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“The Physician who studies the
Science of Medicine from the lips of
his preceptor, and practices medicine
after having acquired experience in his
art by constant practice, is the true
Physician”

- *Susrutha Samhitha*

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Understanding Rasaushadhi

Discretionary use of *Rasaushadhi* is always advised by learned teachers. Phobia towards the toxicity of *Rasa* preparations restricts the doctors from their free use. Doctors are scared by the very thought of the patient indulging in 'Apathya' and the further proceedings going out of their control during the administration of *Rasaushadhies*.

There are drugs in *Rasashashtra* which needs utmost care during administration, but their number is very few. Such drugs are to be scheduled and their quality control and clinical use should be strictly monitored by the drug authorities. *Sameera pannaga ras*, *Malla sindoora*, *Rasa karpooora*, *Thalak bhamsa*, *Rasa manikya*, *Naga bhasma*, *Thamra bhasma*, etc. are outstanding examples for this category. Each of the above drugs needs utmost care during manufacturing and therapeutic use. After selecting the standard drug, it is the duty of the Physician to identify the condition, to fix the dose and to convince the patient with diet and deed restrictions. There is no need of using these drugs in common ailments.

Majority of the *Rasaushadhies* are in second category, i.e. *Bhasmas* of metals, *Khalwi rasayanas* and *Kupipakwa rasas* with *Kajjali* base. *Bhasmas* are usually used as herbo-mineral compounds. If they are used alone, the *bhasma* should be examined and confirmed for the quality. *Khalwi rasayanas* with *Kajjali* are comparatively safer drugs. They also are to be examined for quality.

The third category of drugs includes *Pishtti* and *Bhasmas* of *Sudhavarageeya dravyas*, *Puthiloha bhasmas*, *Lavanas* and *Ksharas*. These medicines can be used by the Physician without special care. Any doctor who wishes to practise *Rasoushadhi* can start with the medicines of this category and by widening his understanding about the higher categories, can opt for them with confidence.

Thus comes the Renaissance.

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MANAGEMENT OF MUSCULAR DYSTROPHY WITH INDIGENOUS MEDICINE

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In olden days it was believed that Muscular Dystrophy is due to defect in the nourishment of the muscle. The incidence is about 1 per 3500-4000 males. There are 3 varieties of muscles present in the human body, i.e. skeletal, smooth and cardiac. Muscular dystrophies are a group of genetic disorders that cause weakness and muscle wasting primarily in the skeletal or voluntary muscles. All forms of the disease are inherited. They are caused due to the mutation of an abnormal gene, dystrophin. Dystrophin is a part of a large complex of sarcolemmal proteins and glycoproteins. The dystrophin gene, estimated at 2000 kb in size, is one of the largest identified human genes. It is localized to the short arm of the X chromosomes at Xp21. Genes are modes of DNA and each gene contains the recipe for a different protein and its different variations are necessary for our body to function normally. When a gene is mutating, it may make a defective protein or none at all. Most commonly, missing or defective proteins in the muscles prevent muscle cells from working properly leading to the symptoms of muscular dystrophy, including muscle weakness and wasting, over the passage of time.

MUSCULAR DYSTROPHY:

The term Dystrophy literally means 'faulty nourishment' (dys = faulty/abnormal, trophe = nourishment). It is commonly seen in males. In this disease females are the carriers. Muscular dystrophy is related with a group of hereditary progressive diseases. Each type of muscular dystrophy has unique phenotypic and genetic features.

Most forms of muscular dystrophies are progressive and they tend to worsen with time. However age of onset and rate of progression can vary widely from one case to the other. In most of the cases of muscular dystrophies, muscle mass in the affected regions may become visible and wasted and the arms, legs and trunk may become so weak that they eventually cannot move. Some forms of muscular dystrophies are accompanied by contractures and some are accompanied by Scoliosis. Certain forms of muscular dystrophy affect the muscles used for swallowing and it may lead to further complications due to aspiration.

The classification of muscular dystrophy based upon the inheritances is as follows:

- I. X-linked recessive muscular dystrophies
 - Duchenne muscular atrophy
 - Becker muscular dystrophy
- II. Autosomal recessive muscular dystrophies
 - Limb – girdle dystrophy
 - Congenital muscular dystrophy
- III. Autosomal dominant muscular dystrophies
 - Myotonic dystrophy
 - Facioscapulohumeral muscular dystrophy
 - Oculopharyngeal dystrophy
 - Distal myopathies

DUCHENNE MUSCULAR DYSTROPHY - It is otherwise known as Pseudo-hypertrophic muscular dystrophy which occurs with an incidence of about 1 in 3333 live males. It is the most common one and characterized by rapid progression of muscle degeneration. Duchenne dystrophy is caused by a

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mutation of the gene responsible for producing Dystrophin. Duchenne dystrophy is present at birth, but the disorder usually becomes apparent between ages 3 and 5. The person falls frequently and has difficulty keeping up with their friends when playing, running, jumping and hopping and are invariably abnormal. By the age of 5, muscle weakness is obvious in muscle testing. On getting up from the floor, the person uses his hands to lift up himself (Gower's maneuver).

In younger children, the calf muscles are usually enlarged from true muscle hypertrophy with calf enlargement appropriated later, called Pseudo-hypertrophy. Since muscle is replaced by fat, there will be inability to walk after the age of 12 years. By the age 12, most patients are confined to a wheel chair. Contractures become fixed, and a progressive scoliosis often develops which may be associated with pain. The chest deformity associated with scoliosis impairs pulmonary function, which is already diminished by muscle weakness. By the age 16 to 18, patients are predisposed to serious, and sometimes fatal, pulmonary infections. Other causes of death include aspiration of food and acute gastric dilation.

BECKER MUSCULAR DYSTROPHY: This less severe form of X-linked recessive muscular dystrophy was described by Becker and Keiner in 1955. It is often called the benign form of Pseudo-hypertrophic muscular dystrophy. It was not known whether Duchenne and Becker muscular dystrophies were genetically distinct disorders. Becker muscular dystrophy is approximately 10 times less frequent than Duchenne, with an incidence of about 3 per 100,000. The pattern of muscle wasting in Becker muscular dystrophy closely resembles to that seen in Duchenne. Proximal muscles, especially of the lower extremities, are prominently involved. As the disease progresses, weakness becomes more generalized. Significant facial muscle weakness is not a feature

here. Hypertrophy of muscles, particularly in the calves is an early and prominent finding.

Mental retardation may be seen in Becker muscular dystrophy, but it is not as common as in Duchenne. Cardiac involvement occurs in Becker dystrophy and may result in heart failure. Most Baker patients first experience difficulties between the age of 5 and 15 years, although onset in the third or fourth decade of life, or even later, can also occur.

LIMB GIRDLE DYSTROPHY: The term was introduced in 1954 by Walton and Natrass. It is presented with muscle weakness, which affects both males and females, with onset ranging from late in the first decade to the fourth decade of life. It affects the pelvic and shoulder girdle muscles. Respiratory insufficiency from diaphragm weakness may occur. In some patients, cardiac involvement results in congestive heart failure or Arrhythmias and is occasionally presented with a Cardio-miopathy. However, intellectual functions remain normal.

CONGENITAL MUSCULAR DYSTROPHY: This rare autosomal recessive disorder includes four subgroups with overlapping clinical features. Variable involvement of brain and eyes can help differentiate these conditions.

All the forms of congenital muscular dystrophy are present at birth or in the first few months of life, along with hypotonia and proximal limb weakness. Varying degrees of joint contractures at the elbows, hips, knees and ankles are seen in most patients. Contractures present at birth are referred to as Arthrogryposis. Weakness of facial muscles may occur, but other cranial nerve musculature is spared. Severity varies greatly, but about half of affected individuals never achieve the ability to stand independently. Death may occur because of respiratory insufficiency early in life. Some patients learn to walk, although there is a difficulty in motor activities.



CRITICAL STUDY OF MEDIEVAL TREATISES OF AYURVEDA

* Dr. R. Vidyanath, * Dr. K. J. Lavanya Lakshmi, * * Prof. K. Nishteswar

The credentials of Ayurveda are referred to in 'Vedas' and the basis of Ayurveda is linked with the origin of Universe. Around 1000 B.C, the knowledge of Ayurveda was comprehensively documented in various *Samhitas* viz. *Agnivesa Samhita*, *Bhela Samhita*, *Kasyapa Samhita*, *Harita Samhita*, *Sushruta Samhita*, etc.

Acharya Priya Vrat Sharma depicted the development of Ayurveda under three major components as *Prachina Kala* - Ancient period (up to 7th Century AD, i.e. post Gupta period), *Madhyama Kala* - Medieval period (8th to 15th Century AD) and *Adhunik Kala* - Modern period (16th Cent. onwards). Acharyas of Ayurveda had written voluminous works on different specialties, which are not tangible to mediocre students and the time demanded for more concise and full-fledged works on medicine of medieval period. *Madhavanidana*, *Chikitsakalika*, *Vrindamadhava*, *Chakradutta*, *Gadanigraha*, *Vangasena Samhitha*, *Sarangadhara Samhita*, *Bhavaprakasa*, etc. are being considered as the popular treatises of Ayurveda during medieval period. Among those works *Vrindamadhava*, *Chakradutta*, *Gadanigraha* and *Vangasena Samhitha* are having shown certain similarities and specialties in the presentation.

Madhavanidana: Madhavakara, the author of 'Madhavanidana' or 'Rugvinishchaya' was the son of Indukara who belonged to Vanga Desa and was born during 7th century AD. It is an excellent

Ayurvedic book on *Nidana*, containing 69 chapters. Verses on *Nidana* found in several sections of the ancient works are compiled and arranged in a methodical way. The names of new diseases appeared for the first time in 'Madhavanidana' are *Amavata*, *Parinamasoola*, *Annadravasula*, *Medoroga*, *Sitapitta*, *Amlapitta*, *Masurika*, *Pakshmasata*, and *Yonikanda*. The new alignment of the diseases, which were arranged in the work of Madhavakara, was followed by his successors like Vrinda, Chakrapanidutta, Vangasena and Shodhala in their treatises. Madhavakara probably also wrote the book 'Madhava Chikitsa' on the treatment of diseases discussed in 'Madhavanidana'.

Chikitsakalika: 'Chikitsa kalika' is a well-known work on medicine composed by Tisata, the son of Vagbhata, during 9th century A.D. In the introductory verses, the author revealed that the works of Dhanvantari, Agnivesa, Bhela, Harita, Parasara, Bhoja, etc. are the sources for his text. It is a collection of simple and efficacious formulations for various diseases and the whole treatise contains 400 verses only.

Vrinda Madhava: Vrinda was the author of 'Siddhayoga', which became more popular as 'Vrinda Madhava'. He stated that the book was written according to the index of 'Madhava Nidana'. 'Siddhayoga' mainly dealt with the treatment of diseases. Every chapter is having sub-heads viz. kinds of therapies required, description of formulae along with the ingredients, their proportion,

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mode of preparation and administration, dosage, actions and indications, suitable and unsuitable foods and activities. In addition to the above, different kinds of therapies required in specific diseases are also described, such as *Kshara*, *Agni*, *Sastrakarma*, *Raktamokshana*, *Oshadhi Dharana*, *Mani Dharana*, etc. The formulations comprised of *Swarasa*, *Kalka*, *Hima*, *Phanta*, *Quatha*, *Vati*, *Choorana*, *Ghrita*, *Taila*, *Asava*, *Arista*, etc. Vrinda has recorded the therapeutic use of *Parasika Yavani* in *Krimiroga* for the first time in the *Materia Medica* of Ayurveda. Due to the above features, '*Siddhayoga*' became more popular with in a short period, and the great scholars like Brahmadeva and Srikanthadatta and others wrote commentaries on it.

