds

Bunch of chopped coriander leaves

2 tablespoon Himalayan salt

Bunch of spinach chopped (optional)

1 teaspoon turmeric

Khichari is normally just rice and moong lentils with Ghee and some Jeera seeds.

Cook rice lentils in a pot with 1 tablespoon Ghee, salt and cumin seeds.

Add chopped spinach to it.

Let it all boil and when the water is in level with the rice and lantil lower the heat, cover the pot and let it simmer on low heat for 10 minutes.

Serve piping hot with garnish of coriander leaves.

If you have loose motions you add 2 parts of rice to one part lentil and if you are feeling under the weather and tired you have more lentils and less rice otherwise normally it is equal parts of both or more rice and less mung.

The combination of rice and lentils has been a staple around the world for 10,000 years and for good reason. You have probably heard the term complete protein, but let's take a minute to really understand what the means.

There are 20 amino acids that combine with one another to make the proteins the body needs. Ten of them, the body can synthesise on its own. The other ten, called essential amino acids, the body does not make, meaning we must get it from our foods. Animal proteins are "complete" in that they contain all ten essential amino acids, but plant foods need to be combined to make a complete protein.

Rice, like most grains, is very low in the amino acid lysine. As a result, if you lieve on grains alone, you will likely become protein deficient. Legumes and lentils, on the other hand, have lots of lysine, but they are generally low in methonine, tryptophan and cystine. Fourtunately, grains are hihg in these three amino acids.

So the marriage of rice and beans, as found in khichari, has been providing the ten essential amino acids and making complete proteins for cultures around the world for thousands of years. For cultures that have subsisted on a plant-based diet, this marriage is often what allows their diet to be nutritionally sustainable.

During a cleanse, it is essential to have adequate protein to keep the blood sugar stable and the body burning fat.

One of the most common reasons folks have trouble with cleansing is due to unstable blood sugars made worse by the detox process. During a fast, for example, you are asked to drink only water, juice or veggies. For many this type of austere fasting can be a strain and deplete blood sugar reserves. Then folks get really hungry, irritable, and end up with a low blood sugar headache or crash. While the goal of a fast is to shift the body into fat metabolism and detox the fat cells, this will not happen if the body is under stress & strain as a result of a difficult fast.

Here's the basic equation :

Stress = Fat storing

No Stress = Fat burning

If you are attempting to detox heavy metals, preservatives, chemicals, pesticides and environmental toxins from your fat cells with a cleanse, make sure that you are not straining, or the amount of fat burned will be minimal.

Khichari provides nourishment in the form of a complete protein that will keep the blood sugars stable during a cleanse. Otherwise, ironically, the body may react to the cleanse as a fat-storing emergency.

The goal of any effective cleanse should be to convince the body and the cells that life is not an emergency and that it is okay to burn that stored fat and release toxins. During a khichari cleanse, you are eating this complete protein three meals a day. so there is no starvation response whatsoever. In fact, I always say that during our Colorado Cleanse and Short Home Cleanse, if you are straining or hungry than you are not getting the optimal benefits. The more comfortable you are the more fat you will burn.

Khichari to Heal the Gut : In India, Khichari is often the first food for babies, not only because it is so easy to digest, it also heals and soothes the intenstinal wall. With 95 percent of the

body's serotonin produced in the gut, it is clear we process our stress through the intestinal wall. Chronic stress will irritate the intestinal wall and compromise digestion, the ability to detoxify through the gut, and cope with stress. During a Khichari cleanse, the digestive system can heal. While we offer four dietary options in our Khichari cleanses, eating just Khichari as a "mono diet" allows much of the digestion to be at rest during the cleanse, providing the nutrition needed to heal the gut and nourish the body.

<http://lifespa.com/whats-so-amazing-about-khichadi/>

5) Doodhi (Long Melon) :

2 doodhis

2 tablespoons olive oil

1 onion

2 to 3 cloves

3 cinnamon sticks

4 cardamon pods

1 flower of mace

1 piece ginger grated

1 teaspoon turmeric

1 teaspoon dhania jeera powder (freshly ground cumin and coriander seeds)

1 piece jaggery

2 tablespoons apple cider vinegar

or 1 fresh lime cut and served with dish

1/2 bunch Coriander leaves chopped

4 cups water

Chop onion into tiny squares and fry till very light brown

Add the grated ginger, cumin and coriander seed powder, turmeric and fry just for two to three seconds.

