ĀRYAVAIDYAN

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लाभानां श्रेय आरोग्यम्

Of all the gifts,
the most precious is health

Vaidyaratnam P.S. Varier's
Arya Vaidya Sala, Kottakkal, Kerala

Aryavaidyan, the quarterly journal of Arya Vaidya Sala, Kottakkal, is intended to encourage scientific writing and intellectual interactions among scholars, academicians, practitioners and students of ayurveda and allied subjects.

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VAIDYARATNAM P.S.VARIER'S
ARYA VAIDYA SALA, KOTTAKKAL

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सतताध्ययनं, वादः परतन्त्रावलोकनम् ।
तद्विद्याचार्यसेवा च बुद्धिमेधाकरो गणः ।।

Constant study, mutual discussion,
learning other disciplines and
serving the preceptor - these factors
endow one with intelligence and memory

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Relevance of Pumsavanakarmam in present scenario

Syamala B.

Introduction

Since 19th century the number of children in every family is restricted by two. Our country was considered as a developing nation earlier till 19th century. One of the main strategies for this development was the control over the population by implementing family planning programs. Of course, our country has achieved much in the field of education and economy and is now considered as a developed country.

Every couple wish for having a girl and a boy in the family. But the number of couple approaching for a child of desired gender is now increasing day by day. It is in this scenario that 'pumsavanakarmam' mentioned in āyurvedic classics, not being practiced now, has to be thought of and to be practiced scientifically.

Pumsavanam is a special regime or procedure carried out in couples for achievement of offspring of desired gender. It aims at maintenance of pregnancy to full term with achievement of child of desired sex. They should undergo the procedure prior to conception and should repeat just after conception and maintain specific regimen till full term.

Every woman after marriage wish to have her first son like her husband. The definition of 'pumsavanam' is 'Pumsthvakārakam karmam pumsavanam' which means the procedure or ritual conducted for the achievement of a male child is termed pumsavanam. 'Pums' means to grind, move, 'a' denotes a human being, a soul or spirit and 'vana' means ceremony, rite, oblation, festival, etc.; pumsavana meaning moving a human being, a soul or a man; bringing forth a male baby in early stage of life.

Historical background

In Atharvaveda Anuvāka 2, sūkta 11 and 8.81, 4.62 versions recite for achievement of a male baby. Pumsavanakarmam is considered to be third among the 16 samskāras of a woman after achievement of conception. Kāḷidāsa's Raghuvamśa, 10th verse of 3rd sarga describes pumsavanakarmam. The King Dilīpa had conducted it for his wife Sudakṣiṇa as he came to know that she is pregnant. In Adhyātma Rāmāyaṇa Bālakāṅḍam, it is mentioned that king Daśaratha conducted pumsavanam for his wives while they were pregnant with evidence of symptoms of pregnancy.[1]

What is meant by gender or sex ?

In normal individuals, the sex at birth is assigned after inspection of the external genitals. The sex of rearing will be decided on this inspection. Beyond these, there are other several factors that are essential and responsible for sex, either male or female of an individual.

There are five sorts of sex. They are;

a. Chromosomal

b. Gonadal

c. Internal genital (Genotype)

d. External genital or body sex (Phenotype) and

e. Sex of rearing.

a. Chromosomal: Ovum and sperm have haploid (23 each) number of chromosomes. Human ovum contains 22 autosomes and one X or Y chromosome. In sperm - 22 autosomes and one X or Y chromosome. Its union will result in a conceptus with 46 chromosomes. A female with 44 autosomes and XX

(46 XX); 44 + XY (46XY-male). These will determine the gonadal sex.

There are 23 pairs of chromosomes in every individual; among which there will be 22 pairs of somatic and one pair of sex chromosomes. Sex chromosomes will be XX or XY. The characteristic of Y chromosomes is that it is lighter than X chromosome as it is deficient of one limb in its lower side (Y). Sex chromosomes of male will be haploid in number ie. either X or Y (separate before becoming spermatozoa). This haploid fuses with ovum which also contain haploid number of X chromosomes. As Y is present only in male, the conception that contain XY (fuse with Y of sperm) will become a male fetus and the sperm containing X if fuse with X of ovum will become a female fetus.

Chromosomally, presence of XX chromosomes will make the person female and XY male.

b. Gonadal (Internal genital): The gonads in female will be ovaries while testis in male. Genes with Y chromosomes are of paramount importance in determining gonadal and differentiation into testis. Testis determining genes are located in Y chromosomes as SRY gene. SRY genes encode a transcription factor that modulate rate of transcription of a male of gene induced on gonadal differentiation.

c. Internal genital organs of male will be seminal vesicles, epidydimis and vas deference while that of female are vagina, uterus and fallopian tubes.

d. External genital or body sex (Phenotype): Development of a female child is a neutral form that can be achieved without much effort. However, achievement of a male child needs many factors from conception till two years after birth and so on.

External genital organs of a female are vulva, labia majora, labia minora and clitoris; while that of a male is scrotum and penis. Males become externally distinct between 8-12 weeks, as androgen enlarges the phallus and causes the urogenital groove and sinus to fuse in midline. DHT will differentiate the remaining male characteristics of external genitalia.

Sex differentiation of external genitalia occurs at puberty. Male levels of testosterone directly influence growth of penis, indirectly via DHT (Dihydro testosterone). In male, paramesonephric ducts will be regressed by paramesonephric inhibiting substance (MIS) that is produced by sertoli cells. Secondary sexual characteristics as visible differentiation of breast in female occur at puberty by the influence of oestradiol and other hormones.

e. Sex of rearing: It depends on how a person is brought up. We get an impression of a person as male or female by the way of that person's dressing, behavior, etc. Psychological and behavioral differentiation is obviously cultural. Mechanism of sexual differentiation of breast and behavior are based on three sources. From simple inspection will be determined the sex of rearing, and it is on this, more than anything else, that the psychosexual orientation of the individual will depend.[2]

Time of application of Pumsavanam: Pumsavanam should be done prior to pregnancy and before the fetal parts become conspicuous in early embryo and as soon as pregnancy is confirmed by its signs and symptoms; that is in the second month.[3]

In āyurveda, it is described for the achievement of pregnancy of desired sex. According to Caraka and Suśruta, it should be conducted after conception but before the organs are developed. In Aṣṭāṅgahṛdayam, pumsavanam is advised to be carried out before conception as they try for conception (Garbhādāna karma).[4]

Most of the factors that compel people to favour a male offspring are social in origin. With the average family size decreasing rapidly and preference for male child remaining the same, the female population is showing a downward trend. North India has the lowest sex ratio in the world. Various methods are

adopted by people to get a son. Sex determination tests and female feticide are still reported from different parts of the country.

Mainly three objectives are mentioned by Ḍalhaṇa for pumsavanam.

1. Prior to conception for achievement of conception.

2. Immediately after conception for its proper implantation and its maintenance.

3. After conception within 2 months for having desired sex (especially for getting male child).

Preparation for achievement of conception ie. prior to conception, is mentioned in Aṣṭāṅgahṛdayam as 'garbhādāna karma'. In this the couple should keep celibacy for one month. They should undergo cleansing therapies including vastikarma; making their body rectified from all types of abnormalities and wastes. Husband should take food including milk, ghee and other preparations with herbs more of madhurarasa (sweet) and the wife should take more of taila (oil), māṣa (black gram) and other pittavardhaka (curd , buttermilk, etc.) food materials. They both should undergo pumsavanakarmam after cleansing their body.[5]

Pumsavana dravyas

1. Lakṣmaṇāmūlam: The root of the plant *Ipomea seperia* should be taken orally with cow's milk.[5a]

2. Grind a leaf of palāśa (*Butea monosperma*) with milk and consume. It is vṛṣya (aphrodisiac) and hepatotonic.

3. Vaṭāṅkura- Grind leaf buds of *Ficus bengalensis* in cow's milk and instill 3-6 drops through the nostril. Through right nostril for achievement of male child and through left nostril for female child. This should be performed specially on puṣya nakṣatra for male child. Its milk preparation (decoction) can also be taken orally. These should be performed for 8 continuous days. It is found that aqueous extract of its leaves depress cardiac and uterine muscles. It acts as a cholinergic blocking agent on smooth and skeletal muscles. There can be certain environmental factors that make the sperms with Y chromosomes more dominant and surplus. On philosophical point of view; 'Puṣya nakṣatra' is considered the most auspicious time for conducting all good divine pursuits. This arena shines with brilliance of prosperity, happiness and all positive shades on earth.

4. Root of śūkaśimbī (*Mucuna pruriens*), seeds of śivaliṅgī (*Bryonia laciniosa*) pasted with cow's milk gives birth to a male child.

5. Roots of white stem of apāmārga (*Achyranthus aspera*), jīvaka (*Microstylis museifera*), ṛṣabhaka (*Microstylis wallichii*), grinded with water if taken gives birth to a male child.[6]

6. Leaf buds of vaṭa (*Ficus bengalensis*) grinded with milk also impart the same effect.

Women desirous of male child should wear white garments, wearing white garlands, should collect roots of lakṣmaṇa on puṣya nakṣatra; grinded well and should be taken with milk. Vaṭaśṛṅga (leaf buds of plant *Ficus glomerata*) can also be taken like above.[7]

In Carakasamhita, use of milk preparation of apāmārga and sahacarā (*Berieria prionitis*) are also useful for the achievement of male baby. These may increase the level of progesterone and testosterone. Anabolic steroids contained in it may help in maintenance of pregnancy. Caraka also opines that fertilization if happens on odd number of days (as 13,15,17) may result in the achievement of male baby and on even days (12,14,16) then it will be a female child.

Milk is the main ingredient of pumsavana drugs. It has various properties that promote pum bīja (spermatozoa essential for male fetus.)

Properties of milk in spermatogenesis:

1. It contains calcium - a key regulator of sperm function.

2. Improves vitality of sperm.

3. L-carnitine, an amino acid that is essential for normal functioning of sperm cells.

4. Higher level of L-carnitine brings high sperm count and motility.

5. Vitamin B12 is needed to maintain fertility, improve count and motility.

6. Vitamin D helps to improve fertility. It assists in the absorption of calcium from food.

7. Vitamin A is the antioxidant that protects sperm against sperm damage.

8. Vitamin E, the antioxidant that protects against sperm damage.

Optimum time for performing pumsavanam

1. Before conception

2. Immediately after conception and

3. After conception within two months

It is mentioned in Carakasamhita,[3a] Suśrutasamhita and Aṣṭāṅgahṛdayam that in the second month, the embryo will develop like a ball (piṇḍa), a muscle (peśi) or as arbuda like structure that may develop into a male, female or leunarch respectively.[8] This indicates that the sex organs of the embryo will develop in the second month. In Aṣṭāṅgahṛdayam pumsavanam is advised to be conducted prior to conspicuousness of these genitalia (pūrvam vyakteḥ prayojayet)[5b] ie; as soon as pregnancy is diagnosed.

According to Vāgbhaṭa, pumsavanam should be performed prior to conception and immediately after conception before the signs and symptoms of pregnancy becomes evident. (snehaiḥ pumsavanaiḥ śuddham)[5c]. The couple should keep celibacy for one month and cleanse their body through pañcakarmas like vasti, etc. Specific diet is also mentioned for the couple that need to be strictly followed.

As sex organs of fetus will be expressed in the end of second month; pumsavanam should be performed before completion of second month ie. as soon as the signs and symptoms of pregnancy ensues. It is mentioned that the pregnant woman will show certain specific behavior and cravings according to the sex of the fetus she carries. If it is a boy, she will start walking first with right leg, milk will come first in right breast, she will ask for fruits and other food items of male gender like mango, she will see male babies in her dreams, her right side of abdomen will be more bulged out, etc. If it is a girl, she likes to decorate her body with ornaments, like to hear music, see dance and other arts, apply fragrant items, etc.

The development and the maintenance of sex organs in an embryo and fetus is a long process. External factors such as diet and food materials of the mother can play an important role in the formation, transformation and maintenance of sex organs and its characteristics.

Development of sex organs in foetus

Embryologically, male and female genital organs develop from paramesonephric ducts. Male genital organs will develop from wolffian ducts where as female genial organs develop from mullerian ducts. In a normal female the wolffian structures will atrophy. Mullerian ducts will develop into uterus, fallopian tubes and upper vagina. (See Table 1)

In male, mullerian structures will regress and wolffian ducts will develop into vas deference, seminal vesicles and epidydimis. Cloacae will musculinize with development of penis, penile urethra and scrotum. Beyond chromosomal level, ovary is responsible for female differentiation and testis for masculine development. Mullerian ducts will develop into vulva and lower vagina irrespective of chromosome.[2]

Female development is regarded as neutral or asexual norm.[9] At fetal level, female organogenesis does not depend on presence of ovary; but male development

Table 1
Development of sex organs in fetus

Weekly embryological development			
Sl. No.	Gestational age in weeks	Crown Rump length in mm	Development of genital organs
1	1	Blastocyst	Inactivity of 1 X chromosome
2	4	2-3	Development of Wolffian ducts
3	5	7	Migration of primordial germ cells in the undifferentiated gonad
4	6	10-15	Development of Mullerian ducts
5	7	13-20	Development of seminiferous tubules
6	8	30	Regression of Mullerian ducts in male fetus
7	9	43	Total regression of Mullerian ducts. Loss of sensitivity of Mullerian ducts.
8	10	43-45	Beginning of musculinization of external genitalia
9	10	50	Beginning of regression of Wolffian ducts in female fetus
10	12	70	Testis in internal inguinal ring
11	12-14	70-90	Male penile urethra completed
12	14	90	Appearance of first spermatogonium
13	16	100	Appearance of first ovarian follicle
14	17	120	Numerous Leydig cells. Peak of testosterone secretion.
15	20	150	Regression of Leydig cells. Diminished testosterone secretion.
16	24	200	First multilayered ovarian follicles. Canalization of vagina.
17	28	230	Cessation of oogonic multiplication
18	28	230	Descend of testis to scrotum

is very much dependant on presence of a testis. Various factors are essential for the development of a male baby.

Factors essential for a male gender

1. HY antigen- H-Y histocompatability antigen carried on Y chromosome is responsible for critical induction of testis. The histocompatability-Y antigen is carried on the Y chromosome and this antigen is responsible for the critical induction of testis.[10] H-Y receptors are found only in the gonad, so that the effects of the H-Y antigen on sexual differentiation is mediated by its primary effect on testicular differentiation.

2. Anti Mullerian Factor (AMF): It causes regression of mullerian ducts. It has local action and its activity precedes leydig cells produced from sertoli cells. Infantile testis produces AMF till the age of 2 years. The sertoli cells of testis produce AMF. A male inter sex lacking AMF will have a uterus, tubes and vagina.

AMF causes regression of mullerian (para-mesonephric) ducts.[9]

3. Wolffian evocation: Abromovich in 1974 had described the pattern of testosterone production in the human fetal male and it is clear that testosterone is effective, de novo, in evocation of wolffian derived structures.[11]Wolffian ducts are exposed to testosterone as soon as the leydig cells differentiate.

5. Cloacal transformation: Testosterone causes Wolffian evocation and musculinization of cloacae. XX is needed for normal ovarian development. The Y antigen of the XY complement probably evokes the testis, as long as there are specific receptors. However, it will not, by itself, induce germ cell colonization of the gonad.

In the absence of gonad, female development is the natural or asexual form.

6. SRY gene: Sex determining Y chromosome. With the presence of SRY gene, gonad will develop into testis. Gonads are histologically distinguishable by 6-8 weeks of gestation. SRY gene produces SRY protein that binds to DNA and directs the development of the gonads into testis.

7. Fetal Testosterone: Evokes Wolffian structures but has no effect on mullerian ducts. Testosterone converts mesonephric ducts into male accessory structures, including epididymis, vas deference and seminal vesicles. Testosterone will also control the descend of testis from abdomen into scrotum. Fetal testosterone will virilize the cloacae if it is bound to the target cells and can be converted to DHT. A relative deficiency of 5 alpha reductase will impair the cloacal response to testosterone; but will not affect wolffian evocation, the latter being dependant on testosterone without the need for conversion.

8. Immunological factor: Researchers in Middle East have found that certain immunological protein materials can change the sex of the offspring irrespective of the chromosomes. They fed X carrying embryos of fish with such material and found that those with XX chromosomes were transferred into male once it was grown.

Abnormal or ectopic androgenic stimuli, depending on timing and biological potency, may cause variable, almost complete musculinization of the female cloacae but never affect mullerian development in the chromosomal or gonadal female. In these clinical syndrome, the androgenic stimulus arrives too late to switch on the wolffian ducts.

SSDs (Sex Selection Drugs): Drugs like mayāphala or mājūphal (*Quercus infectoria*) and śivliṅgī (*Bryonia laciniosa*) are commonly used in Northern India especially in states like Haryana and Maharashtra for the selection of sex in foetus and are named as SSDs. SSDs is freely available from grocers, chemical shops, faith healers and specific people in villages of Haryana. It seems that the strong desire to have a son has made people to exercise on the choice regarding the sex of their children by resorting to sex selection techniques. However, troubled by the exponential rise in incidence of female feticide the government enacted the PNDT Act (1994) to curb this practice .

Sutapa Bandyopadhyay Neogi of The Indian Institute of Public Health -Delhi and The Public Health Foundation of India, studied the risk of SSDs on stillbirths in India. Sex selection drugs contain oestrogen- like plant extracts and testosterone, and are taken in the early phase of pregnancy to determine the baby's gender. This is what atleast some women in India think. Instead, the drugs can irrevocably damage the fetal organs, cause birth defects, and even kill them late in the pregnancy (www.ijcm).

This is because the status of a woman in the society is often determined by her ability to give birth to a male child. A son is seen as a torch bearer of the family name, property, and an heir. Only a son can lit the funeral pyre and release them from the travails of the

world to ensure the salvation of the soul through its entry into heaven.

The National Health Mission (NHM), of the Government of Haryana conceptualized and conceived a centralized online registry by the name of Maternal Infant Death Review System (MIDRS) to gather information regarding maternal deaths, infant deaths and stillbirths from the health facilities.

The present study is designed to explore the association of various risk factors for stillbirths, with a special focus on the intake of sex selection drugs during pregnancy. Of all the risk factors studied, we found prematurity (less than 37 weeks of gestation), previous stillbirths and any complication during labour, and the intake of SSDs has emerged as the significant risk factors. Mothers who had stillborn babies were 2.6 times more likely to have taken SSDs. Out of every 5 women who were exposed to SSDs, one had stillbirth. Neogi did a preliminary analysis on 30 samples collected from various parts of north India. Around 63 percent of the drugs were strongly positive for phytoestrogens, and 20 percent were positive for testosterone.[12]

Conclusion

These procedures may be considered for sex reversal/ change before second month by performing pumsavanakarmam. The drugs contain anabolic steroids that may influence the exposure of SDY on X chromosome. Further scientific inquiry may be carried out to unveil the influence of pumsavana karmam on developing sex of child. Sperm sorting with X or Y chromosomes and embryos of XX and XY chromosomes are now practiced through Flow cytometry and other techniques in IVF and ICSI types assisted conception. So, for the achievement of a male child specially, not only the chromosome but a lot of other factors as testosterone hormones are essential. Efforts for achievement of a child of desired sex should start prior to conception and should continue it for its maintenance with a booster dose at second month. Specific diet and mode of life should be followed even for 2 years and even till adulthood to maintain that child's physical, psychological and behavioral pattern as a male. So pumsavanakarmam if performed prior to conception or prior to organo-genesis after conception, if bring up with such circumstances and character can develop into a complete male person; same as that with a girl if desires and performs.

References

1. Dr. Prasad J. S. R. A. and Dr. Srikanth K. Y., *A medical interpretation of Pumsavanakarma in Raghuvamsa*. https://www.researchgate.net/publication/236953234.

2. Money J., *Sex errors of the body*, Johns Hopkins Press, Baltimore, 1968.

3. Agnivesa, *Carakasamhita* with Ayurvedadipika commentary by Cakrapanidatta, Sarirasthanam 8/19, Chaukhambha Surbharati Prakashan, Varanasi.

3a. Ibid. Sarirasthanam 4/10

4. Bandopadhyaya and Singh A.J., *Sex selection through traditional drugs in rural north India*, Indian journal of community medicine, Vol. 32, Issue 1, P 32-34, 2007.

5. Vagbhata, *Astangahrdayam* with commentaries of Arunadatta and Hemadri, Sarirasthanam 1/19-20, Chaukhambha Surbharati Prakashan, Varanasi, 2011.

5a. Ibid. Sarirasthanam 1/41

5b. Ibid. Sarirasthanam 1/37-38

5c. Ibid. Sarirasthanam 1/20-21

6. Prof. Premavathi Tewari, *Ayurvediya Prasutitantra Evam Striroga*, Vol. I, P 191-198, Chaukhambha Publications, New Delhi, 1996.

7. Susruta, *Susrutasamhita*, with Nibandhasangraha commentary of Dalhana, Sarirasthanam 2/32, Chaukhambha Surbharati Prakashan, Varanasi, 2012.

8. Dr. Syamala B., Arthavam-Garbham-Prasavam Arogyaparipalanam Ayurvedattil, 5th Edtn., P 36, Current Books, Thrissur, 2017.

9. Joes H.W. and Wilkins, American journal of Obstetrics and Gynecology, 82, 1142, Elsevier B.V., Netherlands, 1961.

10. Wachtel S. S., *Obstetrics and Gynaecology*, N.Y. 54, 671, 1979.

11. Imperato-McGinley J. and Peterson R. E., *Male pseudohermaphroditism: the complexities of male phenotypic development*, American Journal of Medicine, 61, 251 ,Elsevier B.V., Netherlands, 1976.

12. Sutapa Bandyopadhyay Neogi, *Risk of Sex Selection Drugs on stillbirths in India*, The Indian Institute of Public Health, Public Health Foundation of India, Delhi.

Related websites:

13.A.J. Sing, *Sex selection through traditional drugs in rural north India.,* www.ijcm.org.in/article.asp?issn=0970-0218;year=2007;volume=32;issue

14. *Sex-selection drugs linked to birth defects: Drug Safety report* | India... www.hindustantimes.com/.../sex-selection-drugs...drug.../

15. https://www.researchgate.net/.../sex-selection-drugs-cause-tens-of-thousands-of-stillbirths...

Syamala B., Professor, Vaidyaratnam Ayurveda College, Thaikkattussery P.O., Ollur, Thrissur, Kerala.
E- mail: drbsyamala@gmail.com

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Pages from Vāgbhaṭa

Ramankutty C.*

ABSTRACT: The sixteenth chapter of Nidānasthānam *viz*. Vātaśoṇitanidānam is explained here. The aetiology, symptomatology, prognosis, etc. of vātaśoṇita (disorders of perturbed vāta and śoṇita) are detailed in this chapter.

Key words: Vātaśoṇitam, Gambhīram, Uttānam, Āvaraṇam

The premonitary symptoms resemble those of kuṣṭha. They seem similar because of the involvment of nerves and blood. Kuṣṭha involves nerves whereas vātaśoṇita involves blood; this is the only difference between the two. Vātaśoṇita is regarded as a vāta disorder because it involves the nerves also. So, after kuṣṭha and vātavyādhi follows vātaśoṇita.

अथातो वातशोणितनिदानं व्याख्यास्यामः।
इति ह स्माहुरात्रेयादयो महर्षयः।
(Athāto vātaśoṇitanidānam vyākhyāsyāmaḥ।
iti ha smāhurātreyādayo maharṣayaḥ।)
Let us discuss the chapter regarding the diagnosis of vātaśoṇita. Thus spoke the sages Ātreya, etc.