Chakradutta: Chakrapanidutta composed a text on medicine entitled as '*Chikitsa Sangraha*' commonly known as '*Chakradutta*'. This work had set a historical land mark in the development of medical principles in India. Nischalakara (13th Century AD) wrote an exhaustive commentary on '*Chakradutta*' entitled as '*Ratnaprabha*'. A verse at the end of *Chakradutta* clearly indicates that he followed the text of Vrinda's '*Siddhayoga*' by making number of editions. These editions were imposed due to the development of *Rasasastra* which took place during that period. Nischalakara traced the sources of several verses of *Chakradutta* from as many as 49 works of preceding authors viz. Bhela, Chandrata, Charaka, Harita, Kharanada, Krishnatreya, Ksharapani, Nagarjuna, Ravigupta, Susruta, Vagbhata, Videha and Vrinda. For the first time, *Rasa Parpati* was described by Chakrapani in this text '*Rasaparpatikakhyata Nibaddha Chakrapanina*' 4 / 90.

Gadanigraha: '*Gadanigraha*' is one of the excellent works of Ayurvedic literature dating back to the 12th century A.D. and was written by Shodhala, son of Nandana, who belonged to *Vatsasa Gotra* of Gujarati Brahmin family. The book is divided into 3 *Khandas* viz. *Pradhama Khanda*, *Dwitiya Khanda* and *Tritiya Khanda*. *Pradhama Khanda* deals with various pharmaceutical

preparations like *Ghrita*, *Taila*, *Churna*, *Vati*, *Avaleha* and *Asava* useful in various disease conditions. Entire *Dwitiya Khanda* is being allocated to the aetio-pathogenesis and treatment of various disease conditions related to *Kayachikitsa* starting from *Jwara* and ends with *Masurika*, in 41 chapters. In the last section, the author described the other branches of Ayurveda too.

Vangasena Samhita: *Vangasena Samhitha* should be considered as the best Ayurvedic therapeutic compendium of medieval India. According to the colophon, it is very much clear that Vangasena was the author of '*Chikitsasara Sangraha*' and he was the resident of Kantika town which was situated in Vanga Desa and belonged to the 12th century AD. '*Vangasena Samhita*' covers the diagnosis of disease, drug prescription, various pharmaceutical processes and the principles of treatment and the entire work was planned according to the index of diseases furnished in '*Madhavanidana*' and this was a collection of well-tried medical formulae from the elders in the art of medicine during that period.

Conclusion:

- The period of Madhavakara was fixed as 7th century AD., while Vrinda and Chakrapani belonged to 9th and 11th century AD respectively. Vangasena and Shodhala were the contemporary authors of 12th century AD.
- Since Chakradutta quoted 49 references from his earlier works, the works of Agnivesa, Bhela, Jatukarna, Videha, Vagbhata, Tisata, Ravigupta and Vrinda can be considered to be authored before 11th century AD.
- The description of the material in the works of Vrinda, Chakrapani, Vangasena and Shodhala have been drafted mainly basing on the contents of '*Madhavanidana*'.
- '*Madhavanidana*' comprises of 69 chapters and deals only with the aetio-pathogenesis of many a number of diseases related to

MANAGEMENT OF BPH BY PHYTOTHERAPY

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ABSTRACT:

Benign Prostatic Hypertrophy (BPH) is a common condition in men above 50, characterized by a non-malignant enlargement of the prostate. The clinical features include incomplete emptying, frequency, intermittency, weak stream, straining & nocturia.

Ayurveda looks at this senile problem in a different way. This B.P.H. can be correlated with *Vata-ashthila*, described by Acharya Sushruta. Drugs advocated in Ayurvedic texts not only take care of the symptoms, but also aims to break the pathology. All this has inspired us to conduct clinical trials of Phytotherapy treatment comprising *Ghana* of *Ashwagandha*, *Varun*, *Gokshur*, *Haritaki* & *Punarnava* in the patients of B.P.H. The statistics obtained revealed that the Phytotherapy combination (Tab. EASYPROST) effectively reduce the symptoms of B.P.H. and worked as good as the highly selective α_1 blocker (Tamsulosin hydrochloride).

KEY WORDS: Benign Prostate Hypertrophy, Prostate surgery, α_1 blocker - Tamsulosin hydrochloride, *Vata-ashthila*, *Varun*, *Gokshur*, *Haritaki* & *Punarnava*.

Introduction: Benign Prostatic Hypertrophy (B.P.H.) is characterized by a non-malignant enlargement of the prostate resulting from excessive cellular growth of both the glandular and the stromal elements of the gland. Due to the enlargement of prostate gland, a group of symptoms develop which is called as Prostatism.

Prostatism is divided into two groups:

Obstructive	Irritative
Hesitancy – worsened if the bladder is very full	Frequency
Dysuria - Poor flow – unimproved by straining	Nocturia
Intermittent stream – stops and starts	Urgency
Dribbling – including after micturition	Urge incontinence
Episodes of near retention	Nocturnal
Sensation of poor bladder emptying	incontinence

Aetiology of B.P.H.: The aetiology of BPH is unknown. One hypothesis infers that the prostate converts testosterone to a more powerful androgen called Dihydrotestosterone (DHT), which stimulates cell growth in the tissue that lines the prostate gland (the glandular epithelium) and is the major cause of the rapid prostate enlargement.

Incidence and Epidemiology: Benign Prostatic Hypertrophy (BPH) is a common condition in older

men; approximately 50% of men aged 60 years and 90% of those aged 85 years present with BPH. In India, prostatic hypertrophy is common over the age of 60 years.

Established Treatment of B.P.H.

Conservative medical management - For Curative relief – 5 α reductase inhibitors like Finasteride and Dutasteride and for Symptomatic relief – Alpha blockers like Terazosin, Doxazosin, Tamsulosin, and Alfuzosin are given. However, these medicines have got side effects and adverse effects like Sexual dysfunction, Postural hypotension, Asthenia and Dizziness, etc. Similarly, long-term therapy is required to maintain the benefits.

Surgical procedures - Supra pubic Prostatectomy, Retro pubic Prostatectomy, Transurethral prostatectomy, Perineal prostatectomy, Laser treatment & Microwave treatment. However, TURP, i.e. transurethral resection of the prostate, has been the mainstay of treatment.

B.P.H. and Ayurveda: There is a lot of similarity between *Vata-ashthila* described by Acharya

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Sushruta and B.P.H. *Vata-ashthila* is said to develop due to vitiated *Vayu* which gets lodged in the space between *Basti* and *Guda* and gives rise to a hard, thick cystic (*Granthi sadrushya*) structure, which is non-shifting in character and produces various obstructive and irritative urinary symptoms and cause pain in the bladder. These symptoms and cystic (*Granthi sadrushya*) structure can be correlated with B.P.H.

Need for Herbal approach in the Management of BPH: In patients of BPH, treating only the symptoms is not sufficient. Modern medicines, though effective, have a number of side effects. Similarly surgical techniques demand not only money factor, but also there are many other complications after surgery. Additionally, about 20 to 25% of patients do not have a long-term satisfactory outcome from surgery.

Herbal drugs advocated in Ayurvedic texts not only takes care of symptoms of BPH, but also aims to break the pathology & improves quality of life of patient with B.P.H. Similarly, Phytotherapy gives curative relief along with the symptomatic relief to the patients of B.P.H. They are cost effective and free from any adverse effect.

Aims and objectives of the study:

- The study entitled “Randomized Controlled clinical study of Phytotherapy combination (Tab. EASYPROST) in the patients of B.P.H. (Grade I & II)” primarily aims at evaluating the treatment result in B.P.H.
- First line therapy – To substitute Medical Therapy for Surgery in the patients of B.P.H. – Grade I & II, free from adverse reactions and side effects of Allopathic drugs.
- Economic Therapy – To give cost effective treatment in the patients of B.P.H.

Materials and Methods

- Title of the study - “Randomized Controlled clinical study of Phytotherapy combination (Tab. EASYPROST) in the patients of B.P.H. (Grade I&II)”.

- Type of study - Open Randomized Controlled Clinical Trial.
- Centre of study - Dr. D. Y. Patil Ayurvedic Hospital, Nerul, Navi Mumbai.
- Sample size - 60 (30 + 30)
- Grouping of patients – Randomly selected patients were divided into:
 - Group A – Tab. EASYPROST (Phytotherapy combination)
 - Group B – Capsule of Tamsulosin Hydrochloride 0.4 mg
- Duration of treatment - 3 months for both the groups.
- Follow Up – Every 3 weeks.

Criteria for the selection of the patients

Inclusion criteria: Male patients around the age of 50, Prostrate size Grade I & II

Exclusion criteria: Complicated B.P.H. with Grade III, Ca prostate, Diabetes Mellitus, Oliguria, Stricture Urethra, Major disease like HIV, Liver cirrhosis, Koch's, IHD, Nephrotic syndrome, etc.

Baseline assessment & Investigations:

Investigations: All Routine investigations CBC, ESR, BSL, BUN, Sr. Creatinine, Urine R/M, etc., Digital rectal examination (DRE), USG for prostate to observe weight and size of the prostate, Post-void residual urine volume (before and after treatment), PSA (Prostate specific antigen) and AUA Score (American Urological Association Symptom Score).

Assessment of Efficacy of Therapy

The assessment of the effect of therapy was totally based on the standard AUA symptom score. Symptomatic relief of the patient was the main aim and the effect of therapy was assessed in terms of:

Cured	100% relief, in all symptoms.
Relieved	75% to 100% relief in the symptoms.
Markedly Improved	50% to 75% relief in the symptom.
Improved	25% to 50% relief in the symptoms.
Unchanged	Less than 25% or no relief to symptoms

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AYURVEDIC CONCEPT OF DISEASE COMMUNICABILITY

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Introduction

On discussions in the topic of disease communicability, what crop up our minds is the quote of *Acharya Sushruta*, in *Kustha Nidana* stating the modes of transmission of communicable diseases, like – *Prasanga* (sexual contact), *Gatra sparsha* (touch, contact), *Nishwasa* (airborne), *Saha bhojana* (food borne), *Saha- shayya*, *aasana*, *vastra*, *malya*, *anulepana* (Fomites). In a broader view, these are just glimpses and much more advanced information is available, as per the necessity of understanding the topic.

Acharya Charaka in *Vimanasthana* discusses the root cause for communicable diseases under a broad caption of '*Adharma*', i.e., not following *Sadvrutta* which is a part of '*Dharma Shastra*', (a list of do's and don'ts), which are conducive towards maintenance of a healthy lifestyle. Further he states that the environmental changes leading to epidemics are also the result of *Adharma* and *Purvakruta asat karma*. Although these two are main causes, they need to be supported by other reasons like, *Bhoota sanga*, *Apachara*, etc., and take up the help of four factors viz., *Jala*, *Vayu*, *Bhumi*, and *Kala* to impart the *asatmyata* and *vikrutata* in *shareera*.

Acharya Vagbhata gives emphasis on *Prajnaparadha* (*nishiddha aacharana*), which is again *Sadhya kruta* and *Purva kruta*, along with the other reasons. A person gets devoid of *dharma* due to the impact of *kama*, *krodha*, *moha*, etc.,

and gets deviated from his *vrutta* and *aachara* leading to *ashaucha*.