Chop doodhi or loki into small pieces after peeling the skin. Add to the above and turn it around so it gets coated with the ingredients. Add the cloves, cinnamon, cloves, mace to the doodhi.

Add water and let it cook for half an hour or for quicker cooking put in pressure cooker.

When ready mash into fine bits with a wooden soup masher. Makes it softer and more like a nice curry. You can add chopped tomatoes to it too when you add the doodhi to cook.

You can also add chicken in this in which case you would saute the chicken before adding the doodhi.

Serve with basmati and make a cachumber (salad) out of finely chopped 2 onions, 1 chopped tomato, 1 chopped cucumber and coriander leaves with 2 chopped green chillies (optional) and fresh lime to squeeze over doodhi if apple cider vinegar not added.

Doodhi calabash or bottle gourd, *Lagenaria siceraria* (synonym *Lagenaria vulgaris* Ser.) also known as opo squash or long melon.

Rasa : Almost tasteless when raw but sweet when cooked

Virya : Cooling

Vipaka : Cooling very easy to digest, calming relaxing specially for irritable bowel syndrome or diarrhoea.

The spices added will work on all three doshas.

6) Potato Sabzi :

6 potatoes medium size

1 teaspoon mustard seeds

1 teaspoon cumin seeds

2 teaspoons flat turmeric powder

3 green chillies whole

Handful curry leaves

1/2 teaspoon Himalayan salt

Small bunch coriander leaves

3 tablespoons olive oil

Boil potatoes with skin.

When soft peel the skin and cut potatoes into cubes.

Warm the oil and add the mustard seeds, cumin seeds, turmeric powder, curry leaves, salt, whole chillies and saute it for a minute or two.

Toss the potato cubes in it and turn them around for a few minutes. Cover them up to steam for another 4 to 5 minutes and serve garnished with coriander leaves.

Tridoshic. It has got all the Rasas combined.

7) Bitter Melon or Bitter Gourd :

2 bitter gourds

2 tablespoons Turmeric powder

1/4 teaspoon hing

1 teaspoon Himalayan salt

1 tablespoon olive oil

Slice the bitter melon into thin round slices with the skin. Marinate in turmeric and salt.

Heat oil in frying pan and fry the slices nice and crisp.

Very therapeutic

Bitter melon is bitter and cooling. Vipaka is pungent. Juicy and light to digest. Can be a bit stimulating for Vata so the hing, salt and turmeric will balance it. Excellent for lowering blood sugar.

8) Guwar Fali :

1 packet of Guar

1/2 teaspoon Himalayan salt

1/2 teaspoon turmeric powder

1/4 teaspoon hing

1/2 teaspoon dhanya (coriander) and cumin powder

1/2 teaspoon ajowan seeds

1 1/2 teaspoon cumin seeds

1 table spoon grated jaggery

1/2 grated ginger

Handful of curry leaves

2 whole green chillies

2 tablespoons olive oil

2 tablespoons apple cider vinegar

Warm olive oil and saute all the seeds first, then the powders, curry leaves and chillies in a sauce pan. Add the Guar and saute it with the herbs half a cup of water and let it cook for some time say 15 to 20 minutes.

Then add the grated jaggery and apple cider vinegar. Let it simmer for another five minutes.

Ready to serve.

Guar or The Guar or cluster bean, with the botanical name *Cyamopsis tetragonoloba* is the source of Guar gum. It is also known as Gavar, Guwar or Guwar bean as it is a bean.

Rasa : Bitter, Astringent

Virya : Cooling

Vipaka : Bitter Astringent cooling

Above is tridoshic with all the right spices. The hing and ajowan will help to cut the gas and digest the bean and the Jaggery and apple cider will cut the bitter flavour. For Vata more hing and ajowan should be added. It tastes delicious with mung daal and rice.

