

**Pharmaceutical standardization, product development and
quality control aspect of C- Pills a marketed
Product**

A REPORT

SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF PHARMACY (AYURVEDA)

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Chapter 1

Introduction

In the present era, the herbal drugs have gained fame all over the world. Indian medicine system is one of the oldest medicine systems in the world and it has the number of herbs and herbal formulation to treat the various disorders. Dengue is recognized to be the most significant arthropod-borne viral disease of humans worldwide ⁽¹⁾. Number of peoples is killed by the every year and there is no effective medicine is available for the dengue. The disease has also been termed "break bone fever" or "dandy fever" and in Ayurveda as *dandak jwara*. In Ayurveda, jwara is very complex diseases there are 80 types of fevers are mention. Explanation of this is found in "madav nidan" under the chapter *parishishta* chapter. ⁽²⁾ Dengue fever begins with a sudden high fever, often as high as 104 – 105 degrees, 4 to 7 days after the infection. Headache, retro orbital pain, and back pain along with the severe Muscular pain that gave rise to the colloquial designation "break-bone fever." A flat, red rash may appear over most of the body 2 - 5 days after the fever starts. ⁽³⁾

C-pill is a combination of herbs which can help to increase the platelet count during the dengue or other platelets related complications. It has hepatoprotective activity and also protects the vital system of the body. It also gives strength to immune system by enhancing both cellular and humoral immunity. It also prevents the platelets aggregation and help to control the fever.

This is contraindicated during the pregnancy, it include the *carica papaya* as ingredient which may have deal to the miscarriage. C-pill has no side effect which is reported. These are remanded to take minimum 10 days for good result.

Chapter 2

SCOPE OF STUDY

C-pills are the marketed product which has shown effective response against complications associated with dengue. Herbal combination shows a significant response against the DENV1 type and help to increase the platelet counts. It also showed the immunomodulator activity due to its antioxidant properties. The combination of herbal material not shown a significant efficacy against other types of dengue virus i.e. DENV2, DENV3, DENV4, DENV5; So there is a need to improve formula which may lead the effective treatment against dengue virus. The study is aimed to improve the formula provide the effective response against all type dengue complication and standrization of prepared formulation (tablet, capsule, syrup, phytosome). These are some various issues which are of concern

Chapter 3

OBJECTIVE OF STUDY

- To perform standard parameters for the standardization of the raw material
- Development of various dosage form which can be beneficial for the dengue patients
- Pharmaceutical standardization and stability study of prepared dosage form
- To carry out the comparative study of prepared dosage form

Chapter 4

LITERATURE REVIEW

4.1 Review of the dengue

4.1.1 According to Ayurveda

In Ayurveda fever is called as Jwara. Also have different synonyms like Kshaya because it destroys body as well as Dhatu. Jwara is also called as Tama because it produces moha which is the function of tama. Jwara is also called as Yamatmaka because it kills the person like that of Yamaraja. There are number of jwara are mention dengue is one of them and known as “dandak jwara”. Dengue is also called as hadjod jwara and dandy fever. ⁽³⁾⁽⁴⁾

Causative factor (Nidan)

Main cause of Dandak jwara is Dengue virus which spread in body through Aedes Aegypti mosquito.

Premonitory symptoms (Purvarupa)

Angmard- bodyache, klam -tiredness without exertion, aruchi- anorexia, nausea, avsaad- depression.

Symptoms (Rupa)

Severe breaking pain in bone and joints. High temperature of 103 to 105 degrees F. may occur which gets subside and may relapse again within three to four days (Saddle back fever). On 8th day, it subsides on its own. Severe pains in bones, difficulty in walking, slow pulse, excessive weakness, loss of appetite are common symptoms. During fever, pulse is not proportionately as fast as it should be with fever. Symptoms of common cold (Pratishyaya)

cough and throat pain are also common symptoms of Dandaka jwara which becomes endemic due to virulence of kapha and vata dosha. ⁽⁵⁾

Etiology (Hetu)

According to Ayurveda, disease is caused only when there is lack of immunity in the body. In this ancient science of healing, when the human body contains ama, it becomes a fertile breeding ground for different kinds of viruses. In the human body ojas is the product of a healthy digestive system, which helps the body in resisting infection. Low ojas is lack of immunity at the physical level and absence of mental strength at the mind level. Dengue can affect anyone but tends to be more severe in people with compromised immune systems.

Due to Virus infestation and irregular nature of fever it can be co-related with dandak Jwara described in Ayurvedic text. Hetu of dandak Jwara has been described. Intermittent fever as caused by invasion of evil spirits or micro-organisms. ⁽⁶⁾

Pathogenesis (Samprapti)

A condition in which the body temperature goes beyond the normal temperature and is characterized by disturbance in normal functioning of the system. Fever occurs when the digestive fire (agni) and digestive toxins (ama) which are normally found in the gastrointestinal tract are change their place by disrupted doshas and then they overflow into the blood and lymphatic system. ⁽⁶⁾

Management

Ayurveda many medicinal plants are effective in Dengue fever and such a very important role in cure to Dengue fever. Ayurvedic medicines, herbs, rasayanas and much Ayurvedic therapy are use in treat for dengue fever.