This article offers a bird's eye view of different references related with disease communicability in Ayurveda and their interpretation according to present day knowledge.

Concept of infective agents:

The infective agents are variously described in Ayurvedic texts as:

- *Bhoota*: *Yama-anucharah*, *Deva grahadayah*
- *Rakshasi*: *Ravana-anucharah* - *Pashupati kubera-kumara anucharani*, *Maheshwara-Dhanada-Kartikeya anucharani*, *tad aadesha karani ityatha*
- *Pishacha*: *Pishitashana*, *Deva yonayh*
- *Pretah*: *Pranino vigatim praptah*
- *Krutya*: *Kupita mantrino abhichara karma janita rakshasi*
- *Nishachara*: *Prithivyam antarikshe cha ye charanti*
- *Krimi*, etc.

These agents are considered as '*Durjneya*' i.e., difficult to perceive and move around and affect to cause *vinasha*.

Bhoota swabhava: The *Bhootas* and *Grahas* are divided into two groups – *Suras* and *Asuras* with varied forms and shapes. *Bhootas* have the

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wandering habit at night in search of their food, which is usually Mamsa, Asruk, Vasa, etc. The timings and the places of *Bhootavesha* (getting infected or infested) are explained as unhygienic places and things, regurgitation, blood, vomit, etc. Even though *Bhootas* get to their favourite places and timings, they will not enter inside the *shareera* till the 'Chidra' (route of entry into body) is created.

The *Bhootas* or *Grahas* prefer specific routes of entry, explained as:

<i>Sparsha</i> – <i>Gandharva</i>	<i>Aavesha</i> – <i>Bhujanga</i>
<i>Gandha</i> – <i>Yaksha</i>	<i>Rakta vahana</i> – <i>Rakshasa</i> , <i>Pishacha</i>
<i>Darshana</i> – <i>Pitru</i>	<i>Shapa</i> – <i>Rhushi</i> , <i>Guru</i> , <i>Vruddha</i> , <i>Siddha</i> , etc.

Incubation Period: The concept of interval between the time of infection and the time of appearance of the first clinical features, which is specific for each infectious disease was profoundly understood and used for diagnoses and treatment by the Acharyas. In *Aagantuja Jwara*, *Acharya* Charaka states three days to a week for the proper establishment of disease and after this duration only, the disease becomes associated with *doshas*.

Concept of *Aagantuja Vikara*: This is based on extrinsic factors invading the body like *Abhighata*, *Abhishanga*, *Abhichara* and *Abhishapa*. *Abhighata* indicates entry of agents through injury or 'Direct mode of transmission'. *Abhishanga* relates to the *Bhootas* referred to as '*Asatmya gandhaadayo*', which is nothing but the air, water, earth, etc. contaminated by dust and infective agents. Further it is stated that scratching with nails, biting, etc., also cause *aagantuja* diseases, which can be considered under inoculation into skin and mucosa.

Concept of *Grahas*: For *Balagrahas*, *Acharya* Vagbhata and Kashyapa explains that Lord Mahadeva, worried about the protection of Lord Kartikeya, also known as Skandha created five *Purusha grahas*, and seven *Stree grahas*. These

grahas later started affecting the children on Earth. *Acharya* Vagbhata in *Unmada nidana* mentions that the *grahas* themselves does not invade any human being, but instead they send their '*Paricharakas*', who are innumerable, to affect the humans. These *grahas* invade the humans to fulfil three reasons, namely: *Hinsa*, *Rati*, and *Archana*.

The *grahas* which affect the child with the intention of *Hinsa* are said to be incurable and at the end will kill the child. The *grahas* with intention of *Rati* get cured with difficulty and should be treated with, by fulfilling their desires. The *grahas* invading with the desire for *Archana*, are *sukha sadhya* and should be treated with *Homa*, *Mantra*, etc. *Agni* is a must in all treatments of *Grahas* and *Bhootas*, and keeping *agni* burning with *Rakshoghna taila*, all around the child signifies the power of disinfection the *Agni* possess, which is true even today in the form of incineration, boiling, fumigation, etc.

Concept of *Revati*: *Revati* was created by Gods to destroy the *Asuras* and *Rakshasas*. The *Asuras* took shelter in the wombs of humans, animals, birds, and plants. When *Revati* came to know of this, she created *Jataharini* and started killing all the forms of *Asuras* including foetus, child and mother.

Acharya Kashyapa mentions, when a woman, during her pregnancy, comes in to contact with another woman having unhygienic practices and is inauspicious, the *Jataharini* attacks the pregnant woman through the roots of hair, nails, old clothes, leftover food and drinks, medicines, perfumes, flowers, old shoes, etc., *Revati* enters through the pores created by the *Adharma* (unrighteous acts), underlines subtle scientific information on vector-borne modes of transmission of diseases. The pregnant women were not desired to eat even with their mother. The husband who has come from outside should wash himself before touching his wife. The concept of sexually transmitted diseases spreading through multiple partners is also mentioned. It is also

POLYETHYLENE TEREPHTHALATE AND AYURVEDA

* Dr. V. Madhavachandran

Polyethylene terephthalate is a thermoplastic polymer resin of the polyester family. It is commonly abbreviated as PET. We find various uses for PET in our daily life. Bottles, packing materials, etc. are made of PET. Products of synthetic as well as natural origin are packaged in PET containers. Many medicines, food supplements, health supplements, etc. are available in PET. We can find many Ayurvedic medicines packaged in PET containers in the market. Many of such packs are found to be distorted and shapeless with the bottle walls softened. Hence it has become imperative to study more about PET, its interactions with its contents, possible health hazards it may cause to the living beings and the damage it can cause to the environment.

PET consists of polymerized units of the monomer - ethylene terephthalate, repeating $C_{10}H_8O_4$ units. PET can be semi rigid to rigid, depending on its thickness, and is very light weight. It makes a fair gas barrier and a moderate moisture barrier. It also can up to certain extent; act as a barrier to alcohol and other solvents.

PET may exist as an amorphous (transparent) or as a semi-crystalline material. The semi crystalline material might appear transparent (spherulites <50nm) opaque and white (spherulites up to some mm) depending upon the size of the spherulites. Shades like Amber, etc. are achieved by the addition of pigments. PET in its natural state is a crystalline resin. At room temperature the molecules stay frozen. This

procedure is known as solid-state crystallization in place. But if enough heat energy is put back into them they begin to move again, allowing crystals to nucleate and grow. This may lead in to softening of the wall of the container.

Molecular formula	$(C_{10}H_8O_4)_n$
Density amorphous	1370 Kg/m ³
Density crystalline	1455 Kg/m ³
Young's modulus (E)	2800-3100 Mpa
Tensile strength (σ_t)	55-75 Mpa
Elastic limit	50-150%
Notch test	3.6 KJ/m ²
Glass temperature	75°C
Melting point	260°C
Vicat B	170°C
Thermal conductivity	0.24 W/(m.K)
Linear expansion coefficient (α)	$7 \times 10^{-5}/K$
Specific heat ©	1.0 kJ/Kg.K)
Water absorption (ASTM)	0.16
Refractive Index	1.5750
Price	30-75 ₹/Kg

Table 1 shows the major characteristics of PET

One of the most important characteristics of PET is referred to as intrinsic viscosity (IV). The IV of the material, measured in decilitres per gram (dl/g) is dependent upon the length of its polymer chains. The longer the chain, the stiffer will be the material. As the container is exposed to harsh climates, this may cause damage to the long polymer chain, which eventually causes damage to the container.

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1	Fibre	0.60 dl/g
2	Film	0.65 dl/g
3	Bottles	0.76-0.84 dl/g
4	Tyre cord	0.85 dl/g

Table 2 shows the difference in IV depending on the purpose

PET is hygroscopic, meaning that it naturally absorbs water from its surroundings. However, when this ‘damp’ pet is then exposed to sun, the water hydrolyses the PET, decreasing its resilience.

PET is subject to various types of degradation during processing. The main degradations that can occur are hydrolytic, thermal and probably and most important, thermal oxidation. When PET degrades, several changes happen like discoloration, chain scissions resulting in reduced molecular weight, formation of acetaldehyde and cross links (gel or fish-eye formation).

This Acetaldehyde is normally a colourless, volatile substance with a fruity smell. It forms naturally in fruits, but it can cause an off-taste in bottled items like water. Acetaldehyde is formed in PET through the ‘abuse’ of the material. High temperature (PET decomposes above 300°C or 570°F), high pressure, extruder speed (excessive shear flow raises temperature) and long barrel residence time all contribute to the production of acetaldehyde. When acetaldehyde is produced, some of it remains dissolved in the walls of the container and then diffuses into the material stored inside, altering its taste and aroma. This is a huge problem except in items for external use only (such as shampoos), and also fruit juices (which already contain acetaldehyde). The thermal and thermo-oxidative degradation results in poor processability characteristics and performance of the material.

Antimony (Sb) is a catalyst that is often used as Antimony trioxide (Sb_2O_3) or Antimony triacetate in the production of PET. It remains in the material and can thus, in principle, migrate out into the food and drinks packed in. Although antimony trioxide is of low toxicity, its presence is still a concern.

PET is not a very effective oxygen barrier. Pet permits oxygen. This property of pet is in other words called ‘Breathing’. Due to this permeability of oxygen premium wines are not packed in PET bottles.

PET is affected by strong alkalis and strong acids and hence for any edible content of pH more than 9, shelf life will be very limited. For determining the compatibility of PET for any specific solvent one needs to carry out stability study. When PET is exposed to chemicals in environmental conditions different from lab conditions, the results of exposure may differ significantly. Users must make their own determination that their use of PET is safe, lawful and technically suitable in the intended applications.

May be due to these reasons, a major manufacturer of PET bottles disclaims as follows “Because of possible changes in the laws and in regulations, as well as possible changes in our products, we cannot guarantee that the status of this product will remain unchanged”.

A study was conducted to understand the changes happening to PET material. Sections of unstressed injection-moulded tensile bars 3.2 mm thick were weighed, measured and immersed in the chemicals or reagents mentioned in the table below and stored at 23°C, 60°C and 80°C for one year and the inferences are as follows:

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OOTHU CHIKITSA (BLOWING THERAPY)

*Dr. Krishna Singh

A survey reports “It is difficult to provide comprehensive primary health care to entire population in developing countries like India where 70% of the population live in rural areas. They are not having the luxury of the Speciality hospitals as in the cities. One of the most certain and feasible ways to provide health care to the entire population is by strengthening and taking the support and help of traditional medicine and its practitioners in cultures worldwide.”

Agadatantra, a branch of Ayurveda, deals with the study of different kinds of poisons and the management of poisoning from various sources. It is not a deniable fact that incidence of snake bite has not declined in rural areas and at the same time statistics proves that suburban areas are also vulnerable to snake bite. It means treatment of snake bite cases still remains a challenge to the medical fraternity even after invention of sophisticated and advanced medicines and techniques.

The contribution of professional *Vishavaidyas* from Kerala for the management of snake bite is highly appreciated. The Ayurvedic treatment module for this medical emergency is unique and requires medical skills and experience to practice. Apart, from using treatment mentioned in the *Samhitas*, they follow many unique treatments which are known to local *Vishavaidyas*, since ages. All these treatments are mentioned in Malayalam *Visha* text book and are passed from generation to generation in the family of *Vishavaidyas*. Many *Vishavaidya* families in Kerala are practicing *Oothu chikitsa*, for e.g. Vimala Antarajanam of Ollur mana, Thrissur.