The beans are a flatter smaller variety of the common French beans. They are high in protein and fibre and has several health benefits.

The seeds are dried and ground into a powder which is famously called Guar gum.

Guar gum is used in nutritional supplements such as Glyconutrients. It is a water soluble fibre and is used as a laxative and studies have shown its effectiveness on Irritable Bowel syndrome, Crohn's disease and colitis. It also apparently is known to lower cholesterol. Also a vegetable it helps in weight loss and diabetes probably because of its bitter and astringent rasa.

The gum and also the bean slows down the digestion of a meal which lowers the glycemic index of the meal. If it is slow you feel full for a longer period and therefore, you would eat less.

9) Farida's Green Chutney :

3 to 4 bunches of coriander leaves

2 bunches of mint leaves

4 full pods of garlic each clove separated and skinned

7 to 8 green chillies

2 tablespoons Himalayan salt

1 freshly grated coconut

Freshly ground 5 tablespoons of coriander and cumin seeds 7 dates chopped

3 tablespoons Apple cider vinegar

Blend the above in a blender.

Add little water to be able to blend.

Excellent as an adjunct to any dish specially mung dal and rice.

Has all the Rasas and is tridoshic but might be a bit hot for pitta so add more coconut and coriander.

Enjoy healthy cooking!

As my professor Dr. P. H. Kulkarni says this way we are learning - Ayurveda as food and food as medicine.

Recipes by Hina Patel

Sweet -

1) Chana besan Laddu :

1 cup chana besan coarse

1/2 cup urad flour

3/4 cup mixture of cashew and almond meal coarse

1½ cup caster sugar

1-2 cup ghee

Cardamom powder

Saffron threads

Nutmeg powder

Add ghee in vessel. Add chana besan cook string constantly till changes colour and fragrant. Add urad flour and cook till fragrant. If required add more ghee. Add dry nuts powder and cook for few minute. Turn off heat. When warm add caster sugar, cardamom, nutmet, saffron mix well and pour mixture in to prepared plate. Sprinkle more cardamom, and almond, pistachio nuts. Let it set and cut in to pieces.

2) Sukhadi :

1 cup wheat flour

3/4-1 cup jaggery

Ghee 1/2 cup

Cardamom

Add ghee in vesseal once warm add wheat flour. Cook until fragrant and pinkish in colour. Add shaved jaggery in to flour mixture. Mix well until jaggery dissolved while stirring. Pour mixture in to prepared plate. Sprinkle pooppy seeds (optional).

3) Drumstick curry :

Drumsticks cut into finger long pieces. Potato optional

Chana besan

Yogurt

Water

Salt

Garlic

Turmeric

Chilli powder

Sugar optional

Mustar seed

Ajwan

Hing

Fresh coriander

Pressure cook vegetables add little salt. Heat oil in vessel when hot add dry chilli, mustard seed and Ajowan hing. Add garlic for few second. Add chana besan fry in oil mixture till fragrant and pinkish in colour. Add yogurt, mix well add salt, chilli powder, turmeric cook for minute add little water to prevent curdling, Mix continues once thickened add vegetable from pressure cooker with water. Mix well and cook till sauce thickens to desired consistency. Add coriander.

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Why Everbody should Eat Fat?

Weight loss from eating good fats? Check. Heart disease prevention? Check. Revved metabolism? Check. But the health benefits from eating more of the right fats don't end there! Here's a look at all the other good things healthy fats can do for your body, your brain, your mood, and more...