विदाह्यन्नं विरुद्धं च तत्तच्चासृक्प्रदूषणम्।
भजतां विधिहीनं च स्वप्नजागरमैथुनम्।।१।।
प्रायेण सुकुमाराणामचङ्क्रमणशीलिनाम्।
अभिघातादशुद्धेश्च नृणामसृजि दूषिते।।२।।
वातळैः शीतळैर्वायुर्वृद्धः क्रुद्धो विमार्गगः।
तादृशैवासृजा रुद्धः प्राक्तदेव प्रदूषयेत्।।३।।
आढ्यरोगं खुडं वातवलासं वातशोणितम्।
तदाहुर्नामभिः.....
(Vidāhyannam viruddham ca
tattaccāsṛkpradūṣaṇam।
bhajatām vidhihīnam ca
svapnajāgaramaithunam।। 1 ।।
Prāyeṇa sukumārāṇā-
macaṅkramaṇaśīlinām।
abhighātādaśuddheśca
nṛṇāmasṛji dūṣite।। 2 ।।
Vātaḷaiḥ śītaḷairvāyur-
vṛddhaḥ kruddho vimārgagaḥ।
tādṛśaivāsṛjā ruddhaḥ
prāktadeva pradūṣayet।। 3 ।।
Āḍhyarogam khuḍam vāta-
valāsam vātaśoṇitam।
tadāhurnāmabhiḥ.....
The food items that create burning sensation, which are incompatible and perturb blood; excessive sleep or very little of it; unorthodox ways of sexual intercourse whose who practice a sedentary life style; trauma, avoidance of regular evacuative measures that which vitiate the blood; using of food items which are vāta vitiating and cold, perturb vāta. The purturbed vāta moves irregularly because of the obstruction by deranged blood and in turn perturbes blood. This is termed as vātaśoṇitam. This is also known as āḍhyavātam, khuḍam and vātavalāsam.

..... तच्च पूर्वं पादौ प्रधावति।।४।।
विशेषाद्यानयानाद्यैः प्रलम्बौ.....
(..... tacca pūrvam pādau pradhāvati।। 4।।
viśeṣādyānayānādyaiḥ pralambau.....
This perturbed blood initially reach out to the feet especially in individuals who keep legs hanging during long rides on horses.

..... तस्य लक्षणम्।
भविष्यतः कुष्ठसमं तथा सादः श्ळथाङ्गता।।५।।
जानुजङ्घोरुकट्यंसहस्तपादाङ्गसन्धिषु।

कण्डूस्फुरणनिस्तोदभेदगौरवसुप्तताः।।६।।
भूत्वा भूत्वा प्रणश्यन्ति मुहुराविर्भवन्ति च।
(..... tasya lakṣaṇam।
bhaviṣyataḥ kuṣṭhasamam
tathā sādaḥ śl̥athāṅgatā।।5।।
Jānujaṅghorukaṭyamsa-
hastapādāṅgasandhiṣu।
kaṇḍūsphuraṇanistoda-
bhedagauravasuptatāḥ।।6।।
Bhūtvā bhūtvā praṇaśyanti
muhurāvirbhavanti ca।)

Its premonitory signs resemble those of kuṣṭha. Besides, profound weakness, flacidity of the body, itching, throbbing or splitting pain on and off in the joints of the legs, calves, thighs, waist, shoulders, hands, feet and other joints; sensation of heaviness; loss of touch, these appears on and off.

पादयोर्मूलमास्थाय कदाचिद्धस्तयोरपि।।७।।
आखोरिव विषं क्रुद्धं कृत्स्नं देहं विधावति।
(pādayormūlamāsthāya
kadāciddhastayorapi।।7।।
Ākhoriva viṣam kruddham
kṛtsnam deham vidhāvati।)

Vātaśoṇita affects the feet and sometimes the hands. Perturbed vāta spread throughout the body quickly in the same way as that of rat poison.

त्वङ्मांसाश्रयमुत्तानं तत्पूर्वं जायते ततः।।८।।
कालान्तरेण गम्भीरं सर्वान् धातूनभिद्रवत्।
(tvaṅmāmsāśrāyamuttānam
tatpūrvam jāyate tataḥ।।8।।
Kālāntareṇa gambhīram
sarvān dhātūnabhidravat।)

Uttāna, in the initial stage it affects the skin and muscles. The next stage is gambhīra which affects all the dhātus. Thus vātaśoṇita is of two types uttāna and gambhīra.

कण्ड्वादिसंयुतोत्ताने त्वक्ताम्रा श्वावलोहिता।।९।।
सायामा भृशदाहोषा.....
(kaṇḍvādisamyutottāne
tvaktāmrā śvāvalohitā।।9।।
Sāyāmā bhṛśadāhoṣā.....

In uttāna stage the skin develops itching, etc. and discolouration. A mixture of copper, red and yellow or red discolouration is seen. Severe burning sensation and heat is also experienced with spasm.

..... गम्भीरेऽधिकपूर्वरुक्।
श्वयथुर्ग्रथितः पाकी वायुः सन्ध्यस्थिमज्जसु।।१०।।
छिन्दन्निव चरत्यन्तर्वक्रीकुर्वंश्च वेगवान्।
करोति खञ्जं पङ्गुं वा शरीरे सर्वतश्चरन्।।११।।
(..... gambhīre'dhikapūrvaruk।
śvayathurgrathitaḥ pākī
vāyuḥ sandhyasthi majjasu।।10।।
Chindanniva caratyantar-
vakrīkurvamśca vegavān।
karoti khañjam paṅgum vā
śarīre sarvataścaran।।11।।)

In gambhīra stage the above mentioned symptoms become severe with the appearance of hard and suppurative swelling. The perturbed vāta affects the joints, bone and marrow with splitting pain. The body parts are deformed and he may become partially or completely lame.

वातेऽधिकेऽधिकं तत्र शूलस्फुरणतोदनम्।
शोफस्य रौक्ष्यकृष्णत्वश्यावतावृद्धिहानयः।।१२।।
धमन्यङ्गुलिसन्धीनां सङ्कोचोऽङ्गग्रहोऽतिरुक्।
शीतद्वेषानुपशयौ स्तम्भवेपथुसुप्तयः।।१३।।
(Vāte'dhike'dhikam tatra
śūlasphuraṇatodanam।
śophasya raukṣyakṛṣṇatva-
śyāvatāvṛddhihānayaḥ।।12।।
Dhamanyaṅgulisandhīnām
saṅkoco'ṅgagraho'tiruk।
śītadveṣānupaśayau
stambhavepathusuptayaḥ।।13।।)

Severe pain, cutting and throbbing pain, dry skin with black or dark bluish black coloured swelling that increases or decreases, contractions of dhamani at the joints and fingers, severe pain of a gripping nature all over the body, aversion to cold measures, stiffness, tremors and diminished touch sensation are the features of vāta vitiated vātaśoṇitam.

रक्ते शोफोऽतिरुक्तोदस्ताम्रश्चिमिचिमायते।
स्निग्धरूक्षैः शमं नैति कण्डूक्लेदसमन्वितः।।१४।।
(Rakte śopho'tiruktoda-
stāmraścimicimāyate।
snigdharūkṣaiḥ śamam naiti
kaṇḍūkl̥edasamanvitaḥ।। 14 ।।)
Severly painful swelling of a coppery colour, pain of pin pricks, does not respond to oily or dry applications, itching and oozing are the features of rakta vitiated vātaśoṇitam.

पित्ते विदाहः सम्मोहः स्वेदो मूर्च्छा मदः सतृट्।
स्पर्शाक्षमत्वं रुग्रागः शोफः पाको भृशोष्मता।।१५।।
(Pitte vidāhaḥ sammohaḥ
svedo mūrcchā madaḥ satr̥ṭ।
sparśākṣamatvam rugragaḥ
śophaḥ pāko bhr̥śoṣmatā।। 15 ।।)
In pitta induced vātaśoṇitam the patient suffers a burning sensation in the body. Fainting, swelling, swooning, thirst with confusion, extreme tenderness, pain, redness, ulceration and heat are also experienced.

कफे स्तैमित्यगुरुतासुप्तिस्निग्धत्वशीतताः।
कण्डूर्मन्दा च रुक्.....
(Kaphe staimityagurutā
suptisnigdhatvaśītatāḥ।
kaṇḍūrmandā ca ruk.....)
Immobility, heaviness, diminished tactile sensation, oily skin that is cold to touch, itching and mild pain are the features of a kapha induced vātaśoṇitam.

..... द्वन्द्वसर्वलिङ्गं च सङ्करे।।१६।।
(.....dvandvasarvaliṅgam ca saṅgare।। 16 ।।)
Combination of the features are precipitated in the involvement of two or three doṣa.

एकदोषानुगं साध्यं नवं, याप्यं द्विदोषजम्।
त्रिदोषजं त्यजेत्स्रावि स्तब्धमर्बुदकारि च।।१७।।
(Ekadoṣānugam sādhyam
navam, yāpyam dvidoṣajam।
tridoṣajam tyajetsrāvi
stabdhamarbudakāri ca।। 17 ।।)

The disorder caused by the perturbation of one doṣa and that of recent onset is curable. The one caused by two doṣas is manageable whereas the one caused by three doṣas and associated immobility, oozing and nodular swelling is incurable and not fit for treatment.

रक्तमार्गं निहत्याशु शाखासन्धिषु मारुतः।
निविश्यान्योन्यमावार्य वेदनाभिर्हरत्यसून्।।१८।।
(Raktamārgam nihantyāśu
śākhāsandhiṣu mārutaḥ।
niviśyānyonyamāvārya
vedanābhirharatyasūn।। 18 ।।)
Vāta embedded in the extremities and joints in the circulation of blood and is veiled mutually. This results in various aches and pains which in time prove fatal.

वायौ पञ्चात्मके प्राणो रौक्ष्यव्यायामलङ्घनैः।
अत्याहाराभिघाताध्ववेगोदीरणधारणैः।।१९।।
कुपितश्चक्षुरादीनामुपघातं प्रवर्तयेत्।
पीनसार्दिततृट्कासश्वासादींश्चामयान्बहून्।।२०।।
(Vāyo pañcātmake prāṇo
raukṣyavyāyāmalaṅghanaiḥ।
atyāhārābhighātādhva-
vegodī̄raṇadhāraṇaiḥ।। 19।।
Kupitaścakṣurādī̄nām-
upaghātam pravartayet।
pī̄nasārditatr̥ṭkāsa-
śvāsādī̄mścāmayānbahūn।। 20 ।।)
Among the five types of vāta, when prāṇa is affected by absence of oiliness, excess activity, fasting or overeating; injury; long walks and suppression of physical urges, one suffers from weakness of sense organs, nasal congestion, facial paralysis, thirst, cough, shortness of breath and such other ailments.

उदानः क्षवथूद्गारच्छर्दिनिद्राविधारणैः।
गुरुभारातिरुदितहास्याद्यैर्विकृतो गदान्।।२१।।
कण्ठरोधमनोभ्रंशच्छर्द्यरोचकपीनसान्।
कुर्याच्च गळगण्डादींस्तांस्तान् जत्रूर्ध्वसंश्रयान्।।२२।।
(Udānaḥ kṣavathūdgāra-
cchardinidrāvidhāraṇaiḥ।

gurubhārātirudita
hāsyādyairvikṛto gadān।। 21 ।।
Kaṇṭharodhamanobhramśa-
cchardyarocakapīnasān।
kuryācca galaganḍādīm-
stāmstān jatrūrdhvasamśrayān।। 22 ।।)

In the case of udāna, the causative factors such as suppression of urges to sneeze, belch, vomit and sleep; carrying heavy loads; excessive crying and laughing result in the constriction of the throat, mental disorders, vomiting, loss of appetite, nasal congestion, diseases above neck including glandular enlargement of the throat.

व्यानोऽतिगमनध्यानक्रीडाविषमचेष्टितैः।
विरोधिरूक्षभीहर्षविषादाद्यैश्च दूषितः।।२३।।
पुंस्त्वोत्साहबलभ्रंशशोफचित्तोत्प्लवज्वरान्।
सर्वाङ्गरोगनिस्तोदरोमहर्षाङ्गसुप्तताः।।२४।।
कुष्ठं विसर्पमन्यांश्च कुर्यात्सर्वाङ्गगान् गदान्।
(Vyānoऽtigamanadhyāna-
krīḍāviṣamaceṣṭitaiḥ।
virodhirūkṣabhīharṣa-
viṣādyaiśca dūṣitaḥ।। 23 ।।
Pumstvotsāhabalabhramśa-
śophacittotplavajvarān।
sarvāṅgaroganistoda-
romaharṣāṅgasuptatāḥ।। 24 ।।
Kuṣṭham visarpamanyāmśca
kuryātsarvāṅgagān gadān।)

The causative factors that contribute to the perturbation of vyāna are: excessive walks, sexual intercourse and mental concentration, excessive play or irregular activities, incompatible and dry food, fear, exhilaration and grief. The clinical features are: reduced potency, strength and zest; swelling, mental disorder, fever, paralysis of the body, pricking pain, gooseflesh, numbness, leprosy, erysipelas and other diseases affecting the body.

समानो विषमाजीर्णशीतसङ्कीर्णभोजनैः।।२५।।
करोत्यकालशयनजागराद्यैश्च दूषितः।
शूलगुल्मग्रहण्यादीन् पक्वामाशयजान् गदान्।।२६।।
(samāno viṣamājīrṇa-
śītasaṅkīrṇabhojanaiḥ।। 25 ।।
Karotyakālaśayana-
jāgarādyaiśca dūṣitaḥ।
śūlagulmagrahaṇyādīn
pakvāmāśayajān gadān।। 26 ।।)

Tha causative factors for the perturbation of samāna are: irregular intake of food, indigestion, intake of cold and heavy food along with untimely sleep result in gulma, grahaṇi and intestinal disorders.

अपानो रूक्षगुर्वन्नवेगाघातातिवाहनैः।
यानयानासनस्थानचङ्क्रमैश्चातिसेवितैः।।२७।।
कुपितः कुरुते रोगान् कृच्छ्रान् पक्वाशयाश्रयान्।
मूत्रशुक्रप्रदोषार्शोगुदभ्रंशादिकान् बहून्।।२८।।
(Apāno rūkṣagurvanna-
vegāghātātivāhanaiḥ।
yānayānāsanasthāna-
caṅkramaiścātisevitaiḥ।। 27 ।।
Kupitaḥ kurute rogān
kṛcchrān pakvāśayāśrayān।
mūtraśukrapradoṣārśo-
gudabhramśādikān bahūn।। 28 ।।)

The causative factors for perturbation of apāna are: heavy food, suppression of urges or their forcible induction, travelling in vehicles and sedentary life style result in the disorders of urine and semen, haemorrhoids, rectal prolapse, disorders of the large bowel and many other diseases that are difficult to cure.

सर्वं च मारुतं सामं तन्द्रास्तैमित्यगौरवैः।
स्निग्धत्वारोचकालस्यशैत्यशोफाग्निहानिभिः।।२९।।
कटुरूक्षाभिलाषेण तद्विधोपशयेन च।
युक्तं विद्यान्निरामं तु तन्द्रादीनां विपर्ययात्।।३०।।
(Sarvam ca mārutam sāmam
tandrāstaimityagauravaiḥ।
snigdhatvārocakālasya-
śaityaśophāgnihānibhiḥ।। 29 ।।
Kaṭurūkṣābhilāṣeṇa
tadvidhopaśayena ca।
yuktam vidyānnirāmam tu
tandrādīnām viparyayāt।। 30 ।।)

Laziness, stuper, greasiness of the body, lethargy, cold, swelling, poor appetite, craving for pungent and dry articles are the symptoms found when vāta is associated with undigested (āmam) food materials. The patients experience a well being on consumption of these articles. All the vāta are associated with āmam, is a point to be kept in mind. The findings would be opposed to those of stuper, laziness, heaviness and similar traits, when vāta is not associated with āmam.

वायोरावरणं चातो बहुभेदं प्रवक्ष्यते।
(Vāyorāvaraṇam cāto
bahubhedam pravakṣyate।)
Now, let us discuss the different types of āvaraṇam (veiling by doṣas, all dhātus and malas).

लिङ्गं पित्तावृते दाहस्तृष्णा शूलं भ्रमस्तमः।।३१।।
कटुकोष्णाम्ळलवणैर्विदाहः शीतकामता।
(liṅgam pittāvṛte dāhastṛṣṇā
śūlam bhramastamaḥ।। 31 ।।
Kaṭukoṣṇāmḷalavaṇair-
vidāhaḥ ṣītakāmatā।)
When vitiated vāta is veiled with pittadoṣa the following symptoms are featured: burning sensation, thirst, pain, dizziness, transient blindness, heartburn produced by pungent, sour and salty foods and craving for cold food.

शैत्यगौरवशूलानि कट्वाद्युपशयोऽधिकम्।।३२।।
लङ्घनायासरूक्षोष्णकामता च कफावृते।
(śaityagauravaśūlāni
kaṭvādyupaśayoऽdhikam।। 32 ।।
Laṅghanāyāsarūkṣoṣṇa-
kāmatā ca kaphāvṛte।)
Cold, feeling of heaviness, pain, disire for hot, pungent, sour and salty food, liking for fasting (laṅghana), overexertion (āyāsa), dry and hot food articles are the clinical features of vitiated vāta veiled by kaphadoṣa.

रक्तावृते सदाहाऽर्तिस्त्वङ्मांसान्तरजा भृशम्।।३३।।
भवेच्च रागी श्वयथुर्जायन्ते मण्डलानि च।
(raktāvṛte sadāhāऽrti-
stvaṅmāmsāntarajā bhṛśam।। 33 ।।
Bhavecca rāgī śvayathur-
jāyante maṇḍalāni ca।)
The clinical features of perturbed vāta veiled by raktadhātu (blood) are: severe burning sensation and pain in the muscles and skin; rounded red patches and swellings in the skin.

मांसेन कठिनः शोफो विवर्णः पिटिकास्तथा।।३४।।
हर्षः पिपीलिकानां च सञ्चार इव जायते।
(māmsena kaṭhinaḥ śopho
vivarṇaḥ piṭikāstathā।। 34 ।।
Harṣaḥ pipīlikānām ca
sañcāra iva jāyate।)
Hard and discoloured swelling and carbuncles and formication (a sensation like insects crawling over the skin) are the clinical features when vāta is veiled by māmsadhātu (muscles).

चलः स्निग्धो मृदुः शीतः शोफो गात्रेष्वरोचकः।।३५।।
आढ्यवात इति ज्ञेयः स कृच्छ्रो मेदसाऽऽवृते।
(calaḥ snigdho mṛduḥ śītaḥ
śopho gātreṣvarocakaḥ।। 35 ।।
Āḍhyavāta iti jñeyaḥ
sa kṛcchro medasāvṛte।। 35।।)
Mobile, soft, slimy, cold swelling; loss of appetite are the clinical features when perturbed vāta veiled by medodhātu (adipose tissue). This condition is known as āḍhyavāta which is hard to cure.

स्पर्शमस्थ्यावृतेऽत्युष्णं पीडनं चाभिनन्दति।।३६।।
सूच्येव तुद्यतेऽत्यर्थमङ्गं सीदति शूल्यते।
(sparśamasthyāvṛteऽtyuṣṇam
pīḍanam cābhinandati।। 36।।
Sūcyeva tudyateऽtyartha-
maṅgam sīdati śūlyate।)
The clinical features of perturbed vāta veiled by asthidhātu (bone) are: the skin is hot and application of pressure is comforting to the patient. He experiences a pin prick feeling and severe piercing pain. Weakness and pain all over the body is also experienced.

मज्जावृते विनमनं जृम्भणं परिवेष्टनम्।।३७।।
शूलं च पीड्यमानेन पाणिभ्यां लभते सुखम्।
(majjāvṛte vinamanam
jṛmbhaṇam pariveṣṭanam।। 37।।
Śūlam ca pīḍyamānena
pāṇibhyām labhate sukham।)

Contracture, pandiculation, cramps and pain are experienced in the condition when vāta is veiled by majjadhātu (marrow). It is soothening for the patient when pressure is applied with the hands on the affected area.

शुक्रावृतेऽतिवेगो वा न वा निष्फलताऽपि वा।।३८।।
(śukrāvṛteऽtivego vā
na vā niṣphalatāऽpi vā।। 38।।)

If vitiated vāta is veiled by śukradhātu ejaculation is either projectile or absent and results in impotency.

भुक्ते कुक्षौ रुजा जीर्णे शाम्यत्यन्नावृतेऽनिले।
(Bhukte kukṣau rujā jīrṇe
śāmyatyannāvṛteऽnile।)

When food is veiled by the perturbed vāta, one experiences ache immediately after meals. But it is relieved on digestion.

मूत्राप्रवृत्तिराध्मानं वस्तेर्मूत्रावृते भवेत्।।३९।।
(mūtrapravṛttirādhmānam
vastermūtrāvṛte bhavet।। 39।।)

Urine retention with distension of bladder is featured in perturbed vāta veiled by urine.

विडावृते विबन्धोऽधः स्वस्थाने परिकृन्तति।
व्रजत्याशु जरां स्नेहो भुक्ते चानह्यते नरः।।४०।।
शकृत्पीडितमन्नेन दुःखं शुष्कं चिरात्सृजेत्।
(Viḍāvṛte vibandheऽdhaḥ
svasthāne parikṛntati।
vrajatyāśu jarām sneho
bhukte cānahyate naraḥ।। 40।।
Śkṛtpīḍitamannena
duḥkham śuṣkam cirātsṛjet।)

When feaces veiled the vitiated vāta one experiences pain below the waist and cutting pain in the stomach, the main seat of vāta. Fat is digested quickly and the person experiences flatulence after meals. Again hard stools are passed with difficulty.

सर्वधात्वावृते वायौ श्रोणिवङ्क्षणपृष्ठरुक् ।।४१।।
विलोमो मारुतोऽस्वस्थं हृदयं पीड्यतेऽति च।
(sarvadhātvāvṛte vāyau
śroṇivaṅkṣaṇapṛṣṭharuk।। 41।।
Vilomo mārutoऽsvastham
hṛdayam pīḍyateऽti ca।)

When vāta is veiled by all dhātus, the patient experiences pain in the pelvis, groins and back, general malaise and severe pain over the heart.

भ्रमो मूर्च्छा रुजो दाहः पित्तेन प्राण आवृते।।४२।।
विदग्धेऽन्ने च वमनम्.....
(bhramo mūrcchā rujo dāhaḥ
pittena prāṇa āvṛte।। 42।।
Vidagdheऽnne ca vamanam.....)

When prāṇavāta is veiled by pitta dizziness, fainting, pain and burning sensation are experienced. Vomiting during the digestion of food is also experienced.

..... उदानेऽपि भ्रमादयः।
दाहोऽन्तरूर्जाभ्रंशश्च.....
(..... udāneऽpi bhramādayaḥ।
dāhoऽntarūrjābhramśaśca.....)

In the case of udānavāta, dizziness, fainting, pain, burning sensation and both physical and mental weaness are experienced.

..... दाहो व्याने च सर्वगः।।४३।।
क्लमोऽङ्गचेष्टासङ्गश्च ससन्तापः सवेदनः।
(.....dāho vyāne ca sarvagaḥ।। 43।।
Kḷamoऽṅgaceṣṭāsaṅgaśca
sasantāpaḥ savedanaḥ।)

When vyānavāta is veiled by pittadoṣa, burning sensation is experienced both internally and externally, fatigued both mentally and physical. This also affects the functions of the organs.

समान ऊष्मोपहतिरतिस्वेदोऽरतिः सतृट्।।४४।।
दाहश्च स्यात्.....
(samāna ūṣmopahatiratisvedoऽratiḥ satṛṭ।। 44।।

Dāhaśca syāt.....)
When samānavāta is veiled by pittadoṣa results in falling of body temperature, profuse sweating and dijection with thirst and burning sensation.

..... अपाने तु मले हारिद्रवर्णता।
रजोतिवृत्तिस्तापश्च योनिमेहनपायुषु।।४५।।
(..... apāne tu male hāridravarṇatā।
rajotivṛttistāpaśca yonimehanapāyuṣu।। 45।।)
In the case of apānavāta, the patients experience yellow discolouration of faeces, menorrhagia and burning sensation in the vagina, penis and rectum.

श्लेष्मणा त्वावृते प्राणे सादस्तन्द्राऽरुचिर्वमिः।
ष्ठीवनं क्षवथूद्गारनिःश्वासोच्छ्वाससङ्ग्रहः।।४६।।
(Śl̥eṣmaṇā tvāvr̥te prāṇe
sādastandrā'rucirvamiḥ।
ṣṭhī̃vanam kṣavathūdgāra-
niḥśvāsocchvāsasaṅgrahaḥ।। 46।।)
Severe weakness, laziness, anorexia, vomiting, cough with expectoration, sneezing, belching, difficulty in breathing are the clinical features when prāṇavāta is veiled by kaphadoṣa.