There are many medicines and treatments which are effectively used as life-saving tools in the remote areas. **Oothu** is one among them which is used in snake bite cases when the patient is falling unconscious. It is an emergency treatment which is very handy and can be practiced with minimal requirement.

The treatment modality called *oothu* is one of the most important therapeutic procedures performed in the initial stage of snake bite treatment, particularly in the stages of *Vata*, *Kapha* or *Vatakapha* predominance and when the effect of *visha* is limited to the first three *dhatu*s. The textual reference for this method of treatment is *Jyotsnika*.

Indications: A *Vishavaidya* mainly employs this treatment modality when any or all of the following symptoms appears in a snakebite victim:

1. Delay in responses to verbal and physical stimuli
2. Drowsiness
3. Drooping of the eyes
4. Numbness over the tongue, mouth and scalp
5. Pain all over the body
6. Paralysis of jaw, tongue, larynx and neck
7. Headache
8. Dizziness, vertigo
9. Excess salivation, formation of mucous and fluids in the chest, eyes, etc.

Materials required: The drugs required are *Sunthi* (dried rhizome of *Zingiber officinale*), *Dusparsha* (root of *Tragia involucrata*), *Maricha* (dried fruits of

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Piper nigrum), *Iswaramuli* (root of *Aristolochia indica*). In common practice the root of *dusparsha* is generally avoided, partly due to the difficulty in procuring the drug at short notice and partly due to allergic reaction it produces in certain individuals.

Method: Three persons who have not consumed alcohol or any such *tiksna dravyas* (because being similar in nature to that of *visha* can aggravate it further) for the last 24 hours are needed for the treatment. If the persons have chewed tobacco or betel leaves, they should thoroughly wash their mouth before starting the treatment.

The patient should be seated in a comfortable position, either in a chair or a high pedestal, which is convenient for the treatment. One attendant should stand behind and the other two attendants on either sides of the patient. They should then chew a small quantity of the 4 drugs explained above, slightly pounded together.

The person standing behind the patient should blow air through his mouth onto the *murdha* of the patient and the two attendants standing on either side should blow air through their mouth to the ear on the

respective side. This should be done synchronously for at least 150 times. It can be increased as per the patient's condition. The attendants can briefly stop the treatment in between to spit out excess saliva. Care should be taken not to spit out the medicines kept in the mouth.

Improvements can be noticed in the responses of the patient after 75-100 blowing. After 150 blowing there is usually a marked improvement in the verbal and physical responses, drowsiness and drooping of the eyes. The patients report a vivid feeling of the effects of *visha* descending down their body before disappearing.

All these medicines and procedures fulfil the criteria of the plans of the AYUSH, which aims to popularize local health tradition which is immediate / handy and also cost-effective treatment. But, the effort should be put to prove the efficacy and mode of action of these procedures and anti-dotes on the scientific basis to be accepted largely by the Ayurvedic medical community. Such efforts will help the survival of the very precious and rarest procedures and anti-dotes by bringing them to the mainstream, which would be beneficial for the mankind.



March 8 - International Women's Day

International Women's Day, which is recognised by the UN, was originally called International Working Women's Day. The focus ranges from general celebration of respect, appreciation and love towards women to a celebration for women's economic, political and social achievements.

March 22 World Water Day

The day is marked as a means of focusing attention on the importance of freshwater and advocating for the sustainable management of freshwater resources. Its campaign is envisaged to raise awareness about sustaining healthy ecosystems and human well-being through addressing the increasing water quality challenges in water management and raise the profile of water quality.

Courtesy: UNO & WHO official websites

**** ANTISENSE TECHNOLOGY - BRINGING HOPE TO LIFE**

* Deepti G.

Introduction

Antisense technologies are a suite of techniques that together form a very powerful weapon of studying gene function (functional genomics) and for discovering new and more specific treatments of diseases in humans, animals and plants (Antisense therapeutics). This type of technology was first developed by Dr. Hal Weintraub and his colleagues at the Basic Science Division in the early 1980s. They were the first to show that aRNA could inhibit gene expression in mouse cells (Berg 2002). Antisense technology was first effectively used in plants to alter the levels of various degradative enzymes or plant pigments.

What is Antisense Technology?

Antisense technology is a tool that is used for the inhibition of gene expression. Protein molecules are the expressions of gene. However, to get to a protein the cell must undergo two complex processes, transcription and translation. Transcription is the process in which an RNA copy is made of the DNA. Finally, the RNA is transported to the cytoplasm; the mRNA molecule binds with ribosomes and starts the production of protein.

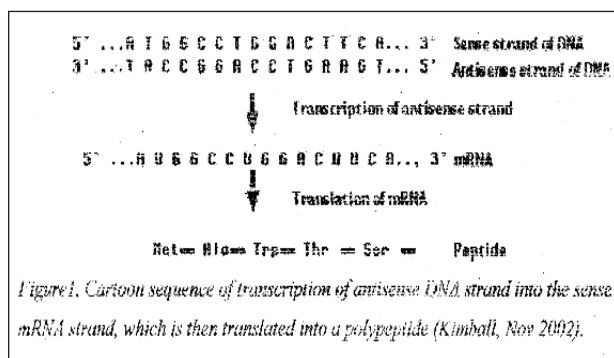
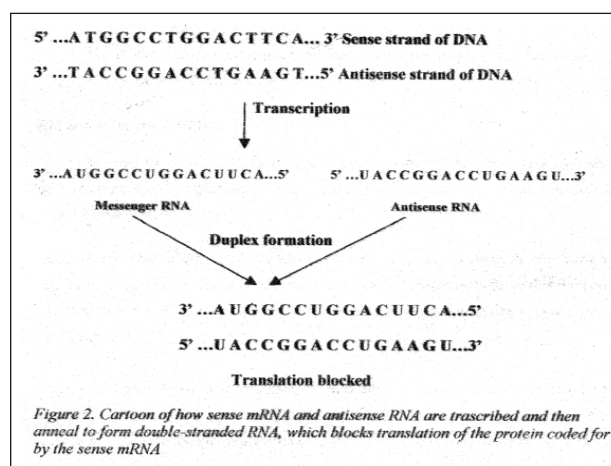


Figure 1. Cartoon sequence of transcription of antisense DNA strand into the sense mRNA strand, which is then translated into a polypeptide (Kimball, Nov 2002).

Occasionally, a bad mRNA molecule is synthesized so that the resulting protein cannot function properly. Abnormalities of proteins cause many diseases that afflict humans. If the production of these proteins is disrupted, many diseases can be treated or cured. This idea is the basis for antisense technology.

Antisense Mechanisms

The principle behind it is that an antisense nucleic acid sequence base pairs with its complementary sense RNA strand and prevents it from being translated into a protein. The complementary nucleic acid sequence can be either a synthetic oligonucleotide, often oligodeoxyribonucleotides (ODN) of less than 30 nucleotides, or longer antisense RNA (aRNA) sequences.



Initially, cellular nucleases dramatically reduce the effectiveness of antisense oligonucleotides by rapidly degrading these molecules after administration. These obstacles can be overcome in applications utilizing synthetic oligonucleotides by altering the nature of

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the phosphodiester bond by replacing oxygen with sulphur. Such modified oligonucleotides are termed as Phosphorothionates.

Theories on how inhibition works

The overall goal in introducing an antisense agent into cells either in vitro or in vivo is to suppress or completely block the production of the gene product. The exact mechanism by which the translation is blocked is unknown. Several theories include:

- That the dsRNA prevents ribosomes from binding to the sense RNA and translating.
- The ds RNA cannot be transported from within the nucleus to the cytosol, which is where translation occurs, or
- That dsRNA is susceptible to endoribonucleases that would otherwise not affect single stranded RNA, but degrade the dsRNA

How to clone RNA

In order for aRNA to block translation, it has to be inserted into the proper cells so it can bind to its complementary sense strand. There are several ways to incorporate aRNA into a cell.

1. Endocytosis – One of the simplest methods to get nucleotides in the cell, it relies on the natural process of receptor mediated endocytosis. The drawbacks to this method are the long amount of time for any accumulation to occur, the unreliable results, and the inefficiency.
2. Micro injection – As the name implies, the antisense molecule would be injected into the cell. The yield of this method is very high, but because of the precision needed to inject a very small cell with similar molecules only about 100 cells can be injected per day.
3. Liposome encapsulation – This is the most effective method, but also very expensive one. Liposome encapsulation can be

achieved by using products such as LipofectACE(TM) to create a cationic phospholipid bilayer that will surround the nucleotide sequence. The resulting liposome can merge with the cell membrane allowing the antisense to enter the cell.

4. Virus infection – Adenoviruses can also be used to infect cells and deliver aRNA sequences. This method has higher transduction efficiency than liposomes.
5. Electroporation – The conventional method of adding a nucleotide sequence to a cell can also be used. The antisense molecule should traverse the cell membrane after a shock applied to the cells.
6. A northern blot can also be used to detect whether the aRNA is produced within the cells, and a Western blot can be used to measure amount of the mRNA gene that is expressed in wild type and mutant cells with. If the aRNA is properly expressed in the cells, then less of the mRNA gene product should be produced.

Biotechnology and antisense technology causation

The impact of biotechnology on antisense technology is expected to increase dramatically as the links between genetics, protein production and disease are better understood.

Currently, antisense technology is used to design therapeutic compounds which target specific mRNA sequences to obstruct the production of certain disease causing proteins. Traditional drug therapies focus on a drug's interaction with the disease causing proteins. However, antisense drug therapies inhibit the production of the disease causing proteins altogether.

Applications of Antisense

Applications of Antisense technology are very diverse. It was first successfully used in plants. One

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DHURDHOORA – FOR SKIN DISEASES

* Baby Joseph, Sophy Paul

Botanical Name	:	Datura metel. Linn
Malayalam Name	:	Ummath
Sanskrit Name	:	Dhurdhoora
English Name	:	Thorn Apple
Hindi Name	:	Dhattura
Family	:	Solanaceae

Distribution & Habitat: *Datura metel* is a glabrous annual herb existing in different species, distinguished by prefixes denoting the colour of the flowers – white, purple, etc. It is a common weed growing in waste places and roadsides throughout India.

Habit and General features: An erect, succulent, spreading annual herb or shrub, with purplish branches, leaves triangular ovate in outline, unequal at base, flowers large solitary, short pedicelled, purplish outside and white inside. Fruits subglobose, capsules covered all over with numerous fleshy prickles, irregularly breaking when mature, seeds numerous, smooth yellowish brown.

Part used: Whole plant, Roots, Leaves, Flowers and Fruits

Chemical constituents: Daturine, Atropine, Scopolamine, Withanolides, Withametelin B, F & G, Withafastuosin F, Withatatinulin B & D, Hyoscyamine, Hyoscyamine, Daturaolone, Daturadiol, etc.

Actions and Uses: The plant is acrid, narcotic, anodyne, antispasmodic, intoxicant and emetic. It is useful in Asthma, Cough, Fever, Inflammations, Hyperacidity, Duodenal ulcer, Renal colic and Calculi. Roots are used for bites of Rabid dogs. Leaf is useful in inflammations and piles. Leaf juice is applied externally for lice and in Skin diseases. Leaves in form of poultice are used in Lumbago, Neuralgia, Mumps and Painful swellings. Seeds are Aphrodisiac

and used in Toothache, Earache, Gastric disorders and are good to treat Dandruff and Lice.