Eating Fat Prevents Brain Aging and Dementia :

Low fat diets have been associated with dementia and higher fat diets shown to prevent it. In fact, leading Alzheimer's researches are promoting a very high fat (or ketogenic) diet for the treatment of dementia. In his paper *Reversal of Cognitive Decline : A Novel Therapeutic Program* Dr. Dale Bredesen, of the Buck Institute for Research on Aging, reviews ten case studies where dementia was actually reversed in patients on a very low carb, low glycemic, low-grain, high-fat diet. This is ground breaking. After \$ 2 billion of research and 243 studies over the last few decades on the treatment of dementia with medication, none have shown this level of success. In fact, none of those studies worked except for one , and that one only very slightly. In Dr. David Perlmutter's ground breaking book *Grain Brain*, he also documents the role of fat in the brain. There is an abundance of research showing that carbs cause brain aging and fat prevents it. In fact, some now call Alzheimer's type 3 diabetes because insulin resistance causes brain damage. A study from the Mayo Clinic found that people who eat a ton of carbs quadruple their risk of getting pre-dementia, known as mild cognitive impairment. The same study showed that people who are the healthiest eaters had a 44 per cent lower risk of early dementia and those who ate more good-quality protein from chicken, meat and fish had a 21 per cent lower risk of early dementia. Another study of more than 8,000 people over the age of sixty-five found that 280 of them got dementia over the span of four years. The researches looked at the participants' diets and found that those who are the least brain-healthy eaters had a 37 per cent increased risk of dementia. Those who are the most fish eaters had a 44 per cent reduction in the risk of getting dementia. Those who are the most olive oil, walnuts and flaxseeds eaters had a 60 per cent reduction in the risk of getting dementia. But they also found that those who are the most omega-6 oils eaters had twice the risk of dementia.

Eating Fat Helps with Seizures, Depression, ADD, Autism, Trauma and More :

Your brain is 60 per cent fat and much of it is made of omega-3 fats and cholesterol. When you eat a low-fat diet, you are starving your brain.

Fat is critical for your brain. Lack of fat in the diet has been linked to neurodegenerative diseases, mental disorders such as depression, suicide and aggressive behaviour; ADD and autism; stroke and trauma. On the other hand, supplementing the diet with omega-3 and other good fats has been linked to improvement in all these conditions. Omega-3 fatty acids stimulate beneficial gene expression and boost the activity of your brain cells, increase connections between brain cells and even help the formation of new brain cells (neurogenesis). They help reduce brain inflammation and improve cognitive function. They can aid depression and even recovery from brain injury. Very high-fat ketogenic diets are used to control epilepsy and are now being used for ALS (amyotrophic lateral sclerosis) and other neurologic disorders, including brain cancer. Bottom line Fat is good for your brain.

Eating Fat Reduces Inflammation and Autoimmune Disease :

Bad fats such as the omega-6 refined vegetable oils cause inflammation, but good fats reduce inflammation. Omega-3 fats have been extensively studied as a way of treating inflammatory and autoimmune disease.

They modulate inflammatory pathways and help improve expression of anti-inflammatory genes. There have been many studies assessing the benefits of supplementation with fish oil in inflammatory and autoimmune disease in humans, including rheumatoid arthritis, Crohn's disease, ulcerative colitis, psoriasis, lupus erythematosus, multiple sclerosis and migraine headaches.

These studies show great benefits, including decreased disease activity and less of a need for anti-inflammatory drugs. I have found that fish oil supplementation along with a low-glycemic, anti-inflammatory, higher-fat diet that is also gluten- and dairy-free can dramatically help my patients with autoimmune disease. Gamma linolenic acid (GLA) has been well researched in autoimmune disease and shown to be effective. It is found in evening primrose oil or borage oil and can be synthesized by the body, but often not very well, especially under conditions of illness. I have used it effectively in combination with diet and other therapies in many of my autoimmune patients.

Eating Fat Boosts your sports performance

We have all been trained to believe that if you want to enhance your sports performance, you need to carbload. Eat that big bowl of pasta before a race to make sure you top up your muscle carbohydrate stores (glycogen) so you don't hit the wall.... that sort of thing. You can store up to 2,000 calories of carbs as glycogen in your muscles, but the average lean athlete has about 40,000 calories of energy stored as fat. Wouldn't it be great if you could switch from carb burning to fat burning? Many scientists have studied high-fat, low-carb diets for athletes. Two in particular have led the way : Dr. Jeff Volek and Dr. Stephen Phinney. They have authored hundreds of papers untangling the biology of high-fat, low-carb diets on every aspect of physiology - even in extreme athletes who are insulin sensitive and not carbohydrate intolerant. In their books. The art and science of low carbohydrate living and the art and science of low carbohydrate performance they go into great detail on how your body can

switch from burning mostly carbs to burning mostly fat. This is called keto-adaptation. The key is to keep insulin levels very low. Higher levels of insulin inhibit or block fat burning, making it impossible to mobilize fat stored in your tissues. Drs Volek and Phinney explain the benefits of switching from carb burning to fat burning for exercise :