उदाने गुरुगात्रत्वमरुचिर्वाक्स्वरग्रहः।
बलवर्णप्रणाशश्च .....
(Udāne gurugātratvamarucirvāksvaragrahaḥ।
balavarṇapraṇāśaśca.....)
A feeling of heaviness to the body, anorexia, difficulty in speech and voice, loss of strength and colour of the body are the symptoms when udānavāta is veiled by kaphadoṣa.

.....व्याने पर्वास्थिवाग्ग्रहः।।४७।।
गुरुताङ्गेषु सर्वेषु स्खलितं च गतौ भृशम्।
(.....vyāne parvāsthivāggrahaḥ।। 47।।
Gurutāṅgeṣu sarveṣu
skhalitam ca gatau bhr̥śam।)
When vyānavāta is veiled by kaphadoṣa the following clinical features are experienced: pain in the joints and bones, difficulty in speech, heaviness to the body parts and impaired gait.

समानेऽतिहिमाङ्गत्वमस्वेदो मन्दवह्निता।।४८।।
(samāne'tihimāṅgatva-
masvedo mandavahnitā।। 48।।)
Severe coldness to the body, absence of sweat and poor digestion are the features when samānavāta is veiled by kaphadoṣa.

अपाने सकफं मूत्रशकृतः स्यात्प्रवर्तनम्।
(Apāne sakapham mūtra-
śakr̥taḥ syātpravartanam।)
When apānavāta is veiled by kaphadoṣa, urine and feaces are mixed with kapha.

इति द्वाविंशतिविधं वायोरावरणं विदुः।।४९।।
(iti dvāvimśatividham
vāyorāvaraṇam viduḥ।। 49।।)
Thus the veiling for vāta occurs in twenty two different types.

प्राणादयस्तथाऽन्योन्यमावृण्वन्ति यथाक्रमम्।
सर्वेऽपि विंशतिविधं विद्यादावरणं च तत्।।५०।।
(Prāṇādayastathā'nyonya-
māvr̥ṇvanti yathākramam।
sarve'pi vimśatividham
vidyādāvaraṇam ca tat।। 50।।)
There are twenty different ways by which the divisions of vāta may interact with each other and create obstructions.

निःश्वासोच्छ्वाससंरोधः प्रतिश्यायः शिरोग्रहः।
हृद्रोगो मुखशोषश्च प्राणेनोदान आवृते।।५१।।
उदानेनावृते प्राणे वर्णौजोबलसङ्क्षयः।
(Niḥśvāsocchvāsasamrodhaḥ
pratiśyāyaḥ śirograhaḥ।
hr̥drogo mukhaśoṣaśca
prāṇenodāna āvr̥te।। 51।।
Udānenāvr̥te prāṇe
varṇaujobalasaṅkṣayaḥ।)
When udānavāta is veiled by prāṇavāta, difficulty in breathing, catarrh, stiffness to the head, cardiopathy and dryness to mouth are featured. When prāṇavāta is veiled by udānavāta there is a reduction in the skin colour, vitality and strength.

दिशाऽनया च विभजेत्सर्वमावरणं भिषक्।।५२।।

स्थानान्यवेक्ष्य वातानां वृद्धिं हानिं च कर्मणाम्।
(diśāऽnayā ca vibhajet-
sarvamāvaraṇam bhiṣak।। 52।।
Sthānānyavekṣya vātānām
vṛddhim hānim ca karmaṇām।)
The physician has to give his reasoning considering the clinical features and determine the nature of obstruction of vāta.

प्राणादीनां च पञ्चानां मिश्रमावरणं मिथः।।५३।।
पित्तादिभिर्द्वादशभिर्मिश्राणां मिश्रितैश्च तैः।
(prāṇādīnām ca pañcānām
miśramāvaraṇam mithaḥ।। 53।।
Pittādibhirdvādaśabhir-
miśrāṇām miśritaiśca taiḥ।)
The physician has to consider the veiling of the five divisions of vāta with pitta, kapha, rakta, etc. which are twelve in number, before treatment.

मिश्रैः पित्तादिभिस्तद्वन्मिश्रणाभिरनेकधा।।५४।।
तारतम्यविकल्पाच्च यात्यावृतिरसङ्ख्यताम्।
तां लक्षयेदवहितो यथास्वं लक्षणोदयात्।।५५।।
शनैःशनैश्चोपशयाद्बृढामपि मुहुर्मुहुः।
(miśraiḥ pittādibhistadvan-
miśraṇābhiranekadhā।। 54।।
Tāratamyavikalpācca
yātyāvṛtirasaṅkhyatām।
tām lakṣayedavahito
yathāsvam lakṣaṇodayāt।। 55।।
Śanaiḥśanaiścopaśayād-
rūḍhāmapi muhurmuhuḥ।)
Their permutations and combinations may result in countless varieties. A physician should learn to distinguish them by a careful observation of the clinical features, their perturbation and pacification symptoms and reasoning peroidically.

विशेषाज्जीवितं प्राण उदानो बलमुच्यते।।५६।।
स्यात्तयोः पीडनाद्धानिरायुषश्च बलस्य च।
(viśeṣājjīvitam prāṇa
udāno balamucyate।। 56।।
Syāttayoḥ pīḍanāddhāni-
rāyuṣaśca balasya ca।)
Prāṇa is the chief agent of life and udāna is the basis of strength. Their derangement is said to cause loss of strength and death.

आवृता वायवोऽज्ञाता ज्ञाता वा वत्सरं स्थिताः।।५७।।
प्रयत्नेनापि दुःसाध्या भवेयुर्वाऽनुपक्रमाः।
(āvṛtā vāyavoऽjñātā
jñātā vā vatsaram sthitāḥ।। 57।।
Prayatnenāpi duḥsādhyā
bhaveyurvāऽnupakramāḥ।)
The veiling of various divisions of vāta with knowledge or without knowledge lasts for more than one year is difficult to cure.

विद्रधिप्लीहहृद्रोगगुल्माग्निसदनादयः।।५८।।
भवन्त्युपद्रवास्तेषामावृतानामुपेक्षणात्।।५८½।।
(vidradhiplīhahṛdroga-
gulmāgnisadanādayaḥ।। 58।।
Bhavantyupadravāsteṣā-
māvṛtānāmupekṣaṇāt।। 58½ ।।)
Failure to treat these would lead to serious complications such as abscesses, spleenopathy, cardiopathy, abdominal lump and poor digestion.

इति श्रीवैद्यपतिसिंहगुप्तसूनुश्रीमद्वाग्भटविरचितायामष्टाङ्गहृदयसंहितायां तृतीये निदानस्थाने वातशोणितनिदानं नाम षोडशोऽध्यायः।।१५।।
(Iti śrīvaidyapatisimhaguptasūnu-
śrīmadvāgbhaṭaviracitāyāmaṣṭāṅgahṛdaya-
samhitāyām tritīye nidānasthāne vātaśoṇita-
nidānam nāma ṣoḍaśoऽdhyāyaḥ।। 16 ।।)
Thus ends the 16th chapter named Vātaśoṇita-nidānam of Aṣṭāṅgahṛdayam composed by Śrīmad Vāgbhaṭa, the son of Śrīvaidyapati Simhagupta.

Author
Ramanakutty C., Chief Medical Officer (Publications), Arya Vaidya Sala, Kottakkal, Kerala. E-mail: drcramankutty@gmail.com

OBSERVATIONAL STUDY

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Hemodynamic evaluation of abhyaṅga (oil massage) with sarvāṅgasveda (whole body fomentation) in Osteoarthritis cases

Devi Nair R., Rohit Kumar Ravte, Achintya Mitra and Jayram Hazra

ABSTRACT: Snehana helps in liquefaction of cellular morbidities and svedana helps in drawing liquefied cellular impurities to alimentary canal. Clinical evaluation of safety profiles of these pūrvakarma procedures (preparatory procedures) is not completely analysed yet. The present documentation attempts to study the hemodynamic effects of abhyaṅga and sarvāṅgasveda in osteoarthritis patients. Study was conducted in osteoarthritis patients of less than 5 years duration with sample size 25. Procedure of abhyaṅga was done for 45 minutes with Balāśvagandhādi tailam and sarvāṅgasveda was given for 15 minutes duration in a sitting type steam chamber. Blood pressure and pulse rate was assessed just after the procedure and 2 hrs after the procedure. Blood pressure showed a transient significant increase and pulse rate showed transient significant decrease just after the procedure when compared with their before therapy values. The changes in both blood pressure and pulse rate was found to be transient and returned to normal without any medical intervention.

Key words: Hemodynamic effect, Abhyaṅga, Sarvāṅgasveda

Introduction

Pañcakarma therapy forms the back bone of samśodhana (purification and detoxification) in āyurveda. It is regarded as the strongest transcellular bio-purification and detoxification mechanism. By innumerable causes, the cellular channels will be lodged with impurities leading to obstruction in the free movement of nutrients and waste products inside and outside cell called as 'āvaraṇa'. To make these cellular impurities out of the body, the first step needed to perform is nothing other than dissolving these cellular impurities. This is achieved by snehana and svedana. Snehana[1] help in liquefaction of the cellular morbidities and svedana[1a] helps in drawing liquefied cellular impurities to alimentary canal.

Clinical evaluation of safety profiles of these pūrvakarma (preparatory procedures) is not completely analysed yet. The contraindications of these procedures can be formulated only if changes happening inside the body during the procedure is studied. Many a time, pañcakarma treatment is received by aged people, who have many co-morbidities like cardiac dysfunction, hypertension, etc. The documentation of hemodynamic parameters on pañcakarma procedures is limited. The present documentation attempts to study the hemodynamic effects of abhyaṅga and sarvāṅgasveda in osteoarthritis patients.

Materials and methods

Abhyaṅga was done with Balāśvagandhādi tailam,[2] procured from GMP certified manufacturer, Arya Vaidya Sala, Kottakkal, Kerala. It was followed by ūṣmasveda (sudation) inside a steam chamber.

Selection of patients: Patients suffering from osteoarthritis of less than 5 year duration were selected from the Out Patient Department of National Research Institute of Ayurvedic Drug Development (NRIADD), Kolkata within the age group 45-65 years irrespective of sex, religion and occupation.

Level of study : IPD level only
Type of study : Open observational study

Sample size : 25 cases
Group : Single

Inclusion criteria

Patients of osteoarthritis of less than 5 year duration between 45-65 years of age irrespective of sex, religion and occupation have been selected from Out Patients Department, and were admitted at In-Patients Department of NRIADD, Kolkata.

Exclusion criteria

1. Uncontrolled diabetes mellitus, hypertension, cardiac illness.

2. Skin disorders especially with vātapitta predominance.

3. Patients with wounds, swelling, burns, intermittent fever.

4. Any other treatment which influence study outcome.

5. Pregnant and lactating women.

Procedure: Patients were educated about the procedure and informed consent was made. They were instructed to avoid food for 2 hours before the procedure. Blood pressure was checked along with pulse rate and PO_2 level. Balāśvagandhādi tailam was made warm up to 40^0 C and abhyaṅga was done in seven postures in the order, sitting, supine, left lateral, supine, right lateral, supine and sitting. In each posture procedure was done up to 6-7 minutes duration. Linear massage was done along the body creases and circular massage was done in joints, abdomen and marma points. Milking movement was given along the toes and fingers. After the completion of 45 minutes of abhyaṅga procedure, patient was asked to sit inside a steam chamber (sitting type) comfortably for a period of 15 minutes, till properly fomented. After completion of procedure, oil along with sweat was wiped off from patient's body. Blood pressure along with pulse rate was again measured. Patient was advised to take rest in bed for one hour duration covered with blanket. After 2 hours of procedure, pulse rate and BP was again checked and recorded in the case sheet.

The same procedure was repeated for 7 consecutive days.

Results

Assessment of systolic BP: Systolic blood pressure showed increase from 128.20 mmHg to 138.27 mmHg immediately after procedure which was statistically significant. (Table 1) The mean Systolic BP was decreased to 126.39 mmHg, which was also statistically significant 2hrs after procedure. (Table 2)

Assessment of diastolic BP: Diastolic blood pressure showed a significant increase from 87.63 mmHg to 97.36 mmHg immediately after procedure. (Table 1). The mean diastolic BP was decreased to 89.03 mmHg which was also statistically significant 2hrs after procedure. (Table 2)

Assessment of Pulse rate: Pulse rate showed decrease from 73.12/minute to 67.29/minute immediately after procedure which was statistically significant (Table 1). The mean pulse rate was increased to 73.28/minute which was not statistically significant 2 hrs after procedure. (Table 2)

Table 1
Hemodynamic changes after therapy

Sl. No.	Parameter	Before Therapy (BT)	Immediately After Therapy (AT1)	p-value
1.	Systolic BP	128.2 ± 1.26	138.27 ± 1.78	$p < 0.01$
2.	Diastolic BP	87.63 ± 1.27	97.37 ± 1.98	$p< 0.01$
3.	Pulse Rate	73.12 ±1.48	67.30 ± 1.67	$p<0.01$

Table 2
Hemodynamic changes 2 hours after therapy

Sl. No.	Parameter	Before Therapy(BT)	Two hours after Therapy (AT2)	p-value
1.	Systolic BP	128.2 ± 1.26	126.39 ± 1.65	$p < 0.01$
2.	Diastolic BP	87.63 ± 1.27	89.02 ± 1.77	$p< 0.01$
3.	Pulse Rate	73.12 ± 1.48	73.28 ± 1.24	$p> 0.01$

Discussion

Hemodynamics deal with the forces that heart has to develop to circulate blood through cardiovascular system.[3] Majority of cardiac disorders are related to systemic hemodynamic dysfunction which deals with blood flow and blood pressure. Hypertension and congestive cardiac failure are dreaded disorders of systemic hemodynamic dysfunction.

Abhyaṅga with sarvāṅgasveda is a commonly practicing procedure in pañcakarma IPDs. In the present study, blood pressure has shown a transient increase immediately after the procedure and a decreasing tend by 2 hours. Both systolic and diastolic BP completely returned back to normal state by 24 hours without any medical intervention.

Abhyaṅga which is done by simultaneous synchronous movements in either sides is believed to raise mechanical hydrostatic pressure in extracellular compartment leading to splanchnic pooling of blood and dilution of accumulated toxins. It is also believed to cause increase in tryptophan level and thereby increase in serotonin level in motor end plates. There also exists piezoelectric theory related to oil massage which states the creation of magnetic and electric fields and increased conductivity along the nerve fibers of about 100 meters/sec.[4] These all ultimately leads to the transient increase in blood pressure immediately after the procedure.

The increase in body temperature is believed to be increasing cutaneous vascular conductance and systemic conductance. This will lead to a decrease in SVR (Systemic Vascular Resistance) and maintains barometric homeostasis. There will be a corresponding decrease in conductance in non-cutaneous beds.[5] This may result in an increase of vascular resistance and exerts pressure in the vessel walls. This will lead to an increase in blood pressure.

There is a positive correlation between heart rate and peripheral blood pressure, whereas there is an inverse relation between heart rate and central blood pressure.[6] The pulse rate immediately after the procedure is found to be significantly decreased.

Conclusion

In this study blood pressure and pulse rate was evaluated after abhyaṅga and sarvāṅgasveda in which blood pressure showed a transient significant increase and pulse rate showed a transient significant decrease. Both the parameters came back to normal without any medical intervention within 24 hours.

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References

1. Acarya Agnivesa, *Carakasamhita*, revised by Caraka and Drdhabala, with commentary of Cakrapanidatta, Edited by Jadavji Trikamji Acharya, 2nd Edtn., Siddhisthanam 1/7 , Choukhamba Sanskrit Series Office, Varanasi, 2005.

1a. Ibid. Siddhisthanam 1/9

2. Krishnan K. V. and Gopalapillai A. S., *Sahasrayogam*, Vidyarambham Press, Alappuzha, 1985.

3. Sakka S. G., *Hemodynamic Monitoring in the Critically Ill Patient - Current Status and Perspective,* Epub;2:44, Frontiers in Medicine, Lausanne, 2015.

4. Vd.Vasanth Patil C., *Principles and Practices of Panchakarma*, 1st Edtn., Choukhambha Orientalia, Varanasi, 2005.

5. Sanjeev Rastogi and Francesco Chiappelli, *Hemodynamic effects of Sarvanga Swedana (Ayurvedic passive heat therapy): A pilot observational study*, AYU, An International Quarterly journal of Research in Ayurveda, Apr-Jun;34(2): 154-159, Wolters Kluwer-Medknow Publications, Mumbai, 2013.

6. Diego Giulliano Destro Christofaro, Juliano Casonatto, Luiz Carlos Marques Vanderlei, Gabriel Grizzo Cucato and Raphael Mendes Ritti Dias, *Relationship between Resting Heart Rate, Blood Pressure and Pulse Pressure in Adolescents*, Arquivos Brasileiros Cardiologia, 2017, May; 108(5): 405-410.

Authors

Devi Nair R., Research Officer (Ay), National Research Institute of Ayurvedic Drug Development, CCRAS, Ministry of AYUSH, 4 CN Block, Sector V, Bidhannagar, Kolkata- 700091, India. E-mail: drdevinair87@gmail.com

Rohit Kumar Ravte, Research Officer (Ay), National Research Institute of Ayurvedic Drug Development, CCRAS, Ministry of AYUSH, 4 CN Block, Sector V, Bidhannagar, Kolkata- 700091, India.

Achintya Mitra, Research Officer (Ay), National Research Institute of Ayurvedic Drug Development, CCRAS, Ministry of AYUSH, 4 CN Block, Sector V, Bidhannagar, Kolkata- 700091, India.

Jayram Hazra, Director, National Research Institute of Ayurvedic Drug Development, CCRAS, Ministry of AYUSH, 4 CN Block, Sector V, Bidhannagar, Kolkata- 700091, India.

ANALYTICAL STUDY

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Ambergris: floating gold of whales

Prakash Deshpande R. and Laxmikant Dwivedi K.

ABSTRACT: Ambergris (amber or anber) is produced by the sperm blue whale as an intestinal secretion product, frequently correlated to the sperm whale's diet; squids and cuttlefish. Ambergris has been explained in 12th century as Rasouṣadhi under Sādhāraṇarasavargas. According to Rasaratnasamuccaya, it is jarāyu (Garbhakośa- covering of garbha) of agninakra (a sea animal) which is dried due to sun rays, taken to the sea shore and is known as agnijāra. Its colour is blackish white just like an ash having black spots over its surface. First and foremost reference of agnijāra can be traced in Rasārṇava. It is having kaṭurasa, uṣṇavīrya and is pittakara, vātakaphahara, useful in raktaja vyādhi, colicky pain, abdominal disorders, etc. Because of the significance of ambrein, for the fragrance and flavor, ambergris is considered as one of the most valuable animal perfumes besides civet, musk and castoroleum. It was said to be capable to dispel evil spirits and ghosts and to lengthen human life.

Key words: Ambergris, Sādhāraṇarasa, Agnijāra, Sperm blue whale

Introduction

One could not have estimated the craziness that ambergris, a sea product had created in the world of fragrance. Ambergris gets its name from the French 'ambre gris' (gray amber) to distinguish it from the fossilized resin, brown amber. Ambergris is the internal secretion of sperm blue whale (*Physeter catodon*/*Physeter macrocephalus*).[1,2] It is either obtained directly from the intestine of the whale or is found washed ashore in small fragments ranging in weight from several hundred grams to several kilograms as compact masses. It is not only rare but extremely valuable.

History: On the earth, sea is one of the major conventional divisions of the world. It is very enchanting to know mysterious things that sea imbibes in its womb. Marine eco system is rich with precious and costliest living and non living things. Sea is an essential aspect of human food, trade, travel, mineral extraction and power generation. In the tales of '*One Thousand and One Nights*' also known as '*The Arabian Nights*', Sindbad the Sailor ship wrecks on an island. He discovers a spring of ambergris, a badly smelling semisolid that flows like wax into the sea.

Many of us may not be knowing about ambergris, gold of whales, that made people crazy because of the quick richness it may bring. Since olden days, it had attracted attention by fragrance and flavor industry by its long lasting eternal fragrance. This was not a new thing to Indians as in 12th century itself. It was explained as Rasauṣadhi under Sādhāraṇa-rasavarga. In Asia, besides being used as a drug, it was employed as a spice for food and wines. Generally, it was obtained from the sea shores of India, Sri Lanka, Lakshadweep, Nikobar and Africa.

In Arabian society,[3] this material was named 'anbar' and from this word the European name ambergris was derived. Arabs believed that raw ambergris emanated from springs near the sea. They used ambergris to treat heart and brain diseases, headaches, rheumatism, constipation, common colds, and as aphrodisiac.

Greeks influenced by early Arabian society, also believed that ambergris came from springs in or near the sea. They expressed an early burgundy lifestyle believing that it enhanced the effects of alcohol when smelled before drinking wine or when it was added to wine. In Yemen and other Arabic countries,

ambergris has been used in folk medicine for gaining weight, to increase appetite and as an aphrodisiac. The Orientals used it for gracious living. They added it to fine tobacco, liquors and coffee.

In Chinese culture, ambergris was referred to as the dragon's spittle perfume. It was thought to be the drooling of dragons while they were sleeping on the cliffs at of the seaside. In the Orientals, it is still used as an aphrodisiac and as a spice for food and wine.

In Japanese society,[4] ambergris is named '*kunsurano fuu*', literally translated 'whale droppings'. These explanations are largely folkloric although the Japanese were not too far off. It has been used by ancient Egyptians for scenting cigarettes and in the eastern discipline of medicine, ambergris containing compounds and pastes were thought to be excellent curative for some nervous disorders, as well as replenish and aphrodisiac. (Figure 1)

Figure 1
Ambergris

Names in different languages[5]

Sanskrit: Amber and Sugandah.

English: Ambergris.

Hindi and Arab: Amber and Anber.

Kannada, Marathi and Konkan: Amber.

Persian: Mushk - amper and Shahabula.

Gujarati: Ambara.

Tamil: Minumber.

Sindhi: MusSumbra.

Burma: Payen - anbhat.

Synonyms:[6] Agnija, Agnijāra, Agnigarbha, Agniniryāsa, Agnijvāla, Arṇavodbhava, Samudrajarāyu, Vadavāgnimāla, Sindhūphala, Sindhūpḷava, Vahnijāra, Vahnijarāyu.

Description: Ambergris (amber or anber) is produced by the sperm blue whale as an intestinal secretion product, frequently correlated to the sperm whale's diet: squids and cuttlefish. The beaks of these are very sharp and may cause small wounds in the gastro-intestinal tract of the sperm whale. As a reaction to these small wounds, ambrein is produced, a conversion product of cholesterol. This is not at all surprising as cholesterol plays a major role in wound healing in animals. The concentration of cholesterol in the affected area is statistically significantly higher compared to the non-affected area and that may also be the case in the intestine of the sperm whale. The mechanism behind this process is still a mystery, but it becomes more and more evident that cholesterol is not such a bad guy at all.

The mass of ambergris that whale sperm expels is usually dark, almost black, has the consistency of the pitch, but it is not sticky. The odour is initially foul but water, sun, air and time change this floating substance into less offensive and more fragrant. It hardens instead of dissolving and decaying. In the tossing sea, it breaks into pieces as small as one half ounce or as large as 100 pounds or more. The colour gradually lightens to pale golden sometimes chalky white often variegated like marble.

It is either obtained directly from the intestine of the whale or is found washed ashore in small fragments ranging in weight from several hundred grams to several kilograms as compact masses. As a result of the action of sunlight and oxygen for long periods of time, ambergris undergoes an aging process during which the strong stercoraccous odour disappears. The

finest and most valuable ambergris is pale gray to golden yellow or, in very rare cases, chalky white.[4]

According to Rasaśāstra

According to Rasaratnasamuccaya, it is the jarāyu (Garbhakośa- covering of garbha) of agninakra[7] (a sea animal) which is dried due to sunrays and taken to the sea shore is known as agnijāra.

Its colour is blackish white just like an ash having black spots over its surface. It is opaque and in mass form which is very light in weight and insoluble in water. It has very pungent and stimulant smell. It resembles musk in properties. It burns in fire and no residue is left as everything volatilizes. (Figure 2)

Figure 2
Ambergris mentioned in Rasaratnasamuccayam

First and foremost reference of agnijāra can be traced in Rasārṇava where it has been explained in the context of Abhrakadrāvaṇa[8] (to liquefy abhraka). Rasopaniṣatkāra[9] explains that it is like jarāyu of the animals dwelling in lavaṇasāgar and agnivatsāgar having the shape of piṇḍa. Agnijāra is of 5 types *viz.* pārāvata, hamsa, cakravat, agnika and śukavat. This is used to make mercury attain alchemical powers. In the same text, it is mentioned that agnijāra is parāpara śakti. Agnijāra, having lohitavarṇa is considered as śreṣṭha.