The plant is used in Headache, Sores, Mumps, Pain, Dropsy, Psychological illness, Rheumatism, Epilepsy, Convulsions, Pimples, Syphilis, Intoxication (Jain & Tarafder, 1970), Cough, Asthma, Gonorrhoea, Rheumatism (Dekha *et.al*, 1984), Ulcers, Skin diseases, Fever (Srivastava. *et.al*, 1986), Kidney-stone & Urinary disorders (Silori & Rana, 2000). Flowers are used in Earache (Rao *et.al*, 2000). The fruits are useful in Eczema (Masilamani *et.al*, 1981), Rabid dog bite (Pushpangadan & Atal, 1994), to reduce Swelling on the cheek (Sahoo & Mudgal, 1993) and Dandruff (Rao *et.al*, 2000).

The fruits and seeds are used to cure Cough, Asthma and Bronchitis (Thakur *et.al*, 1992). Seeds are used in Insanity, Fever with Catarrhal, Cerebral complications and as Antiseptic (Siddiqi *et.al*, 2001) in Toothache (Pandey & Varma, 2002), Waist pain (Maliya & Singh, 2003), and to heal Cracks in the feet (Rao *et.al*, 2000). Seeds and roots are used for steam bath in various Dermatological conditions (Rajasekharan *et.al*, 1993). Leaves are applied to tighten flabby breast and also for Drying up milk in the breast (Bortakur, 1992, 1993, Singh *et.al*, 2002) and Sprain (Gupta *et.al*, 1996b, Singh *et.al*, 2002). The latex is used in Swelling, to expel the Sore worm (Joshi, 1991). Root is used for inducing Sterility (Prem Kishore *et.al*, 1982, Singh & Prakash, 1994), to prevent Miscarriage/Abortion (Hembrom, 1996).

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Root, leaves and seeds are used for infestation of Ringworm, Abrasion, Boils and Rashes (Purohit *et.al*, 1985).

Antidandruff: Fresh juice of the leaves with other ingredients boiled with oil gives good control to Dandruff.

CNS Effects: A preliminary study on the water extract of seeds reported it as a sedative on normal and stressed rats. Administration of 100 mg/kg water was found to prevent the stress induced decrease in the levels of DNA, RNA and protein in the brain. The stress induced increase in the levels of 5-HIAA and VMA in the urine of rats was decreased by the end of 48 hr after Datura treatment (Khan 1985).

Hypoglycemic: The seed powder in the doses of 25, 50 and 75 mg/Kg produced dose-dependent reduction in blood glucose at 8h in normal and alloxan-induced diabetic rats (Krishnamurthy *et.al*, 2004).

Antifertility: The acetone (200 mg/Kg) and methanol (150 mg/Kg) extracts of the fruits were found to be devoid of Antiimplantation activity in rats. (Mathur *et.al*, 1983, Prakash *et.al*, 1985).

Antiulcer: Withafastuosin E (WE), the Withanolide isolated from the leaves was reported to possess Antiulcer activity and augmented prostaglandins in various models of experimental induced Ulcers in rats. The Withanolide (20mg/kg) reduced the incidence of Ulcer and ulcer index significantly in rats.

Wound healing: A 10 percent (w/w) formulation of alcohol extract of leaves was studied for wound healing activity in rats by applying it topically on Thermal wounds. The formulation produced significant beneficial effects on wound contracting ability, wound closure time, tissue regeneration at wound site and histopathological alterations like marked infiltration of inflammatory cells, increased blood vessel formation and enhanced proliferation of cells. There was complete epithelialisation, vascularization and development of hair follicles in rats treated with formulation on day 12. The

granulation tissue from the wounds of treated rats showed increase in content of Collagen, Hexosamine and Metrix modifying enzymes (MMP9) and MMP2T. All these results suggested significant prohealing effect of leaves (Shanmuga Priya *et.al*, 2002a.).

Antibacterial: The seeds grown on cattle dung revealed antibacterial activity against *Bac subtilis*, *Xanth campestris*, *Ps cichorii* and *Esch coli* (Bagchi *et .al*, 1997). The leaf extracts revealed antibacterial activity against the bacteria *Xanth oryzae* causing bacterial blight of rice (Meena & Gopalakrishnan, 2004).

Antifungal: The extract of the plant was found to exhibit antifungal activity against the Dermatophytic fungi *Penicillium chrysogenum*, *Aspergillus niger* isolated from diseased skin samples (Nanir & Kadu, 1987). The ethanolic extract of the seeds was active against *Aspergillus niger*, *A. favus*, *A.fumigatus* and *Candida albicans* in In-vitro studies (Srinivasan *et.al*, 2001). The aqueous and the ethanolic extract of the leaves produced 100 percent spore inhibition of *Pestalotiopsis theae*, *Colletotrichum camelliae*, *Curvularia eragrostidis* and *Botryodiplodia theobromae*, the fungal pathogens of tea (Saha *et.al*, 2005).

Antiviral: The leaf extract inhibited 100 percent tobacco mosaic virus on *Chenopodium amaranticolor*. The expressed juice from the leaf, stem and root markedly decreased the number of local lesions and systemic infection by the virus causing Necrotic mosaic disease of *Solanum melongena*.

Much precautions are necessary in its employment, as in overdoses it acts as a violent narcotic poison.

Ayurvedic Properties:

<i>Rasa</i>	<i>Tiktha, Katu</i>
<i>Guna</i>	<i>Laghu, Ruksha</i>
<i>Virya</i>	<i>Ushna</i>
<i>Vipaka</i>	<i>Katu</i>

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CALORIFIC VALUES OF SELECTED FOODS

Cereals

	Calories per 100 g
--	-----------------------

Rice	325
Wheat Flour (white)	349
Wheat Flour (wholemeal)	333
Biscuits (plain) (100 g)	430
One Chapatti	119
One Paratha (plain)	280
Bread (white)	243
One Slice Bread (white)	60
Bread (wholemeal)	228
Bajra	360
Barley (boiled)	120
Cornflakes	364
Cornflower	350
Custard powder	350
Maize	355
Oatmeal	45
Tapioca	357

Vegetables

Asparagus	18
Beans	26
Brijal	24
Broccoli	25
Brussell sprouts	17
Cabbage	45
Carrot	48
Cauliflower	30
Celery	6
Coconut	626
Cucumber	10
Fenugreek / Methi	49
Lentils	96
Lettuce	21
Mushrooms	18
Onions	50
Parsley	21
Peas	93
Potato	97
Potato (fried)	245
Radish	14
Spinach	24
Tomato	21

Nuts

Almond	598
Brazilnut	644
Cashewnut	615
Chestnut	172
Peanut	570
Walnuts	690

Dairy

	Calories per 100 g
--	-----------------------

Milk (Cow)	98
Milk (Buffalo)	115
Milk (dried)	500
Milk (skimmed)	45
Yoghurt	54
Buttermilk (churned)	19
Butter	770
Ghee	910
Cheese (cheddar)	420
Cheese (cottage)	83
Cheese (cream)	800
Cheese (processed)	350

Fruits

Apple	56
Apricot	28
Banana	95
Black currant	13
Blackberry	30
Cherries (raw)	22
Chickoo	94
Dates	47
Dates (Processed)	281
Fig (dried)	248
Fig (raw)	214
Gooseberry	35
Grape, black	45
Grapefruit	60
Guava	66
Kiwi	45
Lemon (peeled)	22
Lychy	61
Mango	70
Oranges (peeled)	64
Papaya	32
Peach	35
Pear	51
Pineapple	46
Plums	63
Pomegranate	77
Prunes (dried)	22
Raisins (dried)	81
Raspberry	247
Strawberry	77
Watermelon	26

Alcohols

Beer	28
Spirit	220
Wine	70

Poultry & Meat

	Calories per 100 g
--	-----------------------

Eggs (fried)	239
Eggs (poached)	160
One Egg	76
One Egg white	17
One Egg yolk	59
Chicken (boiled)	203
Chicken (roasted)	190
Duck (roasted)	315
Beef (corned)	230
Beef (roasted)	385
Beef (grilled)	300
Beef Sausage (fried)	280
Bacon	530
Liver (fried)	250
Mutton (roasted)	280
Mutton (stewed)	315
Pork (roasted)	455
Sausage, Pork (fried)	326
Rabbit (stewed)	180

Sea Foods

Cod	140
Crab	85
Halibut	130
Herring	190
Lobster	80
Mackerel	158
Mussel	172
Oyster	69
Salmon	200
Sardine	180
Shark	228
Shrimp	126
Tuna	120
Turbot	100
Whiting / Lady Fish	124

Miscellaneous

Chocolate	590
Jam	260
Lard	910
Margarine	800
Marmalade	260
Sugar	390
One Tablespoon Sugar	48
Coffee (black, no sugar)	40
Tea (black, no sugar)	30
Coconut Water	25
Honey	280
One Tablespoon Honey	34

Collected by 'Ayurvedic Renaissance' Editorial Desk

MYOTONIC DYSTROPHY: It is commonly seen in the adults. Both sexes are affected equally. Incidence is about 13.5 per 100,000 live births. The clinical expression of Myotonic dystrophy varies widely and involves many systems other than muscles. Myotonic dystrophy patients have a typical 'hatchet-faced' appearance due to temporalis, masseter and facial muscle atrophy and weakness. Neck muscles, including the flexors and sterno-cleomastoids become involved early, as do the distal limb. Weakness to wrist extensors, finger extensors and intrinsic hand muscles impairs function. Myotonia, which usually appears by age 5, is demonstrable by percussion of the Thenar eminence, the tongue and wrist extensor muscles. Myotonia causes a slow relaxation of hand grip following a forced voluntary closure.

FASCIASCAPULO-HUMERAL MUSCULAR DYSTROPHY: Incidence of this form of the disease is about 1 in 20, 00. It is a distinct form, slightly different from Scapulo-peroneal dystrophy. This condition has an onset in child hood or young adulthood. In some cases, facial weakness, particularly the inability to smile, whistle or close both eyes, are the initial manifestations. Weakness of shoulder girdles rather than the facial muscles usually brings the patient to medical attention. There will be the difficulty to elevate the arm due to the loss of scapular stabilizer muscles and Winging of scapula with loss of power in biceps, triceps and partly in deltoid muscles. It is associated with Foot drop due to weakness of the anterior compartment muscles. In 20 percent of cases, weakness progresses to involve pelvic girdle muscles and sever functional impairment and possibly wheel chair confinement results.

OCULO-PHARYNGEAL DYSTROPHY: It is represented with progressive external Ophthalmoplegia, Ptosis, limitation of eye movements, and sparing of pupillary reactions for light and accommodation. It is having a late onset of muscular

dystrophy with ptosis and/or dysphagia in the fourth to sixth decade. The problem with swallowing may become debilitating and may result in pooling of secretions and repeated episodes of aspiration.

DISTAL MYOPATHIES: Patients with predominantly distal weakness usually have a disease of peripheral nerve or anterior horn cells rather than of muscles. It is inherited as an autosomal dominant condition with onset in the fifth decade. Weakness begins in the hands and distal anterior leg muscle involvement occurs later in the course.

DIAGNOSIS

Following three tests are helpful for the diagnosis of muscular dystrophy:

1. Blood test: for the estimation of Creatikinese or Creatinine phosphokinase levels.

Normal value: 10-135 IU/L in female; 10-170 IU/L in males

A grossly elevated CPK level is highly suggestive of Muscular dystrophy, especially Duchenne muscular dystrophy. It is invariably elevated to between 20 and 100 times than normal. It is secondary to its leakage from the muscle fibres due to the damage to its sacrolemma membrane. CPK levels are helpful to detect 2/3rd of carrier female.