1) Low-carb (high-fat) diets are anti-inflammatory and so reduce oxidative stress during exercise, reduce lactic acid buildup and help the body recover faster between exercise sessions.

2) Once your adapt to a low carb diet (which takes about two weeks), your body relies primarily on burning body fat during and between exercise sessions, so you don't have to load up on carbs to restore glycogen levels. You can eat a lot of fat without risk.

3) Endurance and power - or strength-training athletes can use carb-restricted high-fat diets and even get better body composition and strength.

I know eating a low-carb high-fat diet has made me stronger, fitter and faster even as I've aged. And when I load up on coconut oil, which contains medium-chain triglycerides, which boost performance, increase fat burning, and help build muscle, before a long bike ride, I can go and go without pooping out.

Eating fat gives you beautiful skin, hair and nails

Ever wonder how trainers get horses to have beautiful, shiny coats? They give them flaxseeds, which are a rich source of omega-3 fats. Lack of omega-3 fat in your diet from fish or plant sources can cause significant health problems. Most people slather creams, lotions and potions on dry skin, put on all sorts of hair products to bring their hair back to life, and use nail products to strengthen their nails, but most of our outside problems come from inside. Omega-3 deficiency can cause dry, itchy, flaky, even discolored skin. It can also cause rough, bumpy chicken skin on the backs of your arms. I know you are checking that now! Your fingernails might grow slowly or become brittle and chipped. Omega-3 fats can relieve all of these problems. For some people with really problematic skin, applying a combination of flax and borage oil can have amazing results.

Eating Fat Enhances your Sex Life

You might be surprised to learn that your sex hormones are produced from cholesterol in the body. We eat an average of 146 pounds of flour and 152 pounds of sugar per person per year in America, which spikes insulin, driving the storage of belly fat, increasing estrogen in men (belly fat, cells produce more estrogen) and sending their testosterone levels plummeting. This leads to low sex drive, sexual dysfunction, muscle loss, loss of body hair, and man boobs! For most men, cutting out the carbs and boosting fats fixes the problem without having to resort to hormone replacement. Low-fat diets can cause women to stop menstruating or to experience irregular, heavy periods and infertility. They can increase belly fat, raise testosterone levels, and trigger acne, facial hair, and hair loss on the head, whereas high-fat, low-carb diets can reverse all that. (Ayurveda advises ghee (Ghruta) with some plants for prevention and cure of diseases.)

Fellows of Institute of Indian Medicine contributed to science of Ayurveda as co-authors, Co-Editors of books on Ayurveda in English language since 2010.

1. Mugdha Bothare	10
2. Atul Rakshe	07
3. Kurush Kurmi	04
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- 2) Title , 3) Authors' name, e mail id, phone no. college/institute, university,
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- 4) Mention no.of references for the article in the bracket.
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- 7) References with details such as section, chapter, page no.etc.
- 8) Add graphics if any at the end.
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 - 2) Book : Kulkarni P.H., Hosurkar Geetanjali, 'Obesity & Holistic Medicine', Publisher - Deerghayu Intenational Pune, 1st edition, 2014, pages 42-44
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6th International Ayurveda Research Day Conference





6th International Ayurveda Research Day Conference

Sunday, 28 August 2016 Time: 9.00 to 18.00 hrs

Sumant Moolgaokar and Navalmal Firodiya Auditoriums, MCCIA Trade Tower,
International Convention Center Complex, 403, Senapati Bapat Road, Pune (India)

International Ayurveda research day 28 August 2016

The 6th International Ayurveda Research Day conference was organized on 28th August 2016 at Sumant Moolgaokar (*Sushruta Sabhagruha*) and Navalmal Firodiya auditoriums (SIPKA and *Deerghayu Sabhagruha*), International Convention Center towers, S. B. Road, Pune, India.