Rasaratnasamuccayakāra opines that the placenta of marine living being called agninakra, floats on sea and in due course of time it becomes a mass of agnijāra. Since it is available from sea waters, thoroughly washed by alkalinity of it, there is no necessity to go for śodhanakarma.[7] It is tridoṣahara, used in treatment of Dhanurvāta (tetanus) and for pāradajāraṇa to increase the potency of pārada.

It is kaṭurasātmaka, uṣṇavīrya, pittakara, vātakapha-hara, useful in raktajavyādhi, colicky pain, abdominal disorders.[10] Prof. Siddhinandan Mishra opines the dosage of agnijāra as ¼ to ½ ratti. (1 ratti = 125 mg)

Ambergris is a morbid excreation contained in the intestines of sperm whale.[5] It is in the form of a concrete mass found floating on the Red sea or coast on the shores of Africa. A single whale's excretion has been found to weigh 750 lbs. It is opaque, seldom white, often darkish brown, ashy coloured or grey or of a pink colour. (Figure 3)

Figure 3
Ambergris

The odour is peculiarly fragrant, resembling that of musk; it is nearly tasteless. It melts in hot water, but not in cold; soluble in ether, fats, volatile oils and hot alcohol. It contains ambrein 85%, a little of balsamic extractive and ash. It is stimulant, antiseptic and antispasmodic; used in general weakness, epilepsy, spasms and nervous debility; also given in high fevers

with insensibility or delirium and in the collapse stage of cholera, plague and other infectious diseases. Dose is 5 to 15 grains; used as a confection. Used for mixing with perfumes.

Chemical composition: The first chemical investigation of the constituents of ambergris was carried out in Paris in 1820 by Pelletier and Caventon, who found that its major component is tricyclic triterpene and that the odour of ambergris is due to the presence of oxidation products of ambrein. Ambergris is composed[2] principally of non-volatile material: 30-40% of epicoprosterol and 25-45% of ambrein- a tricyclic triterpene alcohol. Many other constituents have been isolated from ambergris, including ambrein derivatives, coprostanone, chlolestanone, cholesterol, epicholestanol porphyrine, copper and fatty acids.[11]

It is commercially available from certain companies e.g. Cadima Pathē (France); Bernard Perrin Courtage (France); Ambergris.co.nz (New Zealand). The larger piece of commercially acceptable ambergris ever brought into the New York City market arrived during 1956. It weighed 151 pounds 8 ounces and was valued at about 20,000 Dollars. Because of the significance of ambrein for the fragrance and flavor industry, ambergris is considered as one of the most valuable animal perfumes besides civet, musk and castoroleum. The demand for ambergris has been high. Whaling is now fortunately banned and there is a strict prohibition on the trading of ambergris.

Identification: A simple method[12] is to heat a wire or a needle for 15 seconds in flame and press it into the sample to a depth of one-eighth inch. If it is genuine ambergris, a dark brown to black, opaque, resinous liquid will form around the wire and appear to boil. Withdraw the wire and immediately touch it with your finger. Warm ambergris will leave tacky, pitch-like strains adhering to the skin. When cold, these strings are shiny and resemble dark brown or black enamel.

Uses: Ambergris was used long ago for many fantastic purposes. An outstanding use was as a medicine. On account of its some excellent medicinal properties, it has been prized not only for its use in perfumery, but also for its alleged restorative and aphrodisiac properties. It was thought to be a remedy for hydrophobia, epilepsy, typhoid fever, asthma, plague, smallpox and various nervous diseases.[12]

Acharya Yadavaji Trikamaji in his text, Siddhayoga-saṅgraha, Hṛdaya Rogādhikāra has explained the use of agnijāra in Cintāmaṇī rasa, Jaharmohara, Khamir e Gaujuban and Yakuti. Pt. Hari Prapanna Sharma in Rasayogasāgara-II explains, Vadavanal rasa containing agnijāra.

Recent studies on ambergris revealed that it increases serum testosterone levels in male subjects, increases sexual behavior in male rats and increases their number of penile erections in the absence of females. Ambergris also used as an appetizer, to increase body weight in both male and female.[13] It is used to increase appetite, sexual ability and body weight. Increase in these subjects may be due to the effects of elevated anabolic hormones including insulin, testosterone and estradiol.

It was said to be able also to dispel evil spirits and ghosts and to lengthen human life. Ambergris has remarkable and unique property of being able to massively reinforce odorous products to last much longer than they would do otherwise. It is claimed that a single drop of tincture of ambergris applied to a piece of paper and placed in a book will still remain fragrant after many years and once touched again, the fingers will smell after ambrein even after several days and several washings. Hence it is extensively used in leather and perfume industries.

In Homeopathy System of Medicine, *Ambra grisea*, is considered as a substance which is formed in the intestines of the sperm whale.[14] Probably a nosode or morbid product found in belly of sperm-whale. Being under the influence of sunlight, air and sea water, it

becomes a solid, changes its colour from black to ash gray and changes its smell, it becomes soft and pleasant. Most of it is picked up in the Eastern seas. In Homeopathy, the substance has been introduced by Dr. Hahnemann in 1827, after which for a long time were studied by F. Gersdorff. It has a pronounced effect on the nervous system, causing increased susceptibility to physical and mental planes. Effectively suppresses fatigue, cough, itching, dizziness, a feeling of depression and numbness. The alcoholic tincture is the best preparation. The so-called oil of amber is *oleum succinum* and was used by Holcombe in hiccough.

Some yogas containing ambergris:

Bṛhat Vātacintāmaṇī Rasa, Cintāmaṇī Rasa,[15] Jaharmohara vaṭi,[15] Khamir e Gaujuban,[15] Yakuti,[15] Baḍavānala Rasa,[16] Ratneśvara Rasa,[6] Dhātrīrasāyana.[6]

Discussion and Summary

Ambergris is produced by the sperm blue whale as an intestinal secretion product. The mass of ambergris that whale sperm expels is usually dark, almost black, has the consistency of the pitch, but is not sticky. The odour is initially foul but water, sun, air and time change this floating substance into less offensive and more fragrant. According to Rasaratnasamuccaya, it is jarāyu (Garbhakośa- covering of garbha) of agninakra (a sea animal) which is dried due to sun rays and taken to the sea shore is known as agnijāra.

Ambergris is composed principally of non-volatile material: 30-40% of epicoprosterol and 25-45% of ambrein-a tricyclic triterpene alcohol. Many other constituents have been isolated from ambergris, including ambrein derivatives, coprostanone, chlolestanone, cholesterol, epicholestanol porphyrine, copper and fatty acids.

Ambergris is considered as one of the most valuable animal perfumes besides civet, musk and castoroleum. The demand for ambergris has been high. It is used to increase appetite, sexual ability and body weight. Increase in these subjects may be due to the effects of elevated anabolic hormones including; insulin, testosterone and estradiol.

In Homeopathy System of Medicine, *Amber grisea* has been introduced by Dr. Hahnemann in 1827. It has a pronounced effect on the nervous system, causing increased susceptibility to physical and mental planes. Effectively suppresses fatigue, cough, itching, dizziness, a feeling of depression, numbness. The alcoholic tincture is the best preparation.

Conclusion

Ambergris, gold of whales that made people crazy because of the quick richness it may bring. Since olden days, it had attracted attention by fragrance and flavor industry by its long lasting eternal fragrance. In 12th century itself, it was explained as rasauṣadhi under Sādhāraṇa rasavargas. Cintāmaṇī rasa, Jaharmohara vaṭi, Khamir e Gaujuban and Yakuti are some of yogas available in market containing agnijāra. Because of its high price and limited indications, it is not commonly practiced in āyurveda. In Homeopathy Medicine, the alcoholic tincture of *Ambra grisea* is abundantly practiced.

References

1. Dannenfeldt Karl H., *Ambergris: The Search for its Origin*, Isis 73, No. 268(1982): 382-97., doi:10.1086/353040. JSTOR 231442. PMID 6757176

2. Sadek Taha A., *Chemical investigation of the internal secretion of the sperm blue whale*, Pakisthan Journal of Pharmaceutical Sciences,Vol.2 , No. 3, University of Karachi, Karachi, 1989.

3. Elzbieta and Hans Brand, *Ambergris: Gold of Whales*, Elzbieta cosmetics BV, The Netherlands. (www.elzbietacosmetics.com as seen on 12-12-2017).

4. Ohloff G., *The Fragrance of Ambergris in Fragrance Chemistry*, Editor Dr. Ernst Theimer T., P 535-73, Academic Press, New York, 1980.

5. Dr. Nadakarni K. M., *The Indian Materia Medica*, Vol. II,

Reprint Edtn., P 138-139, Bombay Popular Prakashan Pvt. Ltd., Mumbai, 1998.

6. Prof. Siddhinandan Mishra, *Ayurvedeeya Rasashastra*, Revised and Enlarged Edtn., P 401-403, Chaukhambha Orientalia, Varanasi, 2006.

7. Acharya Vagbhata, *Rasaratnasamuccayam*, Vijnana Bodhini Hindi Teeka by Prof. Kulkarni D. A., Reprint Edtn., 3/135, P 67, Meharach and Lachamanadas Publications, New Delhi, 1998.

8. Indradev Tripathi, *Rasarnavam nama Rasatantram*, Rasa Chandrika commentary, 2nd Edtn., Shloka no. 6/19, P 66, Chaukhambha Sanskrit Series Office, Varanasi, 1978.

9. *Rasopanishat*, English commentary by Prof. Gyanendra Pandey, First Edtn., P 296-300, Chaukhambha Krishnadas Academy, Varanasi, 2001.

10. Shree Bhairava, *Anandakanda*, Siddhiprada Hindi vyakhya by Prof. Siddhinandan Mishra, First Edtn., Kriyakarana vishranti, Shloka No. 1/240, P 671, Chaukhambha Orientalia, Varanasi, 2008.

11. Governo T. F., Rocco T. and Manfred J. P., Journal of AOAC International, 60 Supplement-3: 160, USA, 1977.

12. Lola Dees T., *Ambergris*, Fishery leaflet 517, Fish and Wild life services, Washington 25, May 1961.

13. Mohamed-I Kotb-el-Sayed and Zakaria-Y Al-Shoaibi, *Effects of Ambergris on Appetite and serum endocrine hormonal levels in skinny sufferers*, Asian Journal of Pharmaceutical and Clinical Research, Vol 5, Suppl. 3, Innovare Academic Sciences Pvt. Ltd., Bhopal, 2012.

14. <www.homeo4happylife.com> as seen on 12-12-2017.

15. Acharya Yadavaji Trikamaji; *Siddha Yoga Samgraha*, 11th Edtn., P 88-91, Shri Baidyanath Ayurved Bhavan Ltd. Kolkatta, 2003.

16. Vaidya Pandit Hari Prapanna Sharma; *Rasayoga Sagar-II*, with Sanskrit and English notes, Reprint Edtn., P 340-341, Chaukhambha Krishnadas Academy, Varanasi, 1998.

Authors

Prakash Deshpande R., Reader, Department of Rasashastra and Bhaishajyakalpana, BVVS Ayurved Medical College & Hospital, Bagalkot-587101. Karnataka State. E-mail: drprakashdeshpande76@gmail.com

Laxmikant Dwivedi K., Former Professor and Head, Department of Rasashastra and Bhaishajyakalpana, National Institute of Ayurved, Jaipur, Rajasthan.

BOTANICAL STUDY

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Authentication parameters of *Habenaria longicorniculata* J. Graham; medicinal orchid used in āyurveda

Satish B. N., Mallya Suma V. and Prabhu Suchitra

ABSTRACT: *Habenaria longicorniculata* J. Graham from family Orchidaceae, are tuberous herbs, endemic to peninsular India. The underground tubers are widely used by traditional physicians in the treatment of malignancy as a rejuvenator and these also found to be admixed with Aṣṭavarga dravyas in āyurveda. Flowered plants of *H. longicorniculata* were collected along with their tubers from Kodachadri, Kollur, Udupi District, Karnataka and authenticated. Macro-microscopic features, physico-chemical standards, HPTLC and secondary metabolites were recorded as per standard references. Tubers were 15-33 mm long and 10-25 mm thick, oval, with shrunken surface, covered with numerous white hairs. TS of mature tuber revealed distinct epidermis, exodermis and cortical parenchyma. Physicochemical values recorded as; total ash 5.44%w/w, acid insoluble ash 2.73%w/w, water soluble ash 2.19%w/w, alcohol soluble extractive value is 5.85%w/w and water soluble extractive values 29.57%w/w. Chemically tubers exhibited the presence of alkaloids, steroids, carbohydrates, tannin and saponins as secondary metabolites. HPTLC fingerprints were a record of its chemical constituents.

Key words: *Habenaria longicorniculata* J. Graham, Aṣṭavarga dravyas, Macro-microscopic, HPTLC

Introduction

Orchids are most aesthetic, medicinally important group of flowering plants distributed throughout the world from tropics to high alpine. Scientists have traced orchids, their chemical constituents, medicinal usage as long back as 120 million years ago.[1] Traditional Chinese medicine makes reference of various medicinal orchids. Pseudo bulbs or tubers of orchids form an ingredient among Aṣṭavarga dravyas, Cyavanaprāśāvaleha in Indian system of medicine.[2] Because of urbanisation and habitat loss many orchids are endangered today.[3]

Habenaria longicorniculata from family Orchidaceae are tuberous herbs, endemic to peninsular India, which is found commonly at foot hills and slopes amongst grasses.[4] The underground tubers are widely used by traditional physicians in the treatment of malignancy as a rejuvenator. These are also said to be found adulterated for ṛddhi, one among the Aṣṭavarga dravya used as a rejuvenator.[5] Around eight species of *Habenaria* are reported from India among which *H. longicorniculata* is one of them.[6] It is a terrestrial erect herb having 1-2 tubers and white flowers. Tubers of which are used in wasting disease, fever, disorders of blood, haemorrhage and specifically used as a overall rejuvenator.[7]

Materials and methods

Flowered plants of *H. longicorniculata* were collected along with their tubers from Kodachadri, Kollur, Udupi District, Karnataka, cleaned properly, authenticated using floras, and sample deposited at SDM Centre for Research in Ayurveda and Allied Sciences, Udupi (Vouncher No:859/17082201). Tubers separated from plants, washed properly in tap water and shade dried. After complete air drying this was powdered and preserved for further study. Whole plant samples like, leaf, flower, stem were preserved in FAA solution for microscopic study.[8]

Methodology

Macroscopy: The external features of the test samples were documented using Canon IXUS digital camera.

The macroscopic features of whole plant and tubers were compared to local flora for authentication.[9]

Microscopy: Sample was preserved in fixative solution. The fixative used was FAA (Formalin-5 ml + Acetic acid-5 ml + 70% Ethyl alcohol-90 ml). The materials were left in FAA for more than 48 hours. The preserved specimens were cut into thin transverse section using a sharp blade and the sections were stained with saffranine. The slides were also stained with iodine in potassium iodide for detection of starch. Transverse sections were photographed using Zeiss AXIO trinocular microscope attached with Zeiss AxioCam camera under bright field light. Magnifications of the figures are indicated by the Scale-bars.[10]

Physicochemical standards: The percentage of foreign matter, loss on drying, total ash and acid insoluble ash were determined according to the method described in Indian Pharmacopea and the WHO guidelines on quality control methods for medicinal plants materials.[11]

Preliminary phytochemical screening: Preliminary phytochemical screening of the bark powder was performed using alcoholic extract to detect the presence of secondary metabolites.[12]

HPTLC: 1g of *Habenaria longicorniculata* tuber powder was extracted with 10 ml of alcohol. 4, 8 and 12µl of the above extract was applied on a pre-coated silica gel F 254 on aluminum plates to a band width of 7 mm using Linomat 5 TLC applicator. The plate was developed in Toluene: Ethyl acetate (1.0: 1.0). The developed plates were visualized in UV 254, 366, and then derivatised with vanillin sulphuric acid and scanned under UV 254nm, 366nm and 620nm. R_f, colour of the spots and densitometric scan were recorded.[13]

Results

Macroscopic characters: The fresh tubers were 15-35 mm long and 10-25 mm thick, oval, obovate or oblong in shape, yellowish brown in colour, sometimes with shrunken surface, covered with numerous fine white hairs; internally they were white to creamish in colour and mucilaginous to touch. The dried tubers were hard, difficult to break, rough with fine reticulate surface and creamish brown to light brown in colour; the broken surface is uneven exhibiting creamy internally. Both fresh and dry samples show scars of the aerial portion at the apex and beaked or sometimes round base. The tubers were odourless and taste was palatable and mucilaginous. (Figure 1a-d)

Figure 1
Macroscopy of entire plant of *H. longicorniculata* J. Graham

1a: Fresh plant when collected

1b: Tuber

1c: Entire plant

1d: Tuber

Microscopy: Tubers: The T.S. of tubers (Figure 2a-f) shows a single layered epidermis, some of the cells of which elongate and form unicellular hairs. The hairs are either straight with tapering to blunt ends, or broad, conical at the base and abruptly tapering to tail like ends or tortuous showing helical bending (Figure 2a-b). The epidermis is followed by 8-12 layers of parenchymatous cortex. Some of the outer cortical cells of varying size exhibit presence of starch grains. The T.S. of a mature tuber, about 22 mm thick (Fig. 3e) shows 2-3 layered epidermis bound proximally by a distinct exodermis. A number of outer epidermal cells elongate to form unicellular hairs similar to as described earlier. The exodermis is followed by 15-20 layers of cortical parenchyma. A few parenchymatous cells of outer cortex contain starch grains, mostly of simple type, consisting of both small and large grains are found distributed in abundance throughout the parenchyma as well as in the epithelial cells of mucilage canals.

Leaf: TS of leaf at midrib region had shown the presence of distinct upper and lower epidermis. Layer of palisade parenchymatous cells found beneath upper epidermis, followed by 2-3 layers of spongy parenchymatous cells, found embedded with vascular bundles. Layer of chollenchymatous cells found above lower epidermis. (Figure 3)

Flower: TS of stalk shows the presence of outer epidermal layer packed inside with loosely arranged parenchymatous cells along with vascular bundles. (Figure 4)

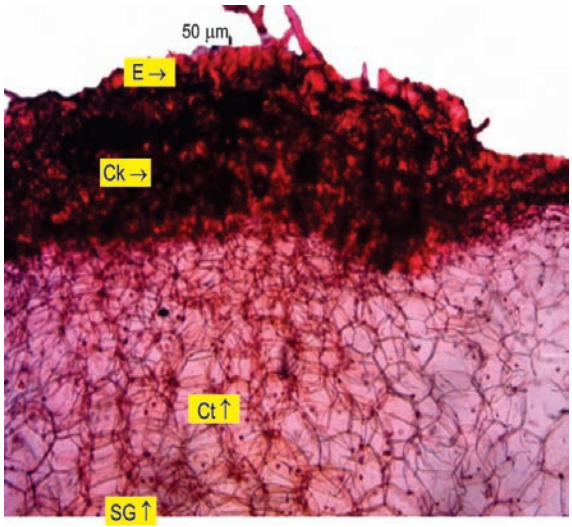
Physicochemical standards

H. longicorniculata J. Graham tuber powder was tested for loss on drying, total ash, acid insoluble ash, ethanol and water soluble extractive as per standard protocol. Loss on drying was 6.71 %w/w, total ash was 5.44% w/w, Acid insoluble ash 2.73%w/w, Water soluble ash 2.19 % w/w, alchohol soluble extractive 5.85%w/w, water soluble extractive value 29.57%w/w.

Figure 2

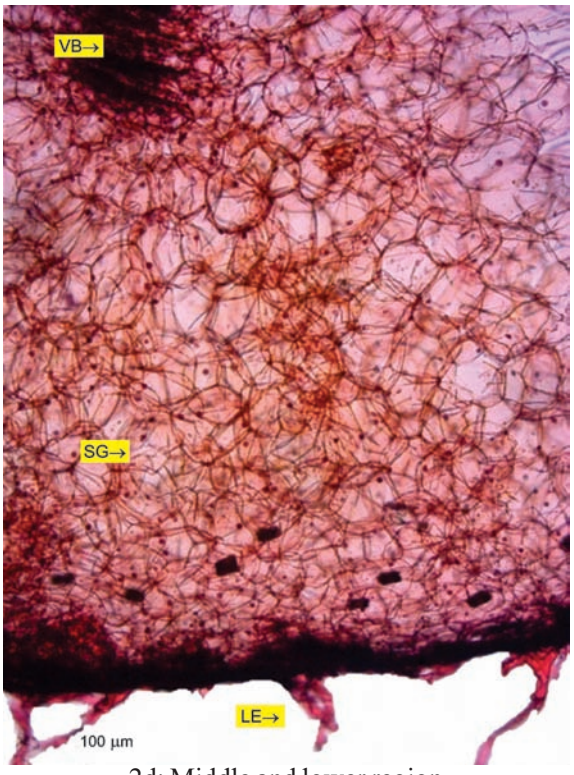
Microscopy of tuber of *H.longicorniculata* J. Graham

2a: Upper region

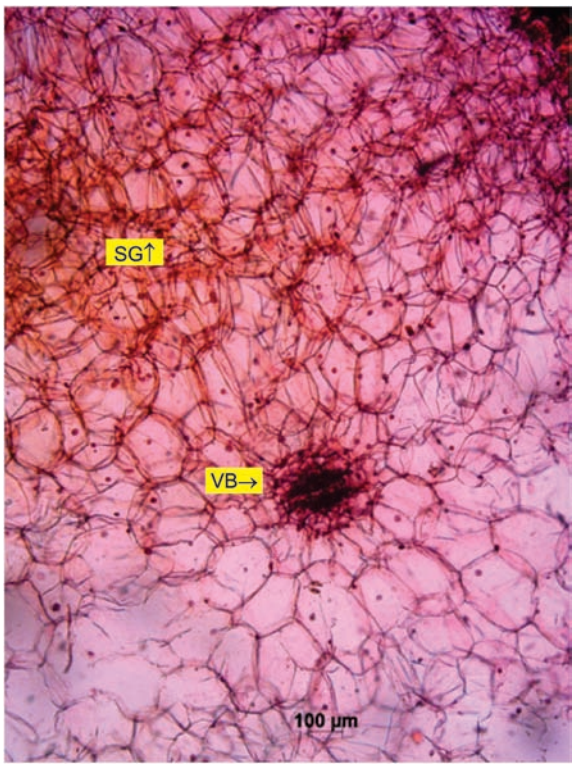


Ct-cortex; Ck-cork; E-epidermis; Per-pericycle; Ph-phloem; SG-starch grains; VB-vascular bundle; Ve- vessel; XY-xylem.