2. Electromyography: It is very useful when CPK levels are not elevated to the degree expected in Dystrophin deficiency. EMG demonstrates features typical of myopathy.

3. Muscle biopsy: It shows muscle fibers of varying size, as well as small groups of necrotic and regenerating fibers, connective tissue and fat replace lost muscle fibers. The amplitude and duration of Motor unit potential is decreased and frequency of Polyphasic potential is increased. Muscle fibers are found to contain vacuoles, which through electron microscopy, are shown to contain membranous

whorls, accumulations of glycogen, and other nonspecific debris related to lysosomes.

Other tests include: ECG should be done in DEM, BMD; L-GM ECG (electrocardiogram) shows and increases net RS in lead V1, deep, narrow Q waves in the precordial leads and RSR, or polyphasic R waves in V1. Immuno histochemistry for Dystrophin I, II, III reveals absent Dystrophin in DMD and reduced patchy Dystrophin staining in BMD.

The new test called Single Condition Amplification Primer Sequencing (SCAID) allows clinicians and Geneticists to sequence the entire Dystrophin gene to find mutations that confirm DMD.

TREATMENT

There is no mentioning of a specific treatment for any of the muscular dystrophies in modern medical texts. Drugs have no significant role on the course of the disease, though complications of respiratory and urinary infections need antibiotic coverage.

Physical Therapy is advisable under the supervision of a skilled physiotherapist to prevent contractures, arthoses and corrective orthopedic surgery can be used to improve the quality of life in some stages. Tight fitting braces helps in preventing scoliosis. Surgical measures are rarely advised to correct the deformities and Psychological and emotional supports to the patients, and of course to the family, are of great importance.

Preventive Treatment consists of prenatal diagnosis in families with known pedigrees, carrier detection and genetic counseling. Some Duchenne carriers are recognized by immuno-staining muscle for Dystrophin, which may show scattered dystrophin negative fibers.

THE AYURVEDIC VIEW

In a clinical view, Muscular atrophy can be compared with *Vatarakta*. Because there is an emaciated state

which is due to aggravation of *Vata* and degeneration, which is caused due to *Rakta dusti* because the function of *Rakta* is *Jeevanam*, i.e., the regeneration or nourishing of all parts of the body and also the subsequent *dhatu*.

The healthy body reflects the typical nature of *sheeta* and *snigdha*, which is reflecting the characteristics of *prakruta Kapha*. *Sheetata* and *snigdhatwa* are maintained by the optimum level of *Agni*. This is showing normal function of *Pitta*. When *Agni* increases due to *Vayu*, it decreases the *snigdha* content of the body. Thus the *snigdhtwa* of *mamsa* and *majja dhatus* are lost and *rukshata* increases. Due to *rukshata* the nourishment will be proper and it produces *Ama*. But *ama* is not prominent in comparison with *rakta dusti* due to *vidagdhastha* and *rukshata*.

In other way, due to the presence of *ama* it blocks the channels and so the subsequent *dhatu* cannot be nourished properly and *mamsa sosha* is clearly seen as in *Rajyakshma* and at last a clear feature of *vata* aggravation is seen which is the progressive impairment in chesta (motor activities like live walking, climbing stairs), *indriya* karmas and defective *dhatu parinama* (transformation process).

As a feedback, *dhatukshaya* is the main reason for the vitiation of *vata*, especially that of *mamsa dhatu*. As *pakwasaya* and *kati* are the sites of *vata* and when aggravated *vata* affects *kati*, the hip is projected and the patient will be having difficulty in standing.

Mamsa sosha is a typical feature, which is caused due to inherited myopathies of unknown etiology. Because of its genetic origin it can be included under *Adhibala pravritta vyadhis*. The disease may be due to the vitiation of *shukra* or *shonita* (chromosomes) or it may be due to the vitiation of *beeja*, *beeja bhaga*, etc. (specific and typical chromosomes and genes). As *mamsa* is derived from

the maternal factor (*matruja bhava*), the mother has a definite role in the genetic predisposition as well as transmission of the disease.

The concerned *beeja bhaga avayava* (specific gene, abnormal gene is positioned on band Xp 21 of X chromosome and the absence of Dystrophin gene from muscle) required for synthesising the specific *dhatwagni* may be defective and this adversely affects the *dhatu parinama* in these disorders resulting in muscle degeneration. Even though genetic defect in the synthesis of cellular level enzymes (*dhatwagni*) are present in all of the muscular dystrophies, the evidence of degeneration and atrophy manifests only shortly after birth or in the later stages of life. It may be because, the differentiation of the germ layers and consequent consolidation of *mamsadhatu* during the 5th month of embryonic development is solely dependent on mother's enzymes (congenital MD) or the nature of the enzymes missing in a particular dystrophy.

Sadhyasadhya & Chikitsa

Due to inherent defect, the disease becomes '*asadhya*' but it can be made '*yapya*' by early detection and necessary interventions at proper time. Considering the genetic origin and *sannipatika* nature the management should aim at bringing back the equilibrium of vitiated *doshas* by proper, timely and continuous *langhana* and *brimhana* procedures. Typically, *vatahara* treatment should be carried out. *Ruksha* state of the body is treated with ghee, milk and *rasayana chikitsa*, and *vatahara* medicines. *Vatika* complications should be treated by *snehana*, *swedana* and *mridu shodhana*. *Udwartana* is helpful a lot initially, particularly in DMD.

The general line of treatment in muscular dystrophy should be *deepana*, *pachana*, *udwartana* and *snehana* with *madhura*, *tikta* and *sheeta* drugs followed by *mridushodhana*, *brimhana* and *rasayana*.

Some of the medicines, which are frequently used in muscular dystrophies, are:

- For ***Deepana- pachana***: *Vaiswanar churna*, *Shaddharana churna*, *Hingwastakam churna*, given with honey, ghee or buttermilk.
- ***Udwartana*** with *Aswangandha churna*, *Udwartana churna*, *Triphala*.
- ***Snehana*** - *Snehanana* should be done using *ghrita* yogas like *Indukantha ghruta*, *Tiktaka ghruta*, *Sukumara ghruta* and *Mahatiktaka ghruta*.
- For external *snehana*, *Narayana taila*, *Dhanwantaram taila*, *Karpooradi taila*, *Sahacharadi taila*.
- ***Swedana*** - *Shashtika shali pinda sweda* and *Patropotali pindasweda*.
- ***Virechana*** – *Mridu virechana* by stabilizing *vata dosha* with *Gandharvahasta kashaya*, *Eranda sukumara*, *Avipattikar* and *Vaiswanar churna*.
- ***Vasti*** – *Ksheera vasthi* with *Tiktaka dravyas*. *Mahatiktaka ghruta* is very effective in treating dystrophies.
- ***Rasayana & Brimhana*** – *Ajamamsa rasayana*, *Pippali rasayana*, *Nagabala rasayana*, *Mandookaparni rasayana*, *Chhagaladya ghruta*, etc. can be used after proper *shodhana karma*.
- All the treatments should be repeated periodically with consideration of the patients' condition.

Pathya Ahara & Pathya Vihara

Ahara – *Shashtika shali*, *godhooma*, *mudga*, *yava*, cow's milk, goat's milk and meat.

Vihara – *Achinta*, (calm and quiet mind), *Priya darshana* (friendly environment), and psychological support with reassurance will help a lot. ●

Ashtangayurveda, except *Rasayana* and *Vajeeekarana*.

- '*Madhava Chikitsa*' is another work of Madhavakara, which dealt with the treatment aspect of the diseases mentioned in '*Madhavanidana*'.
- Similarly Vrinda has chiefly provided the subject matter related to the treatments and certain basics of the pharmaceutical preparations, in his book entitled '*Siddhayoga*'. *Parasikayavani* is introduced by Vrinda for the first time into the *Materia Medica* of Ayurveda to treat *Krimi-roga*.
- '*Chakradutta*' is considered an abridged treatise on medicine and had composed by referring to most of the available books as on that date. The author incorporated the advances in medicine made during two centuries after Vrinda's '*Siddhayoga*'.
- Vangasena's '*Chikitsasarasangraha*' can be considered as the complete text book of Ayurveda as it is providing entire information related to aetio-pathogenesis, line of treatment, herbal and herbo-mineral recipes, wholesome and unwholesome diet, pharmaceutical preparations, surgical and para-surgical techniques, description of instruments and anatomical considerations, wherever necessary.

- '*Gadanigraha*' might have been written after *Vangasena Samhitha*. The author has delineated the subject matter in a different way. The first section has been divided into 5 chapters viz. *Ghritadhikara*, *Tailadhikara*, *Churnadhikara*, *Gutikadhikara* and *Lehadhikara*. Various types of pharmaceutical preparations useful in different disease conditions have been incorporated in each of the specific chapters. For e.g., different types of *Ghrita* preparations useful for all disease conditions have been incorporated in the first chapter, *Taila* preparations in the second chapter and so on. The second section has been exclusively allocated to *Nidana* and *Chikitsa* of diseases related to *Kayachikitsa* only, whereas the 3rd section dealt with the rest of the seven branches of Ayurveda along with *Panchakarma* therapeutic procedures.
 - Probably the sketch of '*Gadanigraha*' might have been taken into consideration by Sarangadhara while writing the treatise '*Sarangadhara Samhita*' during 14th century AD.
- Though all these works are having certain similarities, and the planning of the description of diseases is according to the index of '*Madhavanidana*', each and every work is having its own specialty. This is why all these works became popular among the medical community of indigenous system of India. ●

February 4 - World Cancer Day

World Cancer Day is marked on February 4 to raise the awareness of cancer and to encourage its prevention, detection, and treatment. It is led by the International Union against Cancer.

January 29 – World Leprosy Day

This is observed internationally to increase the public awareness on Leprosy or Hansen's Disease - the infectious chronic disease that targets the nervous system, especially the nerves in the hands, feet, and face. This day was chosen in commemoration of Mahatma Gandhi, the Father of Nation of India, who understood the importance of eradication of leprosy, mainly owing to its effect on the society. Leprosy is one of the oldest recorded diseases in the world.

Courtesy: UNO & WHO official websites

Drugs and Doses

Group A - Tab. EASYPROST (Phytotherapy combination) - Two tablets twice a day for three months, with luke warm water.

1. *Ashwagandha Ghana* (*Withania somnifera*) - 100 mg
2. *Varun Ghana* (*Crataeva nurvala*) - 100 mg
3. *Gokshura Ghana* (*Tribulis terrestris*) - 100 mg
4. *Haritaki Ghana* (*Terminalia chebula*) - 100 mg
5. *Punarnava Ghana* (*Boerhavia diffusa*) - 100 mg

Group B – (Alpha blocker) - Capsule of Tamsulosin Hydrochloride 0.4 mg 1 H.S. for three months.