This was the 64th International Conference organized by Deerghayu International, International Ayurveda Association and sister concerns. 300 researcher participated in this unique gathering of Ayurveda researchers. 22 delegates from Europe and Shrilanka also participated as delegates. The proceedings of the conference started at 10am with prayer '*Dhanvantari Stavana*'.

At the opening ceremony, Conference patron Prof. Dr. P. H. Kulkarni inaugurated the conference. His speech about the experiences of Ayurvedic practice in various countries was one of the most appreciated speech of the day. Executive president Dr. Atul Rakshe his views on 'Ayurvedic management of infertility and Arthritis- hype and beyond' was a brief of present and future of the topic. Dr. Sukumar Sardeshmukh spoke about the Ayurvedic management of cancers. Vaidya Carmen Navarro (Spain), Dr. Jayawardhane (Shrilanka) were present at the dais. Dr. Poonam Patil and Dr. Swati Kamat were the compeer for the session.

Three parallel scientific sessions were organized in Navalmal Firodiya auditoriums (East and west: SIPKA and Deerghayu sabhagruha) alongwith the Sumant Moolgaokar Auditorium post lunch. During these sessions, 64 researches presented their work. Vaidya Carmen Navarro, Prof. Dr. Yogini Kulkarni, Prof. Dr. Nilakshi Pradhan, Dr. Jayawardhane and Prof. Dr. Kavita Indapurkar were the mentor and moderators for the sessions.

The presentation ceremony started at 5.30pm. Prestigious 'International Rural Ayurveda Propagator award' was conferred upon Vaidya Ramesh Tagare from Yeola, Maharashtra at the valedictory function.

Dr. Harshad Mohare, Dr. Sonali Gatlewar were felicitated for their contribution as members of the scientific writing and syllabus design committee for PRAANAM, Barcelona, Spain.

International Ayurveda propagator award was conferred upon Ms. Carmen Navarro Founder, Director of PRAANAM, Barcelona, Spain, for her contribution to Ayurveda education, propagation and practices for last ten years.

During his speech, the patron Prof. Kulkarni said that research in Ayurveda is a continuing process and documentation of work is highly important.

Two books were released in this ceremony. The book 'literary review of Dhatu sarata' written by Dr. Umesh Gate and his guide is Prof. Dr. Kavita Indapurkar

was published.

'Abhyangatantra: Ayurveda massage' written by Prof. Dr. P. H. Kulkarni, Prof. Dr. Ramesh Deshmukh and Dr. Devika Deshmukh (USA). These books are written on various topics under guidance of Prof. Kulkarni. Three hundredth book of the series was released during the function. This is a record in modern history of Ayurveda.

Dr. Atul Rakshe said that Ayurveda research has to join hands and such conferences and meetings which bring all Ayurveda research under one roof should be organized time to time. The next Research day will be organized in January 2017.

Best paper presentation award for the conference was presented

A pre-congress meet was organized at 'Dr. Rakshe center of Ayurveda and Paediatrics', Karvenagar, Pune on Saturday 30 January 2016. The media representatives and members of the conference management committee were present. This conference was managed, conceived and executed by Dr. Ruturaj Kadam Patil, Dr. Harshad Mohare, Dr. Kaustubha Ghodake Vedapathak, Dr. Vikas Chothe, Dr. Poonam Patil, Dr. Sandeep Nikam, Dr. Akshaya Parvatikar, Dr. Priyanka Surjuse, Dr. Sanyukta Mohare, Dr. Prachi Bhagwat, Dr. Zoheb Shaikh, Dr. Swapnil Daspute, Dr. Sagar Thokade, Dr. Swati Kamat, Dr. Sagar Rokade and a brigade of young Ayurveda Practitioners.

Conference patron: Prof. Dr. P. H. Kulkarni

Executive President: Dr. Atul Rakshe