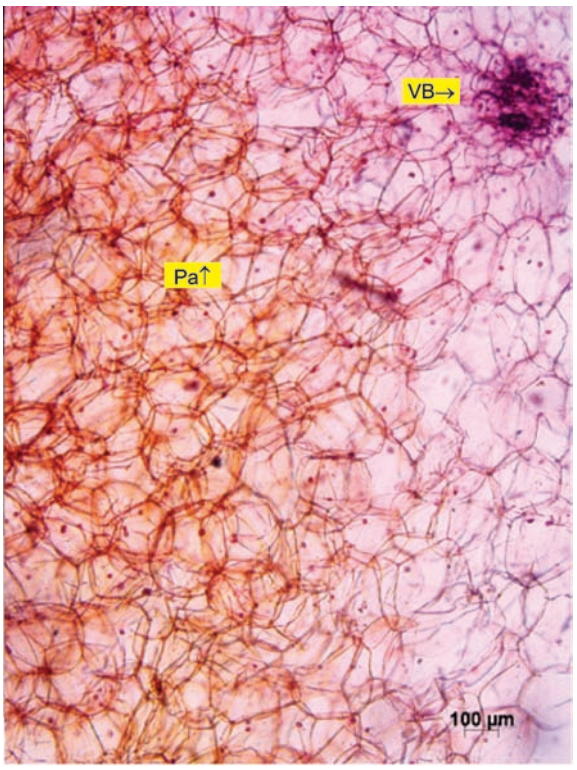
2b: Middle and lower region



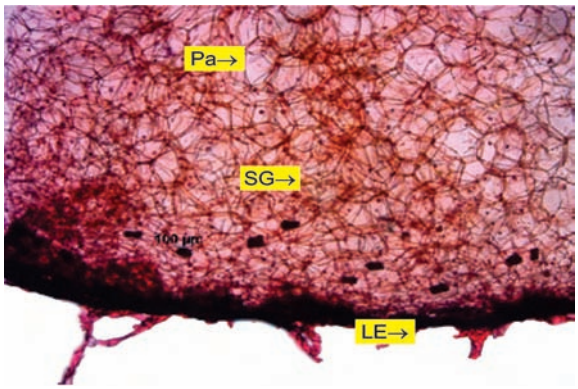
2c: Vascular bundle



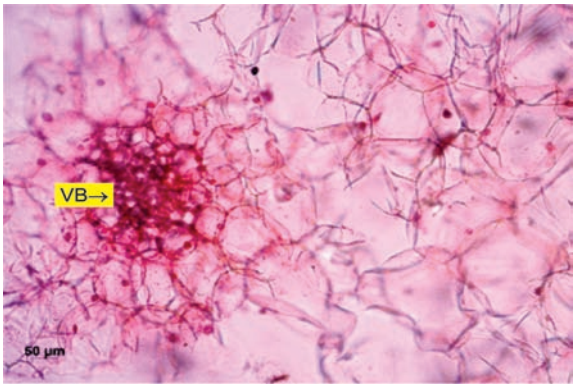
2d: Middle and lower region



2e: Lower region



2f: Vascular bundle showing xylem

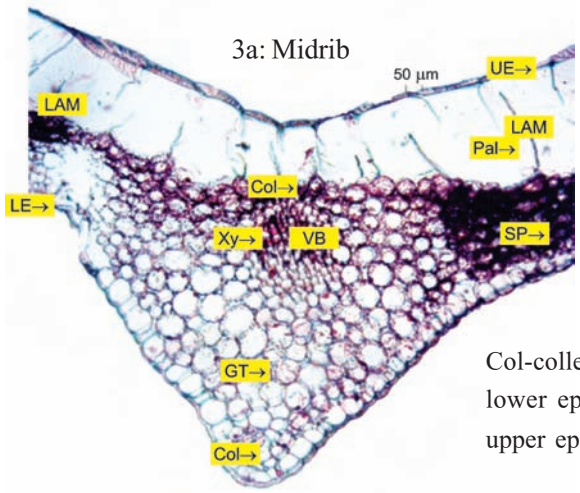


Ct-cortex; Ck-cork; E-epidermis; Per-pericycle; Ph-phloem; SG-starch grains; VB-vascular bundle; Ve- vessel; XY-xylem.

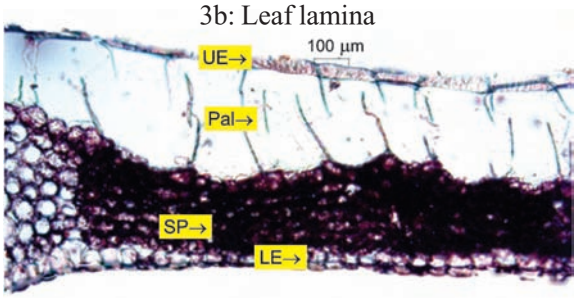
Figure 3

Microscopy of leaf of *H.longicorniculata* J. Graham

3a: Midrib

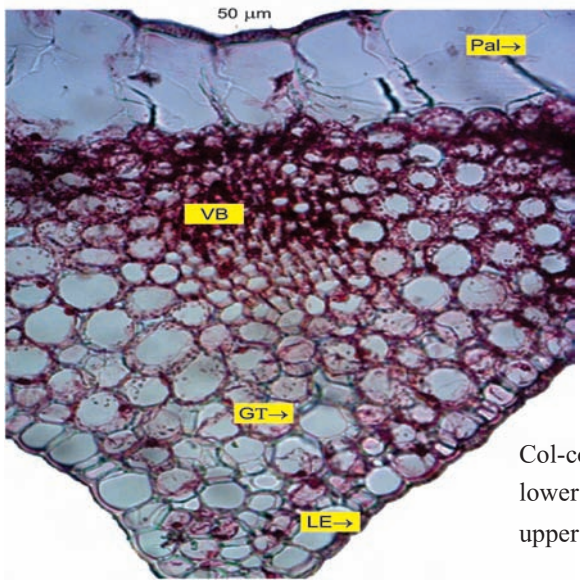


3b: Leaf lamina

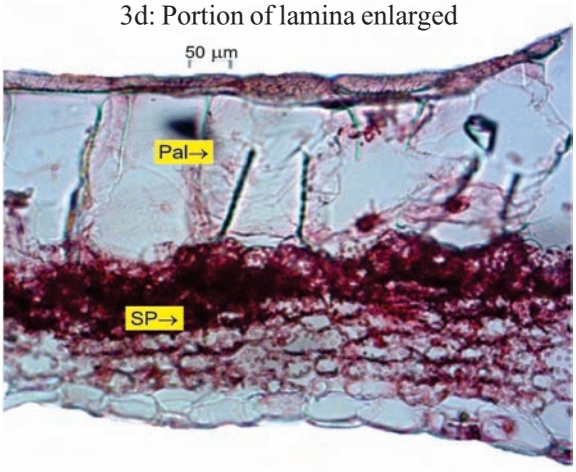


Col-collenchymas; GT-ground tissue; LAM-leaf lamina; LE-lower epidermis; Pal-palisade; SP-spongy parenchyma; UE-upper epidermis; VB-vascular bundle; Xy-xylem.

3c: Portion of midrib enlarged



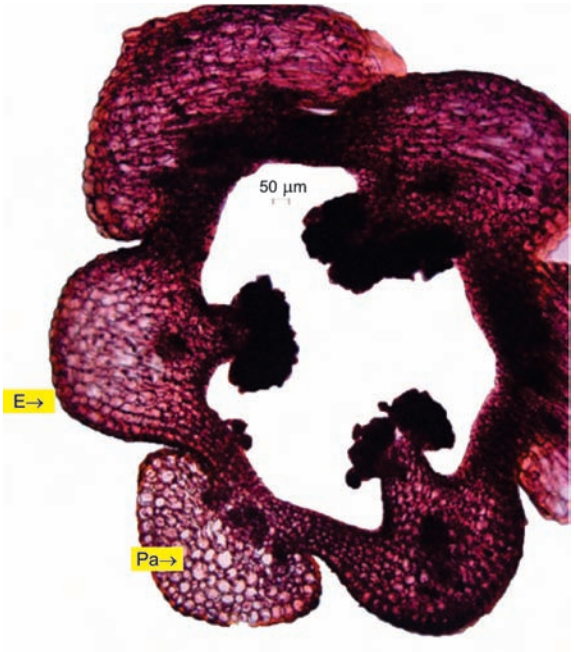
3d: Portion of lamina enlarged



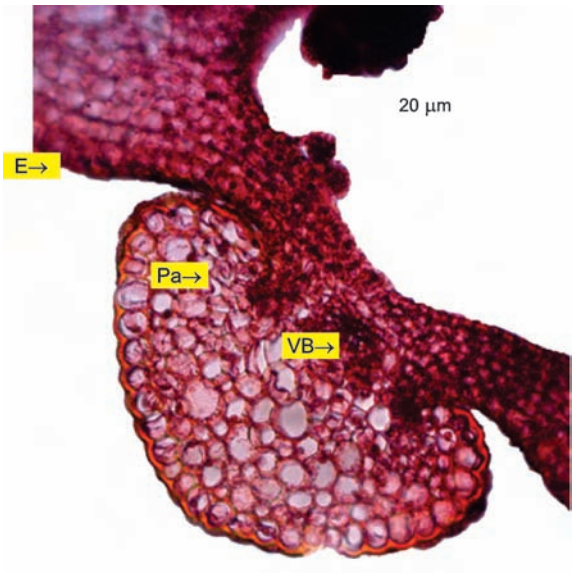
Col-collenchymas; GT-ground tissue; LAM-leaf lamina; LE-lower epidermis; Pal-palisade; SP-spongy parenchyma; UE-upper epidermis; VB-vascular bundle; Xy-xylem.

Figure 4
Microscopy of flower stalk of *H.longicorniculata* J. Graham

4a: Stalk



4b: Stalk enlarged



E-epidermis; Pa-parenchyma; VB-vascular bundle.

Physicochemical standards were a representative of its purity, physical nature and chemical composition. (Table 1)

Table 1
Physicochemical standards of *H. longicorniculata* J. Graham

Parameter	Results n = 3 %w/w
Loss on drying	6.71
Total ash	5.44
Acid insoluble ash	2.73
Water soluble ash	2.19
Alcohol soluble extractive value	5.85
Water soluble extractive value	29.57

Phytochemical study

Herbs are effective in particular therapeutics because of their chemical nature. Preliminary phytochemical test will decide basic chemical nature of the drug. The test drug powder has shown the presence of alkaloids, steroids, carbohydrates, tannin, saponins. (Table 2)

Table 2
Preliminary phytochemical constituents of *H. longicorniculata* J. Graham

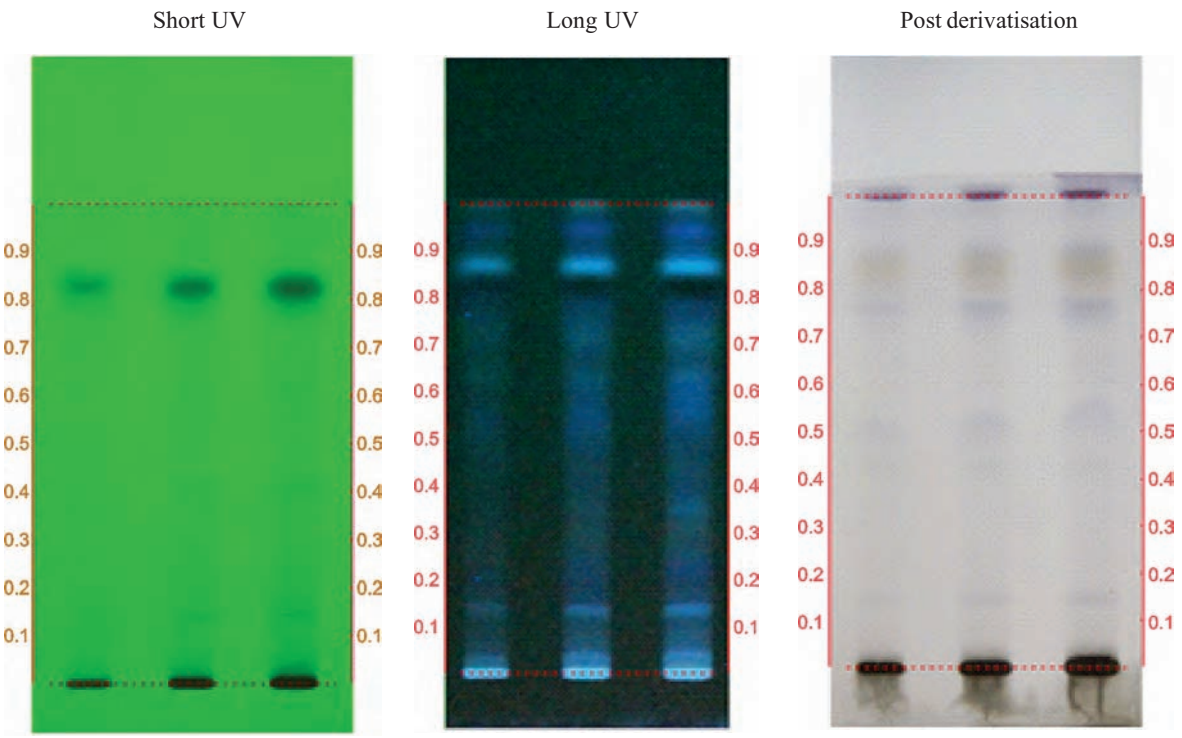
Test	Inference
Alkaloid	+
Steroid	+
Carbohydrate	+
Tannin	+
Flavanoids	-
Saponins	+
Terpenoid	-
Coumarins	-
Phenols	-
Carboxylic acid	-
Amino acids	-
Resin	-
Quinone	-
(+) present and (-) absent	

HPTLC: HPTLC finger print pattern of ethanolic extract of *Habenaria longicorniculata* J. Graham has been obtained with Tolune: Ethyl acetate (1.0: 1.0) solvent system. The developed plates were visualized under UV light and white and then under light after derivatisation with vanillin sulphuric acid reagent. Rf, colour of the spots and densitometric scan at 254 and 366nm were recorded. On photodocumentation there were 4spots under short UV, 7 at long UV and 8 spots after post derivatisation. (Figure 5, Table 3) Densitometric scan at 254nm showed 7 peaks whereas at 366 nm showed 6 peaks. (Figure 6)

Table 3
Rf values of sample of *H.longicorniculata* J. Graham

254nm	366nm	Post derivatiation
0.14 (D. green)	0.14 (F. blue)	0.14 (Purple)
-	-	0.34 (Purple)
-	0.36 (F. blue)	-
0.41 (D. green)	-	-
-	-	0.44 (Purple)
-	-	0.51 (Purple)
0.63(L. green)	0.63 (F. blue)	-
-	0.72 (F. blue)	-
-	-	0.77 (Purple)
-	0.80 (F. blue)	0.80 (Yellow)
0.84 (D. green)	-	0.84 (Yellow)
-	0.87 (F. blue)	-
-	-	0.89 (Purple)
-	0.94 (F. blue)	-
D - dark; F - fluorescent; L - light		

Figure 5
TLC photo documentation of ethanol extract of *H. longicorniculata* J. Graham



Track 1- *Hebanaria longicorniculata* - 4µl
Track 2 - *Hebanaria longicorniculata* - 8µl
Track 3- *Hebanaria longicorniculata* - 12µl
Solvent system: Toluene: Ethyl acetate (1:1)

Figure 6
Densitometric scan of the sample

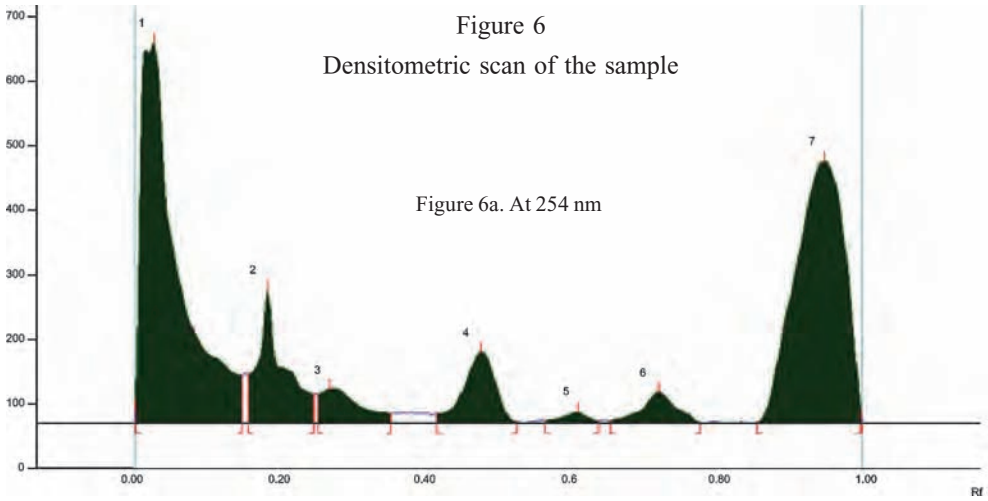


Figure 6a. At 254 nm

Track 3, ID *Hebanaria longicorniculata* extract									
Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.01Rf	35.9AU	0.03Rf	588.7AU	41.27%	0.15Rf	74.4AU	21592.4AU	39.99%
2	0.16Rf	76.7AU	0.19Rf	204.4AU	14.32%	0.25Rf	45.0AU	`5103.1AU	9.45%
3	0.25Rf	44.5AU	0.27Rf	52.8AU	3.70%	0.35Rf	14.8AU	2101.1AU	3.89%
4	0.42Rf	14.8AU	0.48Rf	109.9AU	7.70%	0.53Rf	0.9AU	3401.1AU	6.30%
5	0.56Rf	4.0AU	0.61Rf	16.9AU	1.19%	0.64Rf	2.7AU	427.7AU	0.79%
6	0.65Rf	3.8AU	0.72Rf	48.3AU	3.39%	0.78Rf	0.7AU	1591.6AU	2.95%
7	0.85Rf	0.9AU	0.95Rf	405.7AU	28.44%	1.00Rf	17.8AU	19781.2AU	36.63%

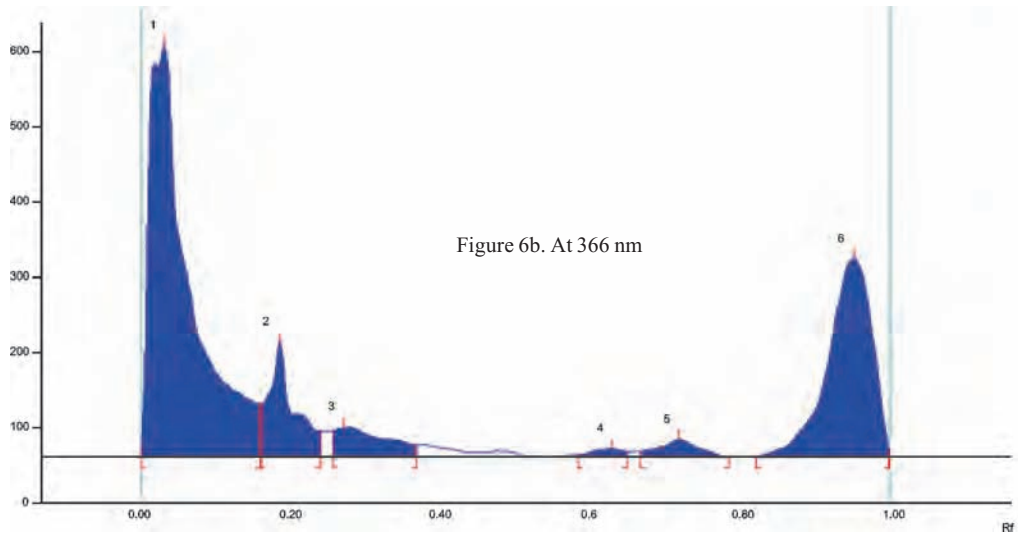


Figure 6b. At 366 nm

Track 3, ID *Hebanaria longicorniculata* extract									
Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.00Rf	13.5AU	0.03Rf	540.9AU	52.66%	0.16Rf	70.4AU	21170.5AU	54.41%
2	0.16Rf	70.8AU	0.19Rf	151.9AU	14.79%	0.24Rf	34.4AU	`3604.0AU	9.26%
3	0.26Rf	34.8AU	0.27Rf	38.6AU	3.76%	0.37Rf	16.3AU	1960.2AU	5.04%
4	0.58Rf	02.8AU	0.63Rf	11.5AU	1.12%	0.65Rf	7.2AU	335.4AU	0.86%
5	0.67Rf	7.6AU	0.72Rf	23.2AU	2.26%	0.78Rf	0.0AU	861.5AU	2.21%
6	0.82Rf	0.7AU	0.95Rf	261.1AU	25.42%	1.00Rf	8.2AU	10978.9AU	28.22%

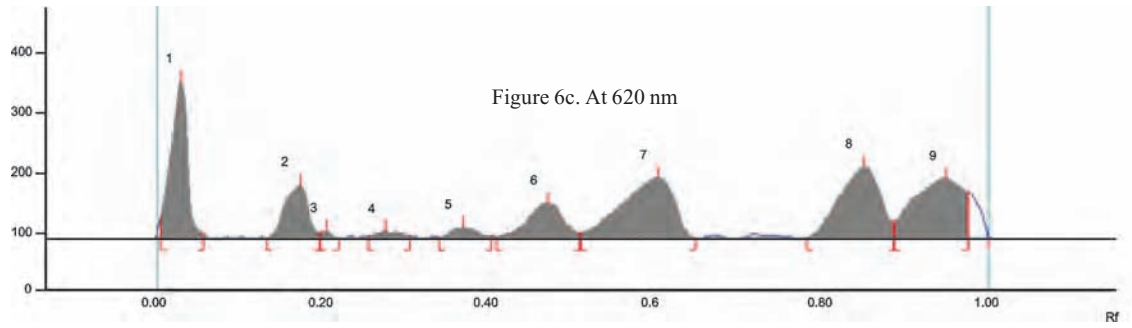


Figure 6c. At 620 nm

Track 3, ID *Hebanaria longicorniculata* extract									
Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.01Rf	35.2AU	0.03Rf	266.0AU	34.14%	0.06Rf	7.3AU	3792.8AU	17.78%
2	0.14Rf	0.0AU	0.18Rf	88.4AU	11.35%	0.20Rf	9.2AU	`1793.5AU	8.41%
3	0.20Rf	9.5AU	0.21Rf	11.5AU	1.48%	0.22Rf	0.0AU	100.5AU	0.47%
4	0.26Rf	3.4AU	0.28Rf	12.2AU	1.57%	0.31Rf	3.7AU	246.0AU	1.15%
5	0.34Rf	1.3AU	0.37Rf	17.7AU	2.27%	0.40Rf	3.3AU	408.2AU	1.91%
6	0.41Rf	2.7AU	0.47Rf	59.7AU	7.66%	0.51Rf	8.6AU	1849.2AU	8.67%
7	0.51Rf	8.8AU	0.60Rf	102.7AU	13.18%	0.65Rf	0.1AU	4603.9AU	21.58%
8	0.78Rf	0.3AU	0.85Rf	119.9AU	15.39%	0.88Rf	27.9AU	4213.3AU	19.75%
9	0.89Rf	28.4AU	0.95Rf	101.0AU	12.97%	0.97Rf	77.8AU	4322.3AU	20.26%

Discussion

Medicinal orchids play an important role in health care management of since centuries. *Habenaria longicorniculata* J. Graham a medicinal orchid the tubers of which are used as rejuvenator.[14]It is highly important to ensure quality and purity of medicinal plants in order to maximize the efficacy and minimize adverse side effects.[15] Correct identification and quality assurance of crude drug is an essential prerequisite to ensure reproducible quality of medicinal plants.[16] Pharmacognostic techniques used in standardization of plant material include its Morphological macroscopic and microscopic, physico-chemical standards and phytochemical characteristics. After confirmation of its botanical identity the tubers were subjected for macro-microscopic, physicochemical and phytochemical studies.

Tubers when collected freshly were 15-33 mm long and 10-25 mm thick, oval, obovate, or oblong in shape with shrunken surface, covered with numerous white hairs. TS of tubers illustrated a single layered epidermis, some of the cells of which elongate and form unicellular hairs. The epidermis is followed by 8-12 layers of parenchymatous cortex. Some of the outer cortical cells of varying size exhibit presence of starch grains. The exodermis is followed by 15-20 layers of cortical parenchyma. The cells of which is proximity of the cortex. A few paren-chymatous cells of outer cortex contain starch grains, throughout the parenchyma as well as in the epithelial cells of mucilage canals.

Physiochemical parameters of a drug indicate chemical nature, physical impurities due to contamination as well as the solubility in different media.[17] Carbonaceous matter was represented by total ash which was 5.44%w/w, Acid insoluble ash 2.73%w/w , Water soluble ash 2.19%w/w, Alcohol soluble extractive value is 5.85%w/w, Water soluble extractive values 29.57%w/w were determined as per the standards. Tubers of *Habenaria longicorniculata* J.Graham exhibited the presence of alkaloids, steroids, carbohydrates, tannin, saponins as secondary metabolites. HPTLC fingerprints are a record of its

chemical constituents. Thus quality parameters prepared on this drug help in authentication of sample, for future research.

Conclusion

Habenaria longicorniculata J.Graham., popular orchid tubers, which are used in Indian system of medicine as best rejuvenator. Authentic macro-microscopic and chemical value atlas presented in this paper forms a reference for future researches, practices to prevent admixture.

References

1. Pant Bijaya, *Medicinal orchids and their uses; Tissue culture a potential alternative for conservation*, African Journal of Plant Sciences, Vol.7(10),P 448-467, October 2013.