Drug Profile:

Drug	Doshagnata	Rogaghanata	Pharmacological activities
<i>Ashwagandha</i> (<i>Withania somnifera</i>)	<i>Kapha Vata - shamak</i>	<i>Granthishotha Mootraghata</i>	Antibacterial, Immuno modulatory Antitumor, Antioxidant, Anti-inflammatory, Antispasmodic, Analgesic, Cytoprotective
<i>Varun</i> (<i>Crataeva nurvala</i>)	<i>KaphaVata - shamak Pittavardhak</i>	<i>Vranshoth, Gulma, Vidradhi, Shool, Ashmari, Bastishool, Mootrakrichra</i>	Diuretic, Lithotriptic, Antibacterial, Anti-inflammatory, Stimulant, Astringent, Spasmolytic, Corticosteroid like activity
<i>Gokshura</i> (<i>Tribulis terrestris</i>)	<i>Vata Pitta - shamak</i>	<i>Nadidaurbalya, Ashmari, Mootrakrucha, Bastishoth</i>	Diuretic, Aphrodisiac, Antiinflammatory, Lithotriptic, Astringent, Analgesic, Antiurolithialic, Muscle relaxant Excellent result in UTI
<i>Haritaki</i> (<i>Terminalia chebula</i>)	<i>Tridosha - shamak, especially Vata shamak</i>	<i>Shotha, Ashmari, Vedanayuktavikara, Vrana, Shoola, Gulma, Mootrakrichra, Mootraghata</i>	Astringent, Diuretic, Anti-inflammatory, Antiseptic, Antifungal, Antibacterial, Laxative, Carminative, Digestive, Antispasmodic
<i>Punarnava</i> (<i>Boerhavia diffusa</i>)	<i>Tridosha shamak</i>	<i>Shoth, Mootrakrichra</i>	Diuretic, Hepatoprotective, Anti-inflammatory, Antibacterial, Antifibrinolytic, Antiviral agent

Group B

Tamsulosin hydrochloride (Symptomatic relief – Alpha blockers)

This drug relaxes smooth muscles, especially in the urinary tract and prostate. Helps relieve BPH

symptoms, but do not reduce the size of the prostate. Helps to improve urine flow and reduce risk of bladder obstruction. Also, it increases the urine flow rate significantly in 90 minutes after administration of a single dose.

Adverse effects: Postural hypotension, retro-grade ejaculation, dizziness, asthenia.

Indications and usage: Treatment of symptoms of Benign Prostatic Hyperplasia.

Dosage and administration: PO 0.4 mg/day, administered approximately 30 minutes following the same meal each day. If the patient fails to respond after 2 to 4 weeks, the dose may be increased to 0.8 mg/day.

Method: A good clinical examination was done and patients with Grade I & II of B.P.H were selected in the study randomly. After starting the treatment, patients were called for visit after 1 week and were asked for the compliance of the tablet and side effects or the adverse effect, if any. No such adverse effects were found and so the treatment was then continued with the patient thoroughly examined in every 3 weeks. The AUA Score was assessed and a Digital rectal examination was carried out in 3 weeks. Statistical analysis was done from the data obtained and final results were found out.

Statistical Analysis

Parametric tests for objective Parameters (Quantitative Data, i.e. Improvement in Physical parameters & improvement in haematological parameters)

Non –Parametric test for subjective parameters (Qualitative Data, i.e. Relief in Symptoms)

Observation and Results

Assessment of observed Parameters

Table showing effect on general AUA symptom (Score of 30 patients of B.P.H.)

GROUP A**GROUP B**

Sr. No.	Symptoms	BT	AT	Difference	% of Relief	Sr. No.	Symptoms	BT	AT	Difference	% of Relief
1	Incomplete Emptying	45	3	42	93.33	1	Incomplete Emptying	48	6	42	89.36
2	Frequency	95	24	71	74.73	2	Frequency	103	28	75	72.81
3	Intermittency	38	4	34	89.47	3	Intermittency	37	2	35	94.59
4	Urgency	86	11	75	87.20	4	Urgency	78	6	72	92.30
5	Weak stream	58	7	51	87.93	5	Weak stream	65	9	56	86.15
6	Straining	40	7	33	82.50	6	Straining	58	5	53	91.37
7	Nocturea	88	21	67	76.13	7	Nocturea	84	17	67	79.76

WILCOXON TEST

Sr. No.	Symptoms	Group A	Group B
1	Incomplete Emptying	3.51 P<0.001	3.72 P<0.001
2	Frequency	4.78 P<0.001	4.78 P<0.001
3	Intermittency	3.51 P<0.001	3.62 P<0.001
4	Urgency	4.62 P<0.001	4.62 P<0.001
5	Weak stream	4.19 P<0.001	4.45 P<0.001
6	Straining	3.62 P<0.001	4.45 P<0.001
7	Nocturea	4.87 P<0.001	4.62 P<0.001

STATISTICAL ANALYSIS OF SYMPTOMS OF PATIENTS OF B.P.H.**GROUP A**

Sr. No.	Symptoms		Mean	SD	Diff SE	Sum of all signed ranks	No. of pairs	Value of 'Z'	P
1	Incomplete Emptying	BT	1.5	1.59	0.27	136	16	3.51	<0.001 Highly Significant
		AT	0.1	0.40					
		DIFF	1.4	1.52					
2	Frequency	BT	3.16	0.93	0.16	465	30	4.78	<0.001 Highly Significant
		AT	0.8	0.71					
		DIFF	2.36	0.92					
3	Intermittency	BT	1.26	1.48	0.22	136	16	3.51	<0.001 Highly Significant
		AT	0.13	0.43					
		DIFF	1.13	2.25					
4	Urgency	BT	2.86	1.43	0.21	406	28	4.62	<0.001 Highly Significant
		AT	0.36	0.61					
		DIFF	2.5	1.19					
5	Weak stream	BT	1.93	1.38	0.21	276	23	4.19	<0.001 Highly Significant
		AT	0.23	0.50					
		DIFF	1.7	1.20					
6	Straining	BT	1.33	1.42	0.19	153	17	3.62	<0.001 Highly Significant
		AT	0.23	0.50					
		DIFF	1.1	1.09					
7	Nocturea	BT	2.93	1.52	0.20	406	27	4.87	<0.001 Highly Significant
		AT	0.7	0.79					
		DIFF	2.23	1.13					

GROUP B

Sr. No.	Symptoms		Mean	SD	Diff SE	Sum of all signed ranks	No. of pairs	Value of 'Z'	P
1	Incomplete Emptying	BT	1.6	1.45	0.23	171	18	3.72	<0.001 Highly Significant
		AT	0.2	0.40					
		DIFF	1.4	1.27					
2	Frequency	BT	3.43	0.93	0.11	465	30	4.78	<0.001 Highly Significant
		AT	0.93	0.73					
		DIFF	2.5	0.62					
3	Intermittency	BT	1.26	1.20	0.20	153	17	3.62	<0.001 Highly Significant
		AT	0.06	0.25					
		DIFF	1.2	1.12					
4	Urgency	BT	2.6	1.03	0.20	406	28	4.62	<0.001 Highly Significant
		AT	0.2	0.40					
		DIFF	2.4	1.10					
5	Weak stream	BT	2.16	1.14	0.16	351	26	4.45	<0.001 Highly Significant
		AT	0.3	0.53					
		DIFF	1.86	0.89					
6	Straining	BT	1.93	1.14	0.18	351	26	4.45	<0.001 Highly Significant
		AT	0.16	0.37					
		DIFF	1.76	1.00					
7	Nocturea	BT	2.8	1.12	0.14	406	28	4.62	<0.001 Highly Significant
		AT	0.56	0.67					
		DIFF	2.23	0.81					

Other Significant Observations:

BUN: Mean BUN level in Group A, before treatment was 18.52 + 3.23 and after treatment was 18.33 + 2.29 where $t = 0.68$, $P > 0.05$, which was statistically insignificant.

Weight of prostate: Mean Wt. of prostate in grams in Group A, before treatment was 33.74 + 11.24 and after treatment was 33.72 + 11.26 where $t = 1$, $P > 0.05$, which was statistically insignificant.

Post Void Residual Urine Volume (PVR): Mean PVR in ml in Group A, before treatment was 64.4 + 59.71 and after treatment was 29.9 + 37.59 where $t = 7.99$, $P > 0.001$, which was statistically significant.

DISCUSSION

Group A: Phytotherapy combination

- Patients were asked for the follow up after 6 months, some of them regularly visited the O.P.D. for 6 months.

- In the data collected, majority of the patients were found in between 60-70 years - 32 patients (53.33%). This shows that B.P.H. is a geriatric problem.
- Out of 60 patients observed 34 patients (56.66%) were retired people. This shows that B.P.H. is the disease of retirement.
- The patients of Group A (Phytotherapy combination) were found to have complete symptomatic relief.
- No adverse effects were observed in Group A patients.
- They did not have any recurrence of the symptoms after stopping the treatment.
- This Phytotherapy combination has already proven its symptomatic relief in the patients of B.P.H. (Grade I & II) in this study, but further evaluation should be done by taking a large sample size.

- It is felt that this combination would also reduce the size and weight of the prostate giving curative relief along with the symptomatic relief to the patients of Benign Prostatic Hypertrophy by giving the treatment for a longer period of a time.

Group B: Alpha blocker -Tamsulosin Hydrochloride

- In order to avoid the side effect, postural hypotension, etc. the patients were advised to take the capsule at bed time.
- Dizziness was seen in some patients, but that did not disturb the routine work of the patient much.

Impact of Phytotherapy combination (Group A): Controlled Group (Group B)

- The total effect of the therapy was same in both the groups.
- The number of patients Cured, Relieved, Markedly improved and Improved were almost equal in number.
- This shows that the Phytotherapy combination does give the patients the same relief like Tamsulosin hydrochloride.

CONCLUSION

- The Phytotherapy combination gave remarkable results by reducing the symptoms of B.P.H. The statistics obtained clearly

shows that the Phytotherapy combination works out as good as the highly selective α 1 blocker, Tamsulosin hydrochloride.

- Total effect of the therapy in Group A, 8 patients (26.66%) were Cured, 19 (63.33%) were relieved, 3 (10%) were markedly improved. In Group B, 9 patients (30%) were Cured, 20 (66.66%) were relieved, 1 (3.33%) was markedly improved.
- From the results obtained in the study we can conclude that The Phytotherapy combination gives -
 - Significant improvement in the AUA symptom score
 - Increase in the urine flow rate
 - Increase in the void volume
 - Decrease in the post void residual urine volume
 - Relieves irritative symptoms like increased urine frequency, urgency and nocturia.
 - Relieves obstructive symptoms like hesitancy, poor and intermittent flow and incontinence.
 - Prevents U.T.I associated with B.P.H.
 - Safe with no adverse effects.
 - Cost effective, as compared to modern drugs.
 - Improves the quality of life.

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mentioned that if disease is not getting subsided by any treatment and the woman is getting repeated problems, then she should vacate the house itself, and not to take any article from it.

The Trans placental transmission of disease through the affected mother to the foetus is also explained. The result of which is classified in to three categories, Curable, Difficult to cure (death of foetus or one of the foetus in twins) and Incurable (death of foetus or both foetus and mother).

The astonishing fact is reference even of cross breeding among the *Jataharinis* of different 'Varnas' shows that mutations among different infective agents were well known. The mentioning of *Jataharini* occurring in birds, animals and plants, which mutate and infect the humans, shows the knowledge of Vector-borne diseases, of which the recent examples are, Bird flu and Swine flu.

Concept of Krimi: We find a very detailed explanation on *Krimi* which meets out the explanation on all parasites known till date and even their lifecycle. These are said to be very minute and difficult to perceive, and of different forms. Broadly they have been divided into four categories, as follows:

1. *Malaja Krimi* – Live in mud and enter body through contaminated food and fluid, small like 'Anu', shaped like *Tila* and have many feet.
2. *Shonitaja Krimi* – Similar to *Kushta* in the modes of spreading, take shelter in blood vessels of the body, *anu swarupa*, rounded, devoid of legs, invisible due to their minuteness.
3. *Shleshmaja Krimi* – Source from food kept for many days and is decomposing, is *Viruddha*, *Asatmya*, and mixed with *mala* due to

unhygienic habits, live in *Amashaya* but after development they spread up and down the G.I. tract.

4. *Pureeshaja Krimi* – Similar to *Shleshmaja* in many ways, but after development they move only downwards.

In *Krimi-roga Pratishedha Adhyaya*, *Acharya Sushruta* explains the prevention of infestation by parasites and also briefs about the lifecycle. He states that *Krimi* are of many varieties and have various sources and reservoirs. In the body, he draws attention on two main sites for breeding, viz. - *Amapakwashaya* and *Dhamanis (Rakta)*.

In *Amapakwashaya*, the parasites breed in *Kapha* and *Vid*, and hence the mode of transmission is obviously *Mala*. So the next susceptible host, who will consume the food contaminated with this *mala*, will get the infection thus completing the lifecycle. That is the reason why *Acharya Sushruta* includes '*Malina ashana*' as one of the reasons for *Krimi-roga*. Here '*Malina*' stands for '*Sa-Mala*'.

Conclusion

The *Adhidaivika* diseases coming under the category of *Daivabala pravrutta* include all the diseases caused by *Bhootas* (infective agents). The explanation available in classics about their behaviour, incubation period, modes of transmission, reproduction, etc. is very elaborate, and is meeting the present day requirements.

The *Agantuja vikaras* claim all the diseases caused by extrinsic factors including the communicable diseases. While explaining *Grahas*, various modes of transmissions have been quoted which include both direct and indirect modes. A detailed explanation can be found on features of *Krimi* and their life-cycle there.

Year 2011 – International Year of Forests

Recognizing that forests and sustainable forest management can contribute significantly to comprehensive development, poverty eradication and the achievement of internationally agreed development goals, including the Millennium Development Goals, UN has declared the Year 2011 as the International year of Forests. UN emphasises on the need for sustainable management of all types of forests, including fragile forest ecosystems, and focuses on raising awareness at all levels to strengthen the sustainable management, conservation and development of all types of forests for the benefit of current and future generations.

Courtesy: UNO & WHO official websites

Agents	Nature of PET				
	Amorphous		Crystalline		
	23 ⁰ C	60 ⁰ C	23 ⁰ C	60 ⁰ C	80 ⁰ C
Acetone	-		+		
Ammonium hydroxide conc. Aniline	-		+	-	
Benzene	-		+	=	
Butane	+		+		
Calcium hypo chlorite	+	+	+	+	
Chloroform	-		-		
Citric acid 10%	+	0	+	+	+
Detergents 25%	+	0	+	+	+
Ethanol	+	-	+		
Ethyl acetate	-		+		
Formic acid 90%	0	-	0	-	-
Glycol	+	0	+	0	
Hexane	+		+	+	
Hydrofluoric acid 50%	-		-	-	-
Isopropanol	0	0	0	0	0
Methanol	+		+		
Mineral oils	+	0	+	+	+
Nitric acid 70%	-	-	-	-	-
Petrol	0		+		
Phenol	-		0	-	-
Phosphoric acid 85%	-	-	+	+	+
Potassium dichromate 10%	+		+		
Potassium hydroxide 60%	-	-	-	-	-
Potassium permanganate 10%	+		+		
Soap solution 10%	0	0	+	+	+
Sodium bicarbonate 10%	+	0	+	+	0
Sodium bisulphate 10%	+	0	+	+	0
Sodium carbonate 20%	+	0	+	+	0
Sodium hydroxide 60%	-	-	-	+	-
Sulphuric acid 98%	-	-	-	-	-
Tetrahydrofuran	-		0		
Toluene	0		+		
Trichloroethylene	-		0		
Vegetable oils	+	0	+	+	+
Water	+	0	+	+	+

Table 3 depicts the *chemical resistance of PET, as inferred in the study.*

+ means resistant; no attack; no changes or only very slight changes in weight (less than 1%).
Reduction in mechanical properties remain under 10%.
0 means partially resistant; in course of time there is a distinct deterioration in mechanical properties (10-50%) and a change in weight of 1-5.
- means non-resistant; after a short time the material is seriously affected and/or dissolved; changes in weight of more than 5% and/or a reduction in mechanical strength of more than 50%.

Another study was conducted to find out if any chemical changes occur in some Ayurvedic medicines like *Arishtams*, *Asavams* and *Kashayams* during their storage in PET bottles. Some fast moving liquid Ayurvedic medicines such as *Poothikaranjasavam*, *Aravindasavam*, *Kanakasavam*, *Dasamool arishtam*, *Abhayarishtam*, *Dhanwanthara rishtam*, *Balaristham*, *Amrutharishtam*, *Khadirarishtam*, *Amrutho tharam Kashayam*, *Rasnairandadi Kashayam*, *Maharasnadi Kashayam*, *Gandharvahasthadi Kashayam*, *Nisakathakadi Kashayam*, *Musaleekhadiradi Kashayam*, *Dasamoola kaduthrayam Kashayam* and *Padolamooladi Kashayam* were studied.

The study was done in comparison with the same batch of the product packed in regular glass bottles. 3 samples each of the products packed in pet bottles and glass bottles were exposed to room temperature, accelerated temperature in incubator and direct sunlight respectively for a period of 6 months. Various parameters such as TSS, Refractive index, Specific gravity, Acidity, Alcohol percentage, Yeast and mould, Bacterial load, TLC and organoleptic parameters such as taste, smell, colour and status of packing material were evaluated in the beginning of the study and in the end.

TSS	No significant change
Specific gravity	No significant change
Refractive index	No significant change
Acidity	Significantly increased in PET bottles
Alcohol%	Sizably Reduction in PET bottles
Yeast & mould cf/ml	No significant change
Bacteria cf/ml	Significantly increased in PET bottles
TLC	Significantly varies in PET bottles
Taste	Changed taste in PET bottles – mostly sour
Smell	Changed smell in PET bottles becoming fruity
Colour	Became more darken in PET bottles
Status of the packing material	Shape change in all pet bottles.

Table 4: Shows the gist of the results achieved from the trial conducted in liquid medicines for internal consumption.

PET is not an effective oxygen barrier. This eventually can cause damage to the content. Another reason is the hygroscopic character of PET. Others are formation of acetaldehyde and cross-links, discoloration, chain scissions & presence of antimony. Yet another reason is that PET is not biodegradable. Due to these reasons it is advisable to avoid the use of PET for packaging of Liquid Ayurvedic Medicines for internal consumption until proves otherwise. Even then food packaging industries in Western countries are generally moving away from plastic such as petroleum based polyethylene terephthalate due to various reasons.

We understand that, studies are being carried out by various Research Laboratories to develop PET bottles, which do not permit oxygen. With certain coatings on the PET bottles this may be possible. Similarly, studies are being carried out to develop biodegradable polymers, which can take up the position of PET. Changing of packaging, especially of liquid products for internal consumption in the Ayurvedic Industry, to PET bottles can be considered only after the completion of detailed studies and after obtaining favourable results from them.



Cultivation and Collection: Datura can be grown on variety of soils but prefers rich clay-loam soil and sunny situations. The land is ploughed two or three times followed by planting. Farmyard manure is applied in the beginning. It is a summer crop and seeds are sown in March. Seeds can be directly grown by seed or by transplanting of seedlings. Seeds germination can be enhanced by soaking the seed overnight in water and washing the seed in fresh water before sowing. The seeds start germinating within a fortnight and in a month's time the germination is complete. Weeding and thinning is done when plants are 10-12 cm high. After five months harvesting can be started with appearance of flowers.

PHARMACOGNOSY

Materials & Methods: Plant materials were collected from different parts of Kerala and Nagarjuna Herbal Garden. For Macroscopical characters Stereomicroscope is used and for Microscopical studies, the Compound microscope. For physical constants Rotary shaker, Muffle furnace, UV – cabinet and Moisture balance were used.

RESULTS AND DISCUSSIONS

Macroscopic features: Roots are cylindrical, brown coloured, rough due to fissures and root scars, stem dichotomously branched, cylindrical, blackish dark to purple colour, leaf petiolate, ovate, acute, flowers stalked, calyx tubular, corolla purple, funnel shaped, fruit capsule, ovate to obovate with persistent calyx, covered with short, stout, spines, seeds light brown, reniform and bitter in taste.

Microscopic features: Root shows 4-7 layers of thin walled rectangular cork cells, secondary cortex composed of 3 to 4 layers thin walled parenchymatous tangentially elongated cells. Stem shows single layered epidermis covered by thick cuticle followed by 2 or 3 layered rectangular cork cells. Secondary cortex consisting of 4-7 layered collenchymatous cells, endodermis distinct containing starch grains. Leaf petiole shows plano convex outline, cortex composed of collenchyma cells, vascular bundles bicollateral and calcium oxalate crystals present in the cortex. Seeds show an outline with bulges at 3 places, single layered epidermis, seedcoat consists of thick walled parenchymatous cells filled with aleurone grains and oil globules, embryo more or less curved.

PHYSICAL CONSTANT VALUES

No	Parameters	Values
1	Foreign matter	Max 2 %
2	Total Ash	Max 16 %
3	Acid Insoluble Ash	Max 4%
4	Alcohol Soluble Extractive	Min 4%
5	Water Soluble Extractive	Min 15%

Thin Layer Chromatography

Powder - 5 g

Extract - Ethyl alcohol

Solvent system - Chloroform: Methanol – 80:20

Rf values	Colour in UV rays
0.65	Blue
0.67	Pink
0.98	Pink

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example that is currently available is the Flavr Savr tomato. They were transgenic tomatoes constructed to have artificial DNA that coded for aRNA that was complementary to the RNA that coded for the protein that caused spoiling. The aRNA suppressed the expression of this spoilage gene by 10%, which was enough to save the tomatoes from rotting while being shipped to grocery stores.

Antisense technology is now being used in mammalian cells. Promising fields of study for antisense technology in humans include Cancer gene therapy and AIDS. Progress in these developments over the last decade has led to the approval of the first such drug – Vitravene for AIDS related CMV retinitis. In cancer treatment, antisense is constructed in a way that will bond with the mRNA from the PKC alpha gene. This gene is targeted because PKC alpha kinase is more sensitive in cancer cells. The treatment has resulted in a 50% decrease in the size of the tumour from ovarian cancer in one patient and stabilization of the tumours growth in other patients. Other antisense drugs are in development for rheumatoid arthritis, other inflammatory conditions, and Hepatitis C. Still other antisense drugs are entering clinical trials for treatment of metabolic conditions such as Diabetes and Hyperlipidaemia. These latter applications provide for target effects to be more

directly measured in the clinic. Improved antisense chemistry, which will enhance the feasibility of subcutaneous and oral administration of antisense drugs and offer the potential of less frequent dosing, is expected to further expand the opportunities for antisense drug development.

Conclusion

Antisense RNA and DNA techniques have been developed as a relatively recent approach to the specific modulation of gene expression *in vitro* and *in vivo*. Antisense technology exploits oligonucleotide analogs to bind target RNAs via Watson-Crick hybridization. Once bound, the antisense agent either disables or induces the degradation of the target RNA. During the past decade, much has been learned about the basic mechanisms of antisense, the medical chemistry, and the pharmacologic, pharmacokinetic and toxicological properties of antisense molecules. Antisense technology has proven valuable in gene functionalisation and target validation. Since antisense technology focuses on preventing gene expression, it has been most widely applied to cancer gene therapy. Improved antisense chemistry, which will enhance the feasibility of subcutaneous and oral administration of antisense drugs and offer the potential of less frequent dosing, is expected to further expand the opportunities of drug development. Thus antisense technology brings hope to life. ●



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