2. dhyaniA. et al., *Importance of Ashtavarga plants in traditional syatem of medicine in Garhwal, Indian Himalaya*, International Journal of Biodiversity Science, Ecosystem Services and Management; Vol.6(1-2), 13-19, 2010.

3. Siddhartha Singh et al., *Medicinal properties and uses of orchids: A concise review;* Elexir Applied Botany 52(2012)11627-11634, Elixir International Journal, Salem, Tamilnadu.

4. Dangat et al., *Inorganic status of tubers of Habenaria longicorniculata J. GRAHAM*, Asian Journal of Pharmaceutical and Clinical Research, Vol7(2) 2014, 172-173, Innovare Academic Sciences Pvt. Ltd., Bhopal, 2014.

5. Balakrishna et al., *Ashtavarga plants- threatened medicinal herbs of the North-West Himalaya*; International Journal of Medicinal and Aromatic Plants, Vol2(4) Dec.2012, 661-676.

6. Gamble J. S., *Flora of Presidency of Madras*,Volume III, P 1469 Dehraduna, Botanical Survey of India, Calcutta, 1998.

7. Kirtikar K. R. and Basu B.D., *Indian Mediicnal Plants*, Volume III, P 2399-415, International Book Distributors, Dehradun, 2008.

8. Mallya Suma V., Sunilkumar K. N. and Shreelatha Kamath, *Macromicroscopic standards of an abortfacient drug Langali(tubers of Golriosa superb Linn.),* The journal of Phytopharmacology, 3(4):P 242-7, 2014.

9. Wallis T. E., *Textbook of Pharmacognosy*, P 5, CBS Publishers and Distributors, New Delhi, 1985.

10. Mallya Suma V., Nesari Tanuja and Sunilkumar K. N., *Pharmacognostic standards of Katphala(Myrica nagi Hook.f.non-Thumb); A potent bark drug used in Indian system of medicine*, Journal of Scientific and innovative Research, 5(4): P1-3, 2016.

11. *The Ayurvedic pharmacopeia of India*, Part I, Vol II, P 102-3, The controller of Publications Civil lines, Delhi, 2006.

12. Dintu et al., *Pharmacognostical evaluation of an extrapharmacopoeial Drug of Ayurveda- Anisochilus carnosus(L.F.)Wall.,* Journal of Ayurveda Medical Sciences, 2017;2(2): P179-87, Herbal Research Guidance and Solutions (HRGS), Kasaragod, Kerala.

13. Hima Shashidharan, Suma Venkatesha Mallya, Prabhu Suchitra and Koppala Narayana Sunilkumar, *Identity parameters on traditionally used Antiurolithiatic Herb-Scoparia dulcis Linn.,* Journal of Ayurveda and Integrated Medical Sciences, 6:72-79, 2017.

14. Jagtap S. S. et al., *Phytochemical screening, Antioxidant, Antimicrobial and Quantitative Multi-Elemental Analysis of H. longicorniculata J. Graham*, Journal of Academia and Industrial Research, Vol.394, 108-17, Aug2014, Youth Education and Research Trust (YERT), Madhavaram, Chennai, 2014.

15. *Quality control methods for medicinal plants*, P25-8, World Health Organization, Geneva, 1998.

16. Mukharjee Pulok K., *Quality Control of Herbal Drugs*, P 68 Business Horizons, New Delhi, 2002.

17. Mallya Suma V., *Comprehensive study of Plants in Surasaadi Gana wsr to their antibacterial activity (PhD thesis)*, Maharashtra University of Health Sciences, Nashik, Mahrashtra, 2016.

Authors

Satish B. N., PhD Scholar, Shree Dharmasthala Manjunatheshwara College of Ayurveda, Kuthpady, Udupi, 574118.

Mallya Suma V., Associate Professor, Shree Dharmasthala Manjunatheshwara College of Ayurveda, Kuthpady, Udupi, 574118.
E-mail: sumamallya@gmail.com

Prabhu Suchitra, Research Officer, Shree Dharmasthala Manjunatheshwara College of Ayurveda, Kuthpady, Udupi, 574118.

OBSERVATIONAL STUDY

Āryavaidyan, Vol XXXI, No. 3, February - April 2018, Pages 41 - 42

A case report on fetal type variant of posterior cerebral artery

Harshitha M. S. and Chethan Kumar V. K.

ABSTRACT: During the routine dissection, Fetal type variant origin of right posterior cerebral artery was observed in a 65 year old male Indian cadaver. Fetal type or fetal posterior cerebral artery (FPCA) is a variant of cerebrovascular anatomy in which posterior cerebral artery is perfused by a branch of Internal carotid artery. Variations are due to developmental modifications. Fetal configuration can be a route to emboli arising from the internal carotid artery and can lead to posterior cerebral artery ischemia.

Key words: Fetal posterior cerebral artery, Posterior cerebral artery (PCA), Internal carotid artery (ICA), Ischaemia

Introduction

The right and left posterior cerebral arteries are the terminal branches of basilar artery. Each receives posterior communicating artery, a branch of internal carotid artery. The cortical branches of posterior cerebral artery (PCA) supply blood to the occipital lobe, the inferomedial surface of temporal lobe, uncus and portions of the posterior inferior surface of the parietal lobe.[1] Most adult humans have the classic vascular anatomy in which both left and right PCAs originate from the basilar artery and are part of the vertebrobasilar system or posterior circulation. Fetal type or fetal PCA (FPCA) is an anatomic variant of the PCA, which has been detected by anatomic and angiographic studies in 11% to 46% of adult humans, either unilaterally or bilaterally.[2]

Materials and methodes

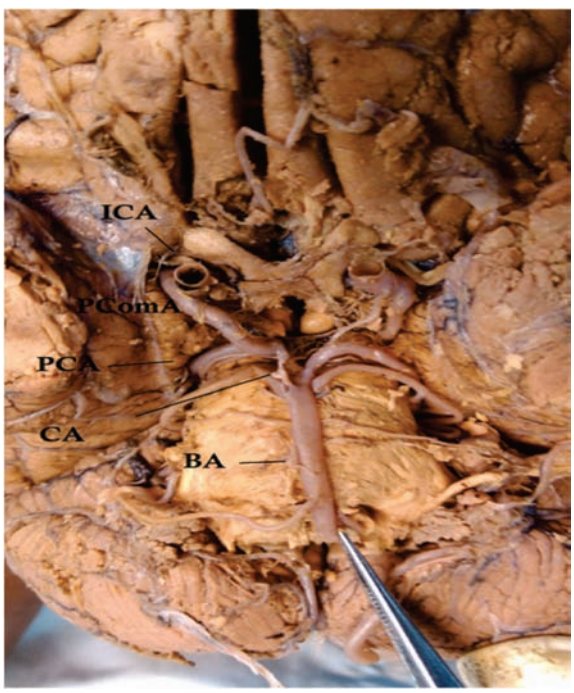
During routine dissection for undergraduate students in Department of Shareera Rachana at SDM College of Ayurveda, Udupi, a 65 year old male cadaver of Indian origin exhibited variation in the origin of Right posterior cerebral artery.

Observation

In the present study right posterior cerebral artery was fetal type i.e; right posterior communicating artery was larger in calibre than the left posterior communicating artery. It continued as the Right posterior cerebral artery. There was a small communicating artery (CA) between right posterior communicating artery (PComA) and basilar artery(BA). (Figure 1)

Figure 1

Internal carotid artery (ICA), Posterior communicating artery (PCom A), Posterior cerebral artery (PCA), Communicating artery (CA), Basliar artery (BA)



Discussion

The term Fetal PCA includes number of developmental variants of adult cerebral arterial system where a significant portion of distal PCA territory is perfused through a branch of ICA.[2] During embryogenesis of cerebrovascular system, the anterior circulation (ICA and branches) supply cerebrum and curve back to supply the upper brainstem. The carotid basilar anastomosis (CBAs) supply the lower brainstem. The terminal internal carotid artery bifurcates into rostral (rICA) and a caudal (cICA) divisions. The cICA is the future posterior communicating artery and its main branches are the posterior choroidal artery and future segment of PCA. The superior cerebellar artery is the only major artery supplying the primitive cebellum during this stage. As the posterior cerebrum, cerebellum and brainstem grow and the ICA can no longer keep up with the metabolic demands the posterior circulation develops with an accelerated rate from the primitive arterial mesh. The posterior circulation increasingly becomes independent of anterior circulation and CBAs regress and disappear.[2]

In the present case CBA has not undergone regression and itself modified to be posterior communicating artery. Later it continued as posterior cerebral artery. So the variation observed in the study is FPCA.

Clinical significance of FPCA in neurovascular system reveals increased extent and severity of anterior circulation strokes by allowing additional infarction in the PCA territory. The physician should therefore vigorously address the stroke risk factors of individuals with FPCA, such as internal carotid artery stenosis and arterial fibrillation. The optimal stroke prevention regimen for individuals with FPCA and one or more stroke risk factors is also unclear. With increasing accessibility to non-invasive neurovascular imaging, it will not be long before clinical researchers find solutions to these problems.[2,3]

Conclusion

Recognition of anatomic variants is important because the information may be needed during Neuro interventional procedures. FPCA is the variation due to defect in embryogenesis of cerebrovascular system. It can also be due to genetic, environmental and hemodynamic factors.[2] FPCA can increase the extent and severity of anterior circulation strokes by allowing additional infarction in the PCA territory. So the identification of the variation becomes significant in relation to cerebrovascular interventions.

References

1. *Inderbir Singh's Textbook of Anatomy*, edited by Sudha Seshayyan, 3rd Vol., 6th Edtn., P 447, Jaypee Brothers Medical Publishers(P)Ltd, New Delhi, 2016.

2. Stephen Lambert L., Frank Williams J., Zhora Oganisyan Z., Lionel Branch A. and Edward Mader C., *Fetal-Type Variants of the Posterior Cerebral Artery and Concurrent Infarction in the Major Arterial Territories of the Cerebral Hemisphere*, Journal of Investigative Medicine High Impact Case Reports, 4(3), 2016.

3. Hunter J. M., Tehrani S. K., Wood T. and Geraghty R., *Internal carotid artery stenosis presenting as ipsilateral posterior cerebral artery ischaemic stroke: a lesson to be learnt*, BMJ Case Reports 2013; 2013. Doi:10.1136/bcr-2013-008848.

Authors

Harshitha M. S., Assistant Professor, Department of P.G Studies in Shareera Rachana, Sri Dharmasthala Manjunatheshwara College of Ayurveda and Hospital, Udupi, Karnataka

Chethan Kumar V. K., Associate Professor, Department of P.G Studies in Kaumarabhritya, Sri Dharmasthala Manjunatheshwara College of Ayurveda and Hospital, Udupi, Karnataka. E-mail: drchethankumar@gmail.com

ANALYTICAL STUDY

Āryavaidyan, Vol XXXI, No. 3, February - April 2018, Pages 43 - 53

Punarjanma - Reincarnation, an absolute truth or the wildest fiction?

An analysis through āyurvedic texts and recent researches

Anjana Devi S., Manoj Kumar N., Eswara Sarma M. P. and Das C.R.

ABSTRACT: The concept of punarjanma (rebirth or reincarnation) is still a matter of debate. Reincarnation is the religious/philosophical idea that soul/spirit after biological death, begins a new life in a new body depending upon the karma (actions or deeds). Ācārya Caraka establishes the existence of punarjanma using caturvidha pramāṇa. The thought originated in India and all the ancient Indian scriptures support this belief. Most of the compelling supports for its actuality does not come from the world of religious or spiritual studies but from the world of science. Reincarnation researches are widely going on all over the world. Case reports of spontaneous recall of past life in children has been made into a data base of almost 2500 cases in the University of Virginia. A type of hypnosis known as PLRT (Past Life Regression Therapy) is now being used to explore past lives in adults. Research in PLRT has led to many new findings which are beyond our logic. It is also being used worldwide due to its healing powers to cure the medically incurable conditions. Moreover many factual evidences through electronic media are also being gathered. Recording of spirit voices through electronic media, capturing of spirit images projected through computers and so on. The information in ancient Indian scriptures like Upaniṣads and āyurveda, that some essential part of ourselves may return after death to a new body, is now being examined by some scientists.

Key words: Punarjanma, Reincarnation researches, PLRT, Caturvidha pramāṇa

Introduction

'Reincarnation' is a topic that creates curiosity as well as immense doubt and confusion in the minds of people which made it the most debated subject in the world. Death is an absolute surety because we witness it but this is not the case with rebirth. Where do we go after death? Or what happens after death? These have always been haunting questions to everyone. The same weightage can be given to the query of where do we come from? Or what were we, before birth? So we have easily given up the responsibility of answering these queries to religions in the world. Some religions believe in reincarnation while some others do not. The concept of reincarnation is present in many religions in the world like Hinduism, Buddhism and Jainism. The Jews believe in reincarnation, some sect of Christians and some sect of Muslims like the Sufis also do the same. But the strange experiences that some people have, driven away the stamping of reincarnation as just a belief. Many ancient Indian philosophies support the existence of reincarnation, not only philosophies but āyurveda also supports the same.

Reincarnation is the religious or philosophical concept that the soul/spirit after biological death, begins a new life in a new body, depending on its karma (actions or deeds). The word 'Reincarnation' is derived from the latin word 'incarni' meaning flesh and reincarnation means 'entering the flesh again'.

Punarjanma in āyurveda

Ācārya Caraka gives a beautiful explanation of the existence of punarjanma and substantiates it, using the four pramāṇas; pratyakṣam, anumānam, āptopadeśam and yukti in the 11thchapter of Sūtrasthānam (C.Sū.) named Tisreṣaṇīyam.

Children dissimilar to parents, similar progenies that differ in varṇa, svara, buddhi, etc., one born to rich family and another to poor, one gets easy money and luck without effort, while another inspite of hard work remains poor and unlucky, the sight of some things or some persons irritate some while it may not be so for others all these are examples of pratyakṣa pramāṇa to prove the exisstance of punarjanma.

For anumāna he explains that, for anything to happen there need to be a cause or karma (previous deed), karmaphala (result of deeds once did) is due to karma once did and adds that present karma will have a phala (result) in future lives to come.

Āptāgama are said to be the information given by other śāstrās and ācāryas who in parallel supports vedas and those who themselves have directly perceived the truth.

Yukti is explained as a logical sense or power of reasoning. The garbha cannot be nothing else than the combination of five mahābhūtas and ātma. For a kriya to exist a karta (doer) and karma (deed) is absolutetly essential. Like wise one particular seed only gives rise to that particular plant.

Eṣā parīkṣā nāstyanyā yayā sarvam parīkṣyate |
parīkṣyam sadasaccaivam tayā cāsti punarbhavaḥ ||
(Ca. Sū. 11/26)[1]

He says that proof for the existence of punarjanma doesnot exceed the limit of the four pramāṇās and gives subsequent examples for each of the four pramāṇās.[1]

Reason of punarjanma: Ācārya points out that the sole reason for punarjanma is 'karma'. The samyoga and vibhāga of the ṣaddhātus that is pañcamahābhūta and ātma occurs due to the same reason that is 'karma'. According to him it is the svabhāva or nature of each of the mahābhūtas and the ātma to exhibit its own characteristics.

Na cānativṛttasatvadoṣāṇāmadoṣairapunarbhavo dharmadvāreṣūpadiśyate || (C.Sū. 11/28)[1a]

Ancient sages have clearly stated that those who have not been able to conquer their satvadoṣa (mental defects) are not eligible for salvation. Indirectly shows that such persons are liable to be born again.

Jātismara: In another context, ie. Khuddikā garbhāvakrāntiśārīram, 3rd chapter in Śārirasthānam (C.Śā.) ācārya Caraka mentions some strange memories that occurs to people. These are memories from the past life, but the person is not aware about the exact fact.

Yadā tu tenaiva śuddhena samyujyate, tadā jāterati-krāntāyā api smarati | smārtam hi ñjānamātmana-stasyaiva manasoऽnubandhādanuvartate, yasyānu-vṛttim puraskṛtya puruṣo 'jātismara' ityucyate ||
(C.Śā. 3/13)

But very rarely if the sātvikabhāva of manas is more, it can prevent the clouding of tāmasabhāva, leading to memories knowing that it is from a previous life. Such a person is termed as jātismara.[1b]

Ācārya Caraka still mentions about punarjanma in Atulyagotrīyam, 2nd chapter of Śārīrasthānam. There he mentions that diseases can occur in spite of adoption of all preventive measures if its manifestation at that time is pre-determined due to actions of previous life.[1c]

Daivam purā yat kṛtamucyate tat tat pauruṣam yattviha karma dṛṣṭam | (C.Śā. 2/44)

He adds that the effect of what is done during the previous life is termed as daiva while that of present life called puruṣakāra.[1d]

In the same chapter Caraka,while explaining the eight types of napumsakas (sexually abnormal foetus), says that they occur due to the effects of misdeeds in the previous life of the individual.[1e]

In the 3rd chapter of Vimānasthānam (C.Vi.) Janapadodhvamsanīyam, ācārya Caraka mentions the equal role of daiva (actions of previous life) and puruṣākāra (actions during this life) in determining the life span of an individual.[1f]

Ācārya Suśruta explains about jātismara in Suśrutasamhita Śārīrasthānam (Su.Śā.) 2nd chapter.

Bhāvitāḥ pūrvadeheṣu satatam śāstrabuddhayaḥ
bhavanti satvabhūyiṣṭhāḥ pūrvajātismarā narāḥ ||
(Su.Śā. 2/57)

Suśruta says that an honest pious man who had aquired a vast knowledge in his past life, will have sātvika predominant mindset in this life and will also remember his previous births. He is termed as jātismara.[2]

Karmaṇā codito yena tadāpnoti punarbhave |
abhyastāḥ pūrvadehe ye tāneva bhajate guṇān||
(Su.Sa 2/58)

Punarjanma occurs in accordance to the previous birth's karmas. Moreover the traits and guṇas that he developed and practised in the previous life will be shown in the present life also.[2a]

Aṣṭāṅgasaṅgrahaḥ (A.S.) while describing the seven types of vyādhis (diseases) has broadly classified them into two namely 'pratyutpannakarmaja and pūrvakarmaja'.[3] Pratyutpannakarmaja are the diseases that occurs due to the unwholesome practices by the present body while pūrvakarmaja is described as

Janmāntarātītena tu pūrvam | (A.S.Sū. 22/ 18-20)

Meaning, that which occurs due to the deeds of the body in previous lives.[3a]

Again Aṣṭāṅgasaṅgrahaḥ mentions that the strength and weakness of one's lifespan or āyus depends upon daiva and puruṣākāra. There itself he describes the previous life's deeds as daiva and the present life's deeds as puruṣākāra.[3b]

Anyajanmakṛtam karma daivam pauruṣamaihikam |
(A.S.Sū. 9/145)

Aṣṭāṅgahṛdayam classifies diseases into three

Dṛṣṭāpacārajaḥ kaścitkaścitpūrvāparādhajaḥ |
tatsaṅkarādbhavatyanyo vyādhirevam tridhā smṛtaḥ ||
(A.H.Sū. 12/57)

namely dṛṣṭāpacāraja (diseases due to misdeeds of present life), pūrvāparādhaja (diseases due to wrong deeds of previous lives) and saṅkara (diseases due to wrong deeds of present life as well as previous lives).[4]

These are also known as doṣaja, karmaja and doṣakarmaja.

Yadhānidānam doṣotthaḥ karmajo hetubhirvinā |
mahārambhoऽlpake hetāvātaṅko doṣakarmajaḥ ||
(A.H.Sū. 12/58)

Doṣaja diseases manifest due to specific causes while karmaja without any perceivable causes. Doṣakarmaja is a mixture of both and manifests due to very insignificant causes.

Ācārya also mentions in the treatment that karmaja rogas can only be cured by practices to curtail accumulated sins and doṣakarmaja by combined application of drugs and noble deeds. But doṣaja rogas can be treated by proper therapeutic measures.[4a]

Thus many references can be found in āyurvedic texts. Many ancient Indian scriptures also refers to rebirth.

Yogavāsiṣṭha, one of the greatest spiritual classics of ancient India, explains about the transcendental spirit which is beyond time and space. Punarjanma is mentioned story-wise. The text explains that the Self (transcendental spirit) does not die nor is born and Self is not dead when the body is killed.[5]

Researches on reincarnation

Most of the compelling supports for the actuality of reincarnation does not come from the world of religious or spiritual studies but from outside. Reincarnation researches are going on in many centres. Reincarnation researches are empirical researches. Empirical research is a way of gaining

knowledge by means of direct and indirect observation or experience. Empirical evidence (the record of one's direct observations or experiences) can be analysed quantitatively or qualitatively.

Observation --> Induction --> Deduction --> Testing --> Evaluation

Case Studies on spontaneous recall of past life in children

The pioneer in reincarnation researches was Dr. Ian Stevenson, a Canadian born U. S. psychiatrist who passed away in 2007. He worked for the University of Virginia, School of Medicine for 50 years in the department of psychiatry and advanced the field of reincarnation research in the 1960s. He was the research professor of psychiatry who investigated the paranormal.

Over his career, Stevenson travelled extensively over a period of 40 years, compiled and studied approximately 3000 cases involving children who spontaneously remembered past lives in detail, 2/3rd of them said that in their previous lives they died from unusual causes. Dr. Stevenson visited the scenes of the contemporary and past lifetimes to interview witnesses to assess details provided in these past-life accounts. In about 1200 of these cases, the past lives of these children could be factually validated. As the Founder and Director of the University's Division of Perceptual Studies, which investigates the paranormal, Stevenson became known internationally for his research into reincarnation, and said the idea that emotions, memories, and even physical injuries in the form of birth-marks, can be transferred from one life to another.[6] He opined that certain phobias, philias, unusual abilities and illnesses could not be fully explained by heredity or the environment. He believed that reincarnation provided a third type of explanation.[6,7]

Stevenson helped to create the 'Society for Scientific Exploration' in 1982, and was the author of around three hundred papers and fourteen books on reincarnation, including '*Twenty Cases Suggestive of Reincarnation*' (1966) and '*European Cases of the Reincarnation Type*' (2003).

Since 1996, Dr. Jim Tucker, a child psychiatrist and Associate Professor of Psychiatry and Neuro-behavioral sciences at the University of Virginia School of Medicine, has been collecting case studies of past life recognition in children that could prove that the soul returns to earth in another body. Tucker is the scientific successor of Ian Stevenson. Case reports of spontaneous recall of past life in children has been made into a data base of almost 2500 cases in the University of Virginia. He is the author of '*Life Before Life: A Scientific Investigation of Children's Memories of Previous Lives*', which presents an overview of over four decades of reincarnation research at the division of perceptual studies. Tucker worked for several years on this research with Ian Stevenson before taking over upon Stevenson's retirement in 2002.[8,9,10,11] The case of Cameron Macaulay, a case investigated by Jim Tucker was featured in the Channel 5 documentary '*Extraordinary People - The Boy Who Lived Before*'.[12]

One of his famous cases is that of James Leninger, a small boy who shared the memories of an American fighter pilot. An article was published by Tucker entitled '*The case of James Leininger: an American case of the reincarnation type*'. This article describes the case of James Leininger, an American child who at the age two began having intense nightmares of a plane crash. He then described being a fighter pilot who was killed when his plane was shot down by the Japanese. He gave details that included the name of an American aircraft carrier, the first and last name of a friend who was on the ship with him, and a location and other specifics about the fatal crash. His parents eventually discovered a close correspondence between James's statements and the death of a World War-II pilot named James Huston. Documentation

of James's statements that was made before Huston was identified includes a television interview with his parents that never aired but which the author has been able to review.[13] His parents released a book on the memories of their child '*Soul Survivor of a World War II Fighter Pilot*' which was the New York Times best seller.

The claim of Barbro Karlen, a Swedish writer, as the reincarnation of Anne Frank the historic figure has really startled the scientific world. Many documentaries about this has been published in print and medias. Babro started saying the vivid memories when she was 2 years old.[14]

Erlendur Haraldsson (born 1931) is a professor emeritus of psychology on the faculty of social science at the University of Iceland. He has published papers in various psychology and psychiatry journals. In, addition, he has published para-psychology books and authored a number of papers for parapsychology journals. He has co-authored studies of the personality, abilities and psychological characteristics of children who claim memories of a previous life in Sri Lanka, comparing them with paired children who did not claim such memories.[15,16]

Dilukshi Nissanka was one of his best cases; he considered her as one of his fascinating research subject.[17] According to Dilukshi's mother, her daughter began to speak about a previous life when she was less than two years old. Briefly stated, she spoke about a life in Peravatte, Dambulla, where she had drowned in a stream. To her parents' dismay, she refused to call them mother and father and requested to be taken home to her earlier mother.

Dr. Satwant Pasricha, Rtd. Head, Dept. of Clinical Psychology, NIMHANS, Bangalore, presently at the Himalayan Institute of Medical Sciences in Dehradun, Uttarakhand, India, has investigated and participated in about 500 cases of reincarnation, involving children since 1973 who claim to remember previous lives. She became interested in working in para-psychology because she was not satisfied with the conventional explanations of certain paranormal or unusual behavior. She was the colleague of Dr.Ian Stevenson.

Criteria to screen reincarnation cases

Ian Stevenson created categories to screen cases worthy of further study. His colleague Jim Tucker still uses this method. The criteria includes two of the following characteristics

- A prediction of rebirth
- A birth mark or birth defect that seems related to the past life
- Statements of memories of previous lives
- Behaviours that seem related
- Recognition of people and places from past life

Recall of past life through PLRT in adults

Brian Leslie Weiss (born on November 6, 1944) is an American psychiatrist, hypnotherapist and author of '*Many Lives Many Masters*' which is one of the bestselling books in the world which says the hypnotic experience of Dr. Brian Weiss with the patient Catharine. He is an expert in Past Life Regression Therapy (PLRT). His research includes reincarnation, and survival of the human soul after death. During hypnosis Catharine revealed that she had 86 past lives and talked in detail about relevant ones. Dr.Weiss was totally astonished when his subject went 4000 years back giving vivid description of a lifetime during the conventional hypnosis he used at that time. At first it was hard for him to believe and he dismissed it as some fantasy or imagination of his patient. But he gradually transformed from a past life skeptic to a past life expert. As the session progressed her symptoms were disappearing. It was rare for a patient with such chronic and deep seated anxieties and fears

to improve so dramatically. It was beyond comprehension and he didnot have a scientific explanation of what happened.[18]

Dolores Cannon who passed away in 2014, was a regressive hypnotherapist and psychic researcher and involved in hypnosis since 1968. She was the Pioneer in PLRT. Later she advanced her technique and renamed it as QHHT (Quantum Healing Hypnosis Technique). In 1986 she expanded her investigations in the UFO field. She spent three decades investigating and writing about concepts ranging from life and death, reincarnation, the origins of humanity, UFOs and extraterrestrials, the prophesies of Nostradamus and a wide variety of other topics. Among the 17 books that Cannon wrote, the most popular one is the '*Convoluted Universe Series*' which is a collection of mind-bending meta-physical insights. During her hypnosis sessions with her clients, Dolores has unveiled many information about past lives, death and beyond. She has tried to revive many lost knowledge of the world. '*Five Lives Remembered*' was her first book which depicts the five past lives of her client. Her early work was heavily focused on reincarnation, which got her acquainted and comfortable with the concept of time travel. Many of her early clients described scenes from past lives where they had lived in past decades, past centuries and even past millennia in a variety of social settings in different locations all over the earth. She would then spend weeks researching the characteristics of life in the locations and time periods her clients had described living in to verify the authenticity of the results she was recording. It was through this vigorous verification process that Dolores ensured the authenticity of her results. Dolores was the first American and the first foreigner to receive the 'Orpheus Award' in Bulgaria, for the highest advancement in the research of psychic phenomenon.[19, 20] (In Kerala, Dr. Uma Devi is practising PLRT at Trissur and Trivandrum.)

Near Death Experiences: Near death experiences is another area where lots of researches are going on. Dr. Elizabeth Kubler Ross and Dr. Raymond Moody are two famous researchers in this field. Near death experiences are the experiences shared by people who had experienced clinical death. And they discovered that many of these experiences shared common features, such as the feeling of being out of one's body, the sensation of travelling through a tunnel, encountering dead relatives, and encountering a bright light. Surprisingly these have striking similarity to those described in the Tibetian book of Death, '*Bardo Thodol*' (*Liberation Through Hearing During the Intermediate State*). In 1975, Moody published many of these experiences in his book, Life After Life, in which he coined the term *near-death experience*.

Other interesting facts: Dējā vu- a word derived from French, literally means 'already seen', is the phenomenon of having the strong sensation that an event or experience currently being experienced has already been experienced in the past.[21, 22] It can evoke both strong emotions and detailed memories. Dr. Weiss explains about many cases of Dējā vu, one of them is that of Jenny Cockell, a women from England who remembers her children in Ireland from a previous life, in that life she was named Mary Sutton. Later she goes back to the place where she lived in her previous life and identifies and remembers all the streets, the hospital where she died and even her previous home.

Xenoglossy, which is defined as 'speaking a real language entirely unknown to (the speaker) in his ordinary state'. The words derived from Greek (xenos), 'foreigner' and (glōssa), 'tongue' or 'language'. Dr.Weiss remembers a Chinese woman who came with a translator for regression and during the regression she went back to 1850, in San Francisco having an argument with her husband, she suddenly began to speak in very fluent and colourful English. The translator was confused and began translating the whole thing back to Chinese.

Evidences from Electronic Devices: Dr.Walter Semkiw MD, a practicing medical doctor in the U.S., was involved in reincarnation research for over 15 yrs. He is the president of IISIS-Institute for Integration of Science, Intuition and Spirit.

Walter has presented principles of reincarnation based on independently researched cases including reincarnation research conducted by Ian Stevenson. He argues that reincarnation is not just a belief but part of spirituality. According to him spiritualism is as scientific as biology, physics and chemistry and we are a living proof of science. Whatever is happening in the outside universe, it is also happening within us. Whatever is universe composed of, our body is also composed of the same elements and there is a universal law which is working within us. He is the author of '*Origin of the soul and Purpose of Reincarnation*, *Return of the Revolutionaries* and *Born again*'.[23]

In *Born Again*, independently researched reincarnation cases with evidence of reincarnation are compiled with a focus on the work of Ian Stevenson, MD of the University of Virginia. *Born Again* has received widespread media attention in India and Walter was featured on CNN in March 2006. Cases derived through world famous trance medium Kevin Ryerson are also presented.

Instrumental Transcommunication and Electronic Voice Phenomenon are the two evidences described by Walter for the existence of spirit world.

Instrumental transcommunication is defined as communication by spirit beings with human beings *via* telephones, tape recorders, televisions, computers and other electronic devices.

Electronic voice phenomenon refers to the capture of voices from the spirit world on tape recorders or electronic devices

Friedrich Jiirgenson, a Swedish film producer became a pioneer in Instrumental transcommunication after hearing the voice of his deceased mother in one of his tapes. This incident sparked a research project for Juergenson, who subsequently recorded thousands of spirit voices and published his findings in the book in '*Voices from the Universe, Radio Contact with the Dead*'.

Dr. Konstantine Raudive a Latvian psychologist, was inspired by Juergenson's '*Radio Contact with the Dead*' in 1964. Later he created his own methodologies utilizing laboratory conditions. Raudive called this Electronic Voice Phenomenon (EVP) and published a book entitled '*Breakthrough: An Amazing Experiment in Electronic Communication with the Dead*'. In 1969, Raudive shared a first prize award from the Swiss Association for Parapsychology and the faint paranormal voices heard on tape have been called '*Raudive Voices*' in his honor.

'*Conversations Beyond the Light*' by Dr.Pat Kubis and Mark Macy, is the first book to describe Instrumental Trans Communication (ITC) in which research teams on earth receive from colleagues in the spirit worlds video images imprinted on the hard drives of computers computerized messages and other physical evidence attesting to the existence of subtler dimensions. These images demonstrate that we have an energy body in the spirit world which has an appearance similar to our physical body.[23]

Discussion

In the experience of several cases Dr. Tucker says that spontaneously recall their past lives occurs in very young children usually between the age of 2-3 yrs upto 5 yrs. Dr Harraldsson says that surprisingly the psychological characteristics of those who claim these memories are not much different from children who never report such memories except for one crucial difference. They tend to have Post Traumatic Stress Disorder (PTSD) without being exposed to such treats in this life.

In the case of adults Dr. Weiss supports the same argument. Dr Weisis's experience gave him the link between remembrance of past life and disappearance of symptoms. Unexplainable fears can be related to PTSD. A traditional PTSD patient will become anxious when something triggers a painful or disturbing memory. He/she re-experiences the trauma even though it is no longer present. It is as if we are all born with a form of post-traumatic stress disorder but the stress comes from a past life. Most of us are carrying our phobias, traumas, fears as well as affections, interests and relationships from our past life times. We remember these triggers on a soul level and in our subconscious minds. And even though they are not present in our current lives we respond and react to them as if they were. Many psychologist now use PLRT admitting that it does not matter if they or their client believe in past-life existences because the important thing is that it helps the patient. The roots of many problems have found to stem from trauma of their past-lives and PLRT as such is a worthwhile tool for exploring the subconscious mind. Moreover the technique also helps to cure medically incurable conditions.

How the PLRT works?

The PLRT therapist induces a deep hypnosis, where the conscious mind steps aside, giving control to the subconscious mind, which has tremendous powers. The subconscious mind acts as a recording system of all the events and experiences. Under hypnosis our sensory faculties become more alert. The hearing, understanding and creative powers becoming keener and more acute.

A regression therapist attempts to use hypnosis to connect people to memories or events that occurred during their previous life times.The healing is actually done by the person himself/herself, the therapist is only helping in the process by appropriate verbal suggestions.

Memories or smṛti is explained by Vaiśeṣika sūtra as:

Ātma manassamyogaviśeṣāt samskārāt ca smṛti ||
(Vai.Da 9/22)

Here, there is union of ātma and manas and the samskāra (previous knowledge) that occurs to this union is termed as smṛti.

In PLRT people are connected to their memories. Here the subconcious mind can be considered as the storage part carrying memories of previous life. According to Caraka smṛti is one of the proof of existance of the ātma, the other one is dehāntara gati or transmigration.[1g]

Tucker suggests that 'Quantum mechanics' may offer a mechanism by which memories and emotions could carry over from one life to another.[24] He argues that since the act of observation collapses wave equations, the self may not be merely a by-product of the brain, but rather a separate entity that impinges on matter. According to him viewing the self as a fundamental, non-material part of the universe makes it possible to conceive of it continuing to exist after the death of the brain.[25]

Tucker's explanation closely corresponds to the āyurvedic view of mind and soul. Manas (mind) and ātma (soul) are counted among the navakāraṇa dravyas (nine eternal causes) and also among adhyātmadravyaguṇasaṅgraha (spiritual elements). This closely resembles to the usage of 'Separate entity that impinges on matter' said by Tucker. In this context dravya cannot be equated to that which is perceivable in general sense. Caraka explains manas as dravya and also acetana (insentient) meaning a physical non-living entity in a broad sense. Kāla (time) and dik (direction) are also physical non-living entities. In āyurveda except soul everything else is acetana (insentient).When the soul unites with the insentient it becomes sentient (cetanavat).[26] We all know that when a person dies his body becomes insentient, that is, the sentient part has left the body. Thus, āyurveda identifies manas (mind) and ātma (soul) as different.

Āyurveda describes manas (mind) as an 'indriya', the most magnificent one which is sensory as well as motor together. (Total of 11 indriyas, 5 sensory, 5 motor and one which is both sensory and motor, that is the mind).

ubhayātmakam manaḥ | (Su.Sū 1/ 4)

Both Caraka and Suśruta have accepted the bhautikatva of indriyas. The usage 'manaṣaṣṭhā-nindriyāṇi' (mind as the 6th indriya) is seen in both Kāśyapasamhita and Bhagavad Gīta.[26a] Āyurveda considers food as Pañcamahābhautika. Chandogyopaniṣad explains mind as annamaya (made of food) and considers that fine and tenous fraction of food constitutes mind. Vedas state anna is brahma and mind is said to be born out of brahma.[26b] This can give an explanation of treating psychological ailments with drugs which are also made up of pañcamahābhūta. It is noteworthy remembering the view of Sāṅkhya here which considers the trio of buddhi, ahamkāra and manas as antakkaraṇa (internal organs) and ten indriyas (5 sensory and 5 motor) as bāhyakaraṇa (external organs). Here Sāṅkhya explains that the external organs can function only in relation to the present, but the internal organs function throughout the three phases of time ie. past, present and future.[26b]

Mind and soul are said to be constantly associated with each other. Caraka opines that the soul can never dissociate itself from the mind. The mind which is associated with rajas and tamas is said to be responsible for the transmigration of the soul from one body to the other and for the individual's inclination to do virtuous or vicious acts. [26c]

Bhūtaiścaturbhiḥ sahitaḥ susūkṣmair-
manojavo dehamupaiti dehāt |
karmātmakatvānna tu tasya dṛśyam
divyam vinā darśanamasti rūpam || (Ca.Śā 2/31)

Caraka says that the soul travels with the help of the mind guided by the past actions, transmigrates from one body to another along with subtle part of four bhūtas. And he specifies that this soul cannot be perceived by any other sense except divine vision.[26d]

The smṛti (memory) occurs to this association. So is the miraculous healing that occurs in PLRT as all the memories that triggers the condition is at a deeper level. Almost all Indian philosophies have accepted the concept of rebirth and transmigration of soul along with other subtleties like buddhi (intellect), ahamkāra (ego factor), manas (mind), indriyas (cognitive and connative organs) and mahābhūtas (subtle proto elements). These impressions (samskāras) are naturally accepted to be transferred from one birth to another and remain latent.

Conclusion

pratyakṣam hyalpam; analpamapratyakṣamasti |
(Ca .Sū 11/7)

Ācārya Caraka reminds us the limitations of our perception. Whatever we can know through pratyakṣajñāna is very limited and that beyond pratyakṣajñāna is unlimited. The present scientific world is based only on pratyakṣajñāna. Reincarnation researches give us the hint that something there exits beyond our logic. Most of the ancient Indian scriptures as well as the ancient medical science āyurveda has undoubtedly accepted the existence of punarjanma (reincarnation). But the modern scientific world needs enough proofs to accept it and the present tools in science are not enough to measure and prove the truth. Truth and proof coincide in the case of reincarnation.Truth is independent and unaffected by the beliefs of humans. In future as science further develops, we cannot dismiss the possibility of inventing new measuring techniques or devices. And truth will be there waiting to be discovered.[18,27]

References

1. Agnivesa, *Carakasamhita*, English translation by Bhagwan Dash and Sharma R. K.,Vol 1, Sutrasthanam 11/26, P 215, Chowkhambha Sanskrit Series Office, Varanasi, 2008.

1a. Ibid., Vol 1, Sutrasthanam 11/28, P 216.

1b. Ibid., Vol 2, Sarirasthanam, 3/13, P 378.

1c. Ibid., Vol 2, Sarirasthanam, 2/43, P 363.

1d. Ibid., Vol 2, Sarirasthanam, 2/44, P 363.

1e. Ibid., Vol 2, Sarirasthanam, 2/21, P 356.

1f. Ibid., Vol 2, Vimanasthanam 3/36, P 3/36.

1g. Ibid., Vol 2, Sarirasthanam 1/52, P 324-25.

2. Susruta, *Susrutasamhita*, English translation by Kunjalal Bhishagratna, Edited by Laxmidhar Dwivedi,Vol. 2 (Nidanasthanam - Cikitsasthanam), Sarirasthanam 2/58, P 154, Chowkambha Sanskrit Series Office, Varanasi, 1998.

2a. Ibid.,Vol. 2, Sarirasthanam, 2/59, P154.

3. Vruddha Vagbhata, *Astangasamgraham,* Prakashika Vyakhya Commentary in Malayalam by Raghavan Thirumulpad K., Mulasiddhantam, 2nd Edtn., Sutrasthanam 22/13-15, P 136, Raghava Ayurvedics, Chalakudy,1996.

3a. Ibid., Sutrasthanam 22/15-20, P 136.

3b. Ibid., Sutrasthanam 9/145, P 198.

4. Vagbhata, *Ashtangahrdayam*, English Commentary by Sreekumar T., Sutrasthanam 12/57, P 281, Harisree Hospital, Thrissur, 2013.

4a. Ibid., Sutrasthanam 12/58, P 281.

5. Abhinanda Padita's Laghu-Yoga-Vasishta, *The Yoga Vasishta* (Abridged Version), Introduction and translation with synopsis for second half of Nirvanaprakaranam by Subramanian K.N., P 415, Sura Books Pvt. Ltd., Chennai.

6. Janice Hopkins Tanne and Ian Pretyman Stevenson, *Psychiatrist who researched reincarnation with scientific rigour*. British Medical Journal (Published 29 March 2007) https:// doi.org/10.1136/bmj.39141.529792. 65 Cite this as: BMJ 2007;334:700.

7. Stevenson I., 2000, *The phenomenon of claimed memories of previous lives: Possible interpretations and importance*, Medical Hypotheses 54 (4): 652-9, PMID 10859660, doi:10.1054/mehy.1999.0920.

8. Stevenson I., 1977, *The explanatory value of the idea of reincarnation*, The Journal of Nervous and Mental Disease, Lippincott Williams & Wilkins, 164 (5): 305-26. PMID 864444. doi:10.1097/00005053-197705000-00002.

9. Shroder Tom, *Old Souls: The Scientific Evidence For Past Lives*, Simon & Schuster, P 230-232. ISBN 0-684-85192-X.

10. Deepak Chopra, 2008, *Life After Death: The Burden of Proof*, P 178, Three Rivers Press. ISBN 1-4000-5235-1.

11. Philip Clayton and Zachary Simpson R., 2006, *The Oxford handbook of religion and science*, P 35, Oxford University Press, ISBN 0-19-927927-6.

12. UK Channel 5 documentary, 2006, *The Boy Who Lived Before*, follows Jim Tucker's investigation of the case of Cameron Macaulay.

13. Jim Tucker, *The Case of James Leininger: An American Case of the Reincarnation Type*, Explore, the Journal of Science and Healing, Vol. 12, Issue 3, P 200-207, May-June, 2016.

14. Nell Rose, *The Story of Barbro Karlen's Proof That She Is Anne Frank Reincarnated,* Exemplore >> The Paranormal >> Reincarnation.Updated on April 15, 2016. https:// exemplore.com/

15. Haraldsson E., 1995, *Personality and Abilities of Children Claiming Previous-Life Memories,* Journal of Nervous and Mental Disease, 183 (7): 445-51., doi:10.1097/00005053-199507000-00004.

16. Haraldsson Erlendur, 2003, *Children who speak of past-life experiences: Is there a psychological explanation?* , Psychology and Psychotherapy: Theory, Research and Practice, 76: 55-67., doi:10.1348/14760830260569256.

17. Erlendur Haraldsson, *Children Claiming Past-Life Memories: Four Cases in Sri Lanka*, Journal of Scientific Exploration, Vol-5, No.2, P 233-61, Society for Scientific Exploration.

18. Brian L. Weiss M. D., *Many Lives, Many Masters: The True Story of a Prominent Psychiatrist, His Young Patient, and the Past-Life Therapy That Changed Both Their Lives,* 1988, ISBN 0-671-65786-0

19. *In Memorium:Dolores Cannon* (1931-2014), The Edge Holistic Livin, By Staff reports, Nov.1.2014, available at http://www.edgemagazine.net/2014/11/in-memorium-dolores-cannon/

20. *Between Death & Life*, Ozark Mountain Publishing, ISBN: 0-9632776-5-0, P 241.

21. Brown A. S., 2003, *A Review of the Deja Vu Experience*, Psychological Bulletin, 129: 394-413. doi:10.1037/0033-2909.129.3.394.

22. O'Connor A. R and Moulin C. J. A., 2010, *Recognition without identification, erroneous familiarity, and dējā vu*, Current Psychiatry Reports, 12: 165-173, doi:10.1007/s11920-010-0119-5.

23. Institute for the Integration of Science, Intuition and Spirit, available at http://www.iisis.net/index.php?page=walter-semkiw-reincarnation-past-lives-past-life-expert&hl=en_US

24. Ellis James, (March 7, 2006), *Have we met before?*, Metro, Retrieved 17 July 2009.]

25. Tucker J. B., *Life Before Life: A Scientific Investigation of Children's Memories of Previous Lives,* P 256, St. Martin's Press, New York, 2005, ISBN 0-312-32137-6.

26. Murthy A. R. V., *The Mind in Ayurveda and other Indian Traditions*., P 246-49, Chowkamba Sanskrit Pratishthan, Delhi, 2004. ISBN: 81-7084-272-2.

26a. Ibid., P 249. 26b. Ibid., P 250.

26c. Ibid., P 310. 26d. Ibid., P 311.

27. *Miracles Happen: The Transformational Healing Power of Past Life Memories*, 2012, ISBN 978-0-06-220122-5

Authors

Anjana Devi S., Deputy Physician, AryaVaidya Sala, Bangaluru Branch, Jayanagar, Bangaluru.

Manoj Kumar N., Associate Professor, Department of Dravyagunavijnana, VPSV Ayurveda College, Kottakkal.

Eswara Sarma M. P., Former Principal, VPSV Ayurveda College, Kottakkal.

Das C. R., Professor of Kayacikitsa, Sri Chandrasekharendra Saraswathi Viswa Mahavidyalaya, Kancheepuram.

ETHANOMEDICINE STUDY

Āryavaidyan, Vol XXXI, No. 3, February - April 2018, Pages 54 - 57

Ethanomedicinal plants used by tribal's in Udaipur, Rajasthan

Vimla Kumari and Kamini Kaushal

ABSTRACT: The present paper deals with the ethnomedicinal plants used by the tribal people from Udaipur district, Rajasthan. Tribal areas in the district of Udaipur were visited to collect information on ethnomedicinal plants used in these regions by local medicine men (Vaidhs), local healers (Gunijan) and Hindu priests (Sādhūs). The predominant tribes living in this region are Garacia, Kalbelia, Nats, Bhils, Raika, Bhopas, Banjara, Gadolia-Lohar, Saharia and Meena communities, have a rich knowledge of plant based traditional medicines. Some of them includes *Boswellia serrata* (sallaki), *Chlorophytum borivilianum* (śveta musali), *Commiphora wightii* (guggulu), *Pterocarpus marsupium* (asana), *Oroxylum indicum* (śyonāka), *Sterculia urens* (badaya), *Tribulus terrestris* (gokṣhura), *Convolvulus pleuricaulis* (śaṅkhapuṣpi), *Ampelocissus latifolia* (amḷavetasa), *Ensete superbum* (bahujā), *Aerides crispum* (valihakal), *Costus speciosus* (kemuka), *Enicostema hyssopifolium* (nāgajihvā), *Elytraria acaulis* (Homulee), *Holarrhena antidysenterica* (kuṭaja), *Bombax ceiba* (śālmali), etc. The present investigation is aimed to create awareness about the ethnomedicinal value of the plants and their therapeutic uses to draw phyto-chemists and pharmaceuticals.

Key words: Ethnomedicne, Phytochemists, Pharmaceuticals, Local healers

Introduction

India, a country rich in biodiversity and herbal plants, has a mature indigenous medical heritage, which in modern terms is described as 'complimentary medicine'. It is one of the countries, which has provided legal status to seven non-allopathic systems of medicine, namely Āyurveda, Yoga, Unani, Siddha, Homeopathy, Naturopathy and Tibetan/Amchi medicine. All these systems function today in India, as parallel streams along with the mainstream of allopathic medicine, with a very little interaction between them.[1]

Rajasthan has a large population among the states of India. Around 80 percent of them live in villages, which utilizes local medicine. The people of Rajasthan can be broadly divided as those living in extreme weather conditions as in Western Rajasthan and those in milder climate. Rajasthan has rich biodiversity consisting of large number of plants, some of which are used for their medicinal value.[2]

Ancient scriptures and literatures like Ṛgveda (4000 BC) clearly mentions the healing properties of plants. Further, āyurveda, a branch of medicine, has evolved which specifically talks about herbal medicines in detail. In the past, various efforts have been made to document the available medicines and plants through various medicine journals like Suśrutasamhita and Carakasamhita. Centuries ago, the traditional system of medicine was highly developed and was promoted especially among the traditional health practitioners like herbal doctors (vaidyas) and guṇis (traditional health practitioners).[3]

What is Traditional Medicine (TM)?

The World Health Organization (WHO) defines 'Traditional Medicine' as knowledge, skills and practices based on the theories, beliefs and experiences indigenous to different cultures, used in the maintenance of health and in the prevention, diagnosis, improvement or treatment of physical and mental illness.[1]

What is Ethnomedicine?

Ethnomedicine is a study or comparison of the

traditional medicine practiced by various ethnic groups, and especially by indigenous peoples. The word ethnomedicine is sometimes used as a synonym for traditional medicine. Ethnomedical research is interdisciplinary; in its study of traditional medicines. It applies the methods of ethnobotany and medical anthropology. Often, the medicine traditions or studies are preserved only by oral tradition.[1]

The tribal's who depend on forest (mostly their surrounding vegetation) wealth are the real custodians who safeguard the medicinal plants till now. Rapid deforestation caused by over harvesting and exploitative trade of medicinal plants has significantly reduced the availability of the medicinal plants in arid and semi arid region of Rajasthan. Generally, wasteland plants are called as weeds and said to be unwanted and undesirable plant species. On the contrary, as suggested by 'āyurveda' it is said, 'No plant of this world is useless'. Knowledge about the medicinal properties of these plants is confined to tribal's only. Generally the folk people are well acquainted with the medicinal properties of their surrounding vegetation particularly for their well being. Rajasthan, where 80 percent of its people live in the rural areas and cannot afford to the luxury of costly modern medicine, depend on the vegetation surrounding them and make perfect use of them for their medicinal needs. The present investigations were undertaken for the collection of important medicinal plants from different regions of Rajasthan. The variability in climate, edaphic and topographic conditions causes diversity of vegetation in the Udaipur district. Udaipur hill ranges possess an abundant population of various tribes. The main tribes of the study area are Bhil, Meena, Garasia and Kathodi, which form 8% of the total population of the state. Plants growing around them form an integral part of their culture and are largely dependent on their traditional healing system for their healthcare.[4,5]

Medicinal plants plays an important role in the traditional knowledge practices in Udaipur. Medicinal plants and herbs are used in āyurvedic medicines. So many plant varieties are available in Udaipur and Rajasthan. Villagers use the medicinal plants for common diseases like cold, cough, cuts on body, skin diseases, etc. Here are some details of those local medicinal plants with their uses .[5,6] (Table 1).

Table 1

Ethnomedicinal plants and their uses recommended by the priest and medicine man in Udaipur district [4, 5, 7]

Sl. No.	Plant name	Local name	Useful part	Uses
1.	*Achyranthes aspera*	Apāmārg Lal apāmāg, Audha Jhara	Whole plant	Migrane: Juice drops are administered via nostril. Red variety is also used in impotency.
2.	*Boerhavia diffusa*	Sāntia	Whole Plant, Root, flower	Root juice is used in stomachache, jaundice and eye itching. *B. diffusa,* red flower variant is used in blood cancer treatment.
3.	*Cassia tora*	Mṛdcakrak	Whole plant,	Used in ring worm after grinding and applying on the affected area.
4.	*Convolvulus arvensis*	Hirankhuri	Panchang	As a tonic for Kids.
5.	*Cyperus rotundas*	Nāgarmotha	Root nodule or rhizomes, Root	After drying it is grinded into powder. If taken as capsule in the morning and night it helps cure rheumatism. Cures stone problem.

6.	*Euphorbia hirta*	Dūdi	Root Latex, Whole Plant, Leaf	Root after grinding if taken orally it cures diarrhea, bleeding and cramp in stomach. Latex applied cures nerve bleeding and nerve inactiveness.
7.	*Tridax procumbens*	Bhangra	Whole plant	If plant juice/powder is applied over bleeding area in a cut, bleeding gets arrested.
8.	*Cassia auriculata*	Amaltas	Leaf, Bark	Used in curing mouth ulcer. Leaf juice cares stomach ache and hepatitis.
9.	*Chlorophytum borivilianum*	Safed musalī	Root	Effective in impotency and improves physical performance. Useful in cancer cure.
10.	*Pterocarpus marsupium*	Biya/Vijaysār	Heartwood	Used in diabetes, skin problems like vitiligo.
11.	*Clerodendrum viscosum*	Arni	Whole plant	Used in typhoid. Plant is used for massaging the body and can also be taken after boiling in water.
12.	*Sterculia urens*	Kadaya	Gum	Used in constipation, blood cancer, fracture, diabetes, etc.
13.	*Lepidagathis cristata*	Bhangari, bukhar jadi	Leaf	Used in fever,eczema, burns, wounds, etc.
14.	*Tribulus terrestris*	Cchota gokhru	Whole plant	Used in urinary disorders.
15.	*Langenandra toxicaria*	Khadiya	Root	Instilling the grinded paste juice drops in nostrills stops running nose in winter.
16.	*Ampelocissus latifolia*	Khatalimba	Root	Used in bone fracture.
17.	*Ensete superbum*	Jangli kela	Root	Used as contraceptives (for birth control).
18.	*Aerides crispum*	Valihakal	Whole plant	Used in Rheumatism.
19.	*Costus speciosus*	Vailakdi	Whole plant	Used in Rheumatism.
20.	*Enicostema hyssopifolium*	Nāmi	Whole plant	Has anti malarial effect.
21.	*Bombax ceiba*	Semal	Flower, Bark	Used in Leucorrhoea.
22.	*Elytraria acaulis*	Homulee	Root	Used in diarrhea and menorrhagia.
23.	*Holarrhena antidysenterica*	Kado	Bark	Used in diarrhea and dysentery.
24.	*Helicteres isora*	Maror fali	Fruit	Used in diarrhea and dysentery.
25.	*Phyllanthus emblica*	Bhūmi ānwla	Whole plant	Juice useful in hepatitis B. Also used in urinary tract infection and hepatic damage.
26.	*Leptadenia pyrotechnica*	Khīp	Whole plant	Useful in diabetes.
27.	*Acacia nilotica*	Desi babūl	Flower Bark	Yellow flower after grinding with water can be applied over eczema. 50 gm flower taken with water twice a day cures hepatitis. 10gm bark powder taken with water can cure leucorrhea.

28.	*Grewia flavescens*	Gengchi	Root	Sweet Gengchi leaf and root powder if taken with water help reduce the labour pain after delivery.
29.	*Pedalium murex*	Bada gokhru	Stem	Stem, when dipped in water makes water thick and if taken after adding some sugar and salt it cures impotency.
30.	*Baliospermum montanum*	Tamba bel	Leaf	Used in tumor management. Apply clarified butter (ghee) over the affected area and tie the plants' leaf (ventral surface facing the affected area). This reduces the node (cancer) and the node subsides gradually.

Conclusion

Ethnomedicinal uses of plants are one of the most successful criteria used by the pharmaceutical industries in finding new therapeutic agents for the various fields of biomedicine. The Udaipur region of Rajasthan exhibits a great variety of geology, physiographic, and peculiar edaphic and climatic conditions. The region is a rich repository of genetic material of important medicinal plant wealth. These plants are not valued as herbal drugs but also utilized for food, fodder, gums and resins, essential oils, dyes, fatty oils, condiments, spices, etc. These studies of ethnomedicinal aspects will be useful for further researches in the field of pharmacology, phyto-chemistry and pharmaceutical chemistry.

Research interest and activities in the area of ethno-medicine have increased tremendously in the last few decades. Since the inception of the discipline, scientific research in ethnomedicine has made an important contribution to the understanding of traditional subsistence, medical knowledge and practice. The explosion of the ethnomedicine literature has been stimulated by an increased awareness of the consequences of the forced displacement and/or acculturation of indigenous people, the recognition of indigenous health concepts as a means of maintaining ethnic identities and the search for new medical treatments and technologies.

References

1. Sharma N. K., *Ethno-medico-religious plants of Hadoti Plateau (SE Rajasthan) - a preliminary survey*, In: Ethnobotany, Edtd. by Trivedi P. C., P 394, Aavishkar Publishers & Distributors, Jaipur, 2002.

2. Jain A., Katewa S. S. and Galav P. K., *Some Phyto-therapeutic claims by tribals of southern Rajasthan*, Indian Journal of Traditional Knowledge, 4 (3) (2005) 291.

3. Ashwani Kumar, *Some important medicinal plants from different regions of Rajasthan*, Sciences 2.0 Join the revolution, November 4th 2009.

4. Joshi P., *Ethnobotany of the Primitive Tribes in Rajasthan*, Printwell, Jaipur, 1995.

5.Sebastian M. K. and Bhandari M. M., *Medicoethnobotany of Mount Abu, Rajasthan*, Journal of Ethnopharmacology, Elsevier, 12 (1984) 233.

6. Sebastian M. K. and Bhandari M. M., *Medicinal plant lore of Udaipur district Rajasthan*, Bull Med Ethnobot Res, 5(3-4) (1988) 133.

7. Trivedi P. C., *Ethno-medicinal Plants of Rajasthan State India*, In: Ethnobotany, P 412, Aavishkar Publishers & Distributors, Jaipur, 2002.

Authors

Vimla Kumari, P.G. Scholar, P G Department of Dravyaguna, M.M.M. Govt. Ayurved College, Udaipur, Rajasthan.
E-mail: kumarivimla1990@gmail.com

Kamini Kaushal, Professor and Head, P G Department of Dravyaguna, M.M.M. Govt. Ayurved College, Udaipur, Rajasthan.

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Aupasargikameham (Vraṇameham)

Vaidyan Kammaran Nambiar P. P.

Dhanvantari is the first medical journal in Malayalam published every month by Vaidyaratnam P. S. Varier from Arya Vaidya Sala uninterruptedly for 23 years from 1903 to 1926 . This clinical note was published in its column on Book No. 3, 1081 Kanni Malayalam Era (1906 CE), Article No. 6, Page 37.

ഔപസർഗ്ഗികമേഹം.

(വ്രണമേഹം)

(വൈദ്യൻ പി. പി. കമ്മാരൻനമ്പ്യർ.)

This is a disease where puss is oozed through the penis or vagina. It is referred in many names according to different geographical locations. Countless people suffer from it. Since it is a sexually transmitted infection, most people abstain from consulting a physician due to embarrassment. But sometimes they would be forced to by the circumstances. Normally it would be the barbers who would encounter it first. They would prescribe some common medicines and the patients would acquiesce as they could avoid a consultation and it would be a bonus if it gets cured. As a result, the barbers would act as the first physicians for phiraṅga and vraṇameha. But the disease would not be cured and the patients finally consult the physician. The embarrassment gets the better of their logic resulting in unbearable pain and supplementary diseases such as phiraṅga thereby forcing them to consult a physician.

Nidāna: Sex with multiple partners would sometime putrefy the vagina. If one conducts an intercourse with such a woman or a woman suffering from aupasargikameha, or *vice versa*, the inner skin of the urethra gets ulcerated. The symptoms would start appearing on the seventh day of the intercourse. The puss would start flowing then. Sometimes it takes two weeks for the symptoms to be visible. The common titles given to this disease are vraṇameha because of the oozing of the infectious puss, aupasargikameha as intercourse serves as one of the causative factors, āgantuka, for it is an infectious disease and pāpameha as immorality is a sin.

Viśiṣṭalakṣaṇa: Itching on the tip of the penis, successive hardening, swelling and reddening of the same, pain in the glands, painful and dived dripping of hot urine because of the puss, sometimes resulting in bleeding are the general symptoms of aupasargika-meha. The puss would be fluid and transparent and later it gets slimy. Carelessness leads to unbearable

pain, supplementary diseases like āmavāta, eye disorders, etc.

Cikitsā: The first thing the patient should do is to abstain from making love. Not only it is unhealthy but an innocent woman may also get infected. The dietary and medical intervention should aid in reducing the vāta, heal the wound and should also have diuretic properties. Strong medication is not advisable. The patient should dip his penis in a lukewarm decoction of either the leaves of Jasmine or Triphala. It reduces the pain as well as the intensity of the disease. It is also an effective process in correcting the flow of the urine. Intake of fresh milk with water is also advised. The decoction made with the bark of ābha (*Acacia nilotica*) along with the additive Cavarkkāra (*Potassii carbonas impura*), the decoction of naṟnīṇṭikkizhaṅṅu (*Hemidesmus indicus*), pālvaḷḷikizhaṅṅu (*Ichnocarpus frutescens*), elattari (*Elettaria cardamomum*), ñeriñña (*Tribulus terrestris*), etc. along with the additives such as gandhaka (sulphur), navasāra (*Ammonii chloridum*) can also be advised. It is obvious that the said additives should be purified. The process of uttaravasti with the decoction of triphala (*Terminalia chebula*, *Terminalia bellirica*, *Emblica officinalis*), bark of Pīpal (*Ficus religiosa*), bark of ābha is also an excellent treatment, but one should be careful not to injure the patient with the process.

Mahābhravaṭika: The hand made tablets of the mixture of abhrabhasma which underwent 21 times of bhāvana in kaṅṅuṇṇinīru (juice of *Eclipta prostata*), jīrṇasūtam, śuddhagandhakam, lohabhasmam, svarṇabhasmam ground in the decoction of triphala is named as Mahābhravaṭika. It serves as an excellent medicine for vraṇameha. The Kandarparasa mentioned in Bhaiṣajyaratnāvali is another such medicine which effectively cures vraṇameha. The mixture of śṛṅgabhasmam, elattari podi(powder) and butter is another effective medicine.

Śṛṅgabhasmavidhi: The horn of a deer cut into small pieces are to be burnt in fire and is to be put into a slake lime solvent for long hours. Each piece should then be covered with the paste of Vāzhappadaṭṭi grass and then the entire lot has covered in a piece of cloth moistened with clay. Once it is dry these are to be burnt inorder to get the bhasma.

Another process includes wrapping the horns with a piece of cloth moistened with ghee and deep frying it. Then it is made into a powder which is then mixed with kaṅṅuṇṇinīru and are made into tablets which once dried can be processed (putam) into bhasma. Mix 333.333 mg of this with 2 gm of cardamom powder and butter. The intake of this for two weeks will rout out the disease. Spicy foods should be avoided during this period.

The milk decoction of cerupañcamūlam (*Solanum violaceum*, *Solanum virginianum*, *Desmodium gangeticum*, *Pseudarthria viscida*, *Tribulus terrestris*) in which one half of ñeriñña and other half of the rest is also advisable. Even if the disease is cured one should abstain from sex for a long period of time. Incorporating oiled bath in one's daily routine is necessary.

Translated by : Rati Vijayan, Publication Department, Arya Vaidya Sala, Kottakkal, Kerala.

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Rasasindūram

Krishna Varier P. V.

Dhanvantari is the first medical journal in Malayalam published every month by Vaidyaratnam P. S. Varier from Arya Vaidya Sala uninterruptedly for 23 years from 1903 to 1926 . This clinical note was published in its column on Book No. 3, 1081 Meenam Malayalam Era (1906 CE), Article No. 4, Page 37.

The introduction of rasauṣadhis has changed not only the Indian medical system but also the entire medical plethora. The reason being its immediate relief if used wisely that is. Because of this, our ancestors believed that it is the seed of Lord Śiva himself. The variety of its usages have been discussed and catalogued by eminent saints and physicians. But I would say that it is just a tip of an iceberg. The knowledge and the procedure undertaken by the Indian physicians regarding the properties, effects and usage of these chemicals still stand tall for the world to see. The boon to alleviate countless diseases were given to them because of their piety and only they are equipped with the nuanced technical know how and its application along with the various procedures in their making and the proper dietary restrictions to be followed while its intake. So it would not be far fetched if I claim that they remain the masters in this particular field. Rasasindūram remains the best of the countless such chemical combinations used by them. Even though it can be prescribed for various ailments it is optimal in treating wounds, especially in the case of 'phiraṅgam'. No medicines can cure this but for Rasasindūram. The skin disease where the puss is oozing out from the wound along with numbness can only be cured by Rasasindūram.

The effects of Rasasindūram is miraculous in ailments like purulent ulcer, duṣṭavraṇam, vātaśoṇitam, bhagandaram, arbudam, nāḷīvraṇam, vraṇaśukḷam, etc. It disintegrates the abscess and ulcer found in lungs, liver and spleen. It drains the unwanted fluids in our body as well. It efficaciously cures the vāta due to phiraṅgam, swelling of the knee as well as ankles and eye disorders. It has become an inevitable drug in treating all types of blood disorders because in apt dosage it cures all kinds of toxins in the blood stream and strengthens its normal characteristics. It

is the best among all the rasāyanas. It increases the strength of the body. The daily administration of Rasasindūram in small doses removes the cysts and papules of the body completely. Apart from this it is effective in asthisrāvam, disorders of the liver and the spleen, jīrṇajvaram, jīrṇātisāram, grahaṇi etc.

Mātra - Dosage

Half a grain to two grains of Rasasindūram mixed with sugar, honey or jaggery is to be swallowed carefully so as not to have any contact with the teeth. Strict diet is inevitable during its intake, especially in vraṇa (ulcers). The intake of fried broken rice cooked under pressure is advised. One should avoid sour, salty and spicy foods. There is a debate regarding the intake of saindhavam (rock salt). Water intake is not allowed. Milk can be prescribed as a supplement. Direct contact with the hand should also be avoided. All the unhealthy regimen like day sleep or afternoon nap is to be strictly avoided. Many physicians prescribe heavy doses of Rasasindūram inorder to get immediate relief. But a long term intake in small doses is more suitable and recommendded. The intake of green gram, bitter gourd and snake gourd and its various recipes and a hot water bath once in four days is also advised.

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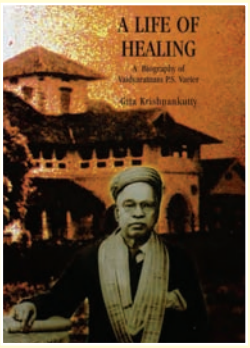

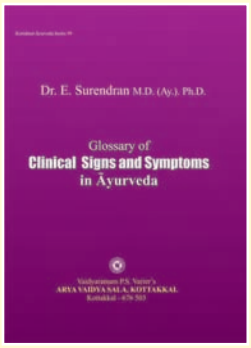

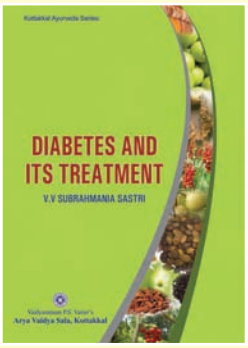

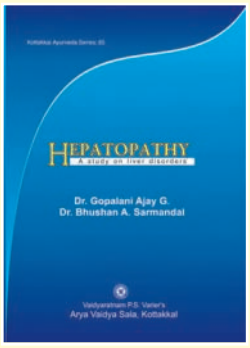

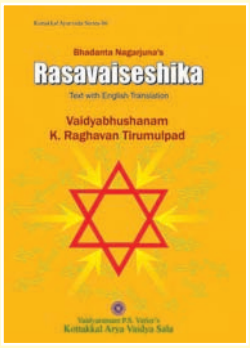

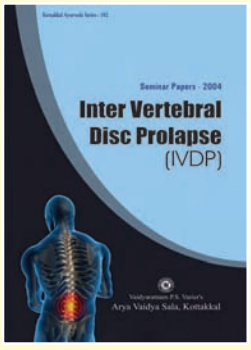

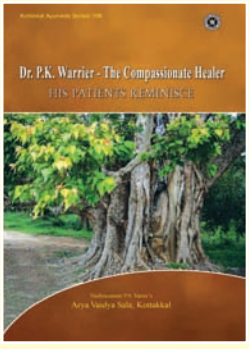

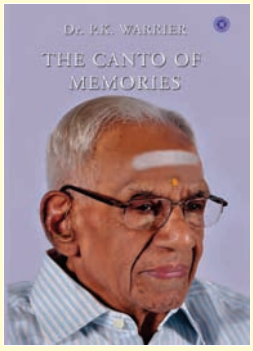

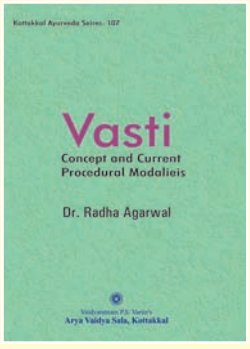

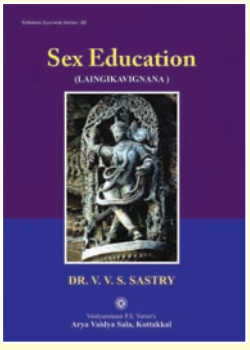

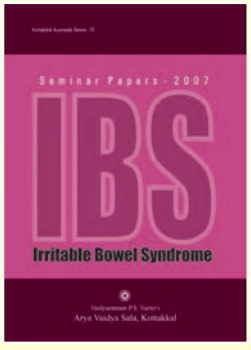

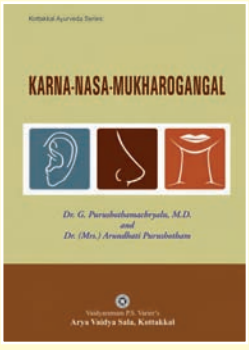

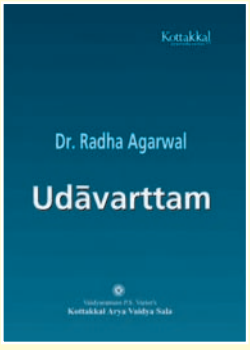

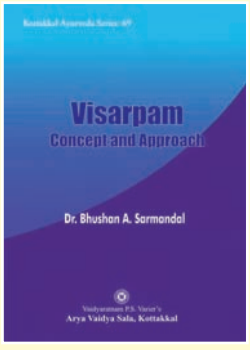

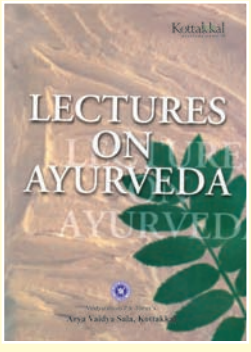

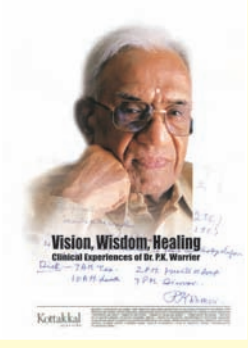

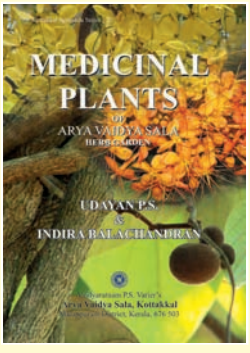

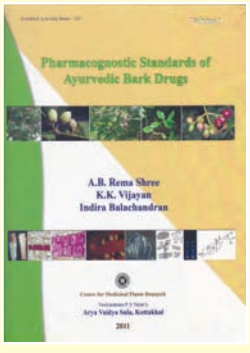

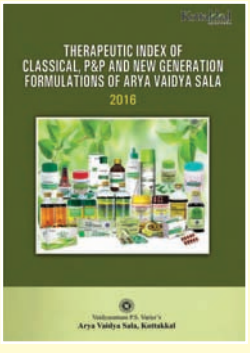

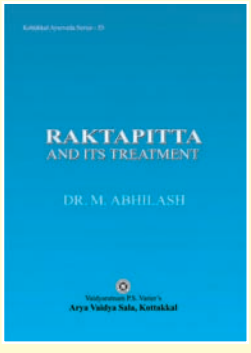

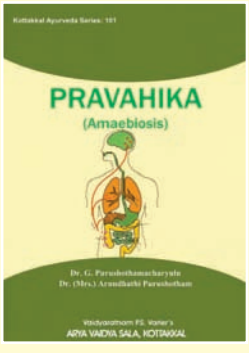

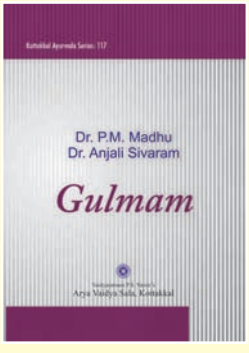

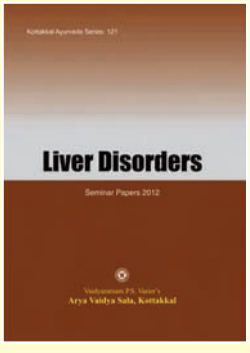

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