According to Ayurveda spread of dengue can be prevented by strengthening the ojas and enhancing body immunity. Ayurveda is a practical, medical science which promotes perfect health through prevention and cure health problems by recommending lifestyle changes. Ayurveda, hygiene, lifestyle and diet are crucial to good health. To attain good health, Ayurveda prescribes the specific daily routine Dincharya and the seasonal regime Ritucharya. These are the some drugs which can be used for the treatment of the dengue. ⁽³⁾⁽⁶⁾

4.1.2 According to the Modern science

Dengue virus (DENV) is the cause of dengue fever. It is a mosquito-borne single positive-stranded RNA virus of the family Flaviviridae; genus Flavivirus. Five serotypes of the virus have been found, all of which can cause the full spectrum of disease. Dengue fever is a mosquito-borne tropical disease caused by the dengue virus. Symptoms typically begin three to fourteen days after infection. This may include a high fever, headache, vomiting, muscle and joint pains, and a characteristic skin rash. Recovery generally takes two to seven days. In a small proportion of cases, the disease develops into the life-threatening. Dengue hemorrhagic fever, resulting in bleeding, low levels of blood platelets and blood plasma leakage, or into dengue shock syndrome, where dangerously low blood pressure occurs. ⁽⁷⁾

Virology: Dengue virus is a RNA virus of the family flaviviridae³; they are otherwise called arboviruses. The dengue virus genome contains 11,000 nucleotide bases. They have 3 different

protein molecules that form virus particle (C, prM and E) and 7 other types of protein molecules (NS1, NS2a, NS2b, NS3, NS4a, NS4b, NS5) that are found in infected host cells and are required for replication of virus. There are 4 strains of virus, ex; DEN1, DEN2, DEN3, DEN4. ALL 4 serotypes can cause full blown disease. Infection with 1 serotype is believed to produce lifelong immunity to that serotype, but he can be infected with other serotypes in future. ⁽⁸⁾⁽⁹⁾⁽¹¹⁾

The humans are the primary host for dengue viruses & transmitted by Aedes mosquitoes. A mosquito that takes a blood meal from infected person become infected with virus. In 8 to 10 days.

Mechanism

When a mosquito carrying DENV bites a person, the virus enters the skin together with the mosquito's saliva. It binds to and enters the white blood cells, and reproduces inside the cells while they move throughout the body. The white blood cells respond by producing a number of signal proteins (Such as interferon) that are responsible for many of the symptoms, such as the fever, the flu-like symptoms and the severe pains. In severe infection, the virus production inside the body is much increased, and many more organs (Such as the liver and the bone marrow) can be affected, and fluid from the bloodstream leaks through the wall of small blood vessels into body cavities. As a result, less blood circulates in the blood vessels, and the blood pressure becomes so low that it cannot supply sufficient blood to vital organs. Furthermore, dysfunction of the bone marrow leads to reduced numbers of platelets, which are necessary for effective blood clotting; this increases the risk of bleeding. ⁽¹⁰⁾⁽¹¹⁾

Clinical Features

The characteristic symptoms of dengue are: a sudden-onset fever, headache (Typically behind the eyes), muscle and joint pains, and a rash; the alternative name for dengue, "break-bone fever", comes from the associated muscle and joints pains. The course of infection is divided into three phases: febrile, critical, and recovery.

The febrile phase involves high fevers, frequently over 40°C (104°F) and associated with generalized pain and a headache; this usually lasts 2–7 days. Flushed skin and some small red spots called petechiae, which are caused by broken capillaries, may occur at this point.

The critical phase, if it occurs, follows the resolution of the high fever and typically lasts one to two days. During this phase there may be significant fluid accumulation in the chest and abdominal cavity due to increased capillary permeability and leakage. This leads to depletion of

fluid from the circulation and organs. During this phase, organ dysfunction and severe bleeding (Typically from the gastrointestinal tract) may occur. Shock and hemorrhage occur in less than 5% of all cases of dengue but those who have previously been infected with other serotypes of dengue virus ("Secondary infection") have an increased risk of this.

The recovery phase occurs next, with resorption of the leaked fluid into the bloodstream. This usually occurs over a period of two to three days. The improvement is often striking, but there may be severe itching and a rash. It is during this stage that a fluid overload state may occur, which if it affects the brain may reduce the level of consciousness or cause seizures. ⁽¹¹⁾⁽¹⁹⁾

4.1.3 PROBLEM BACKGROUND

Dengue is the most rapidly spreading mosquito-borne viral disease in the world. In the last 50 years, incidence has increased 30-fold with increasing geographic expansion to new countries and, in the present decade, from urban to rural settings. An estimated 50 million dengue infections occur annually and approximately 2.5 billion people live in dengue endemic countries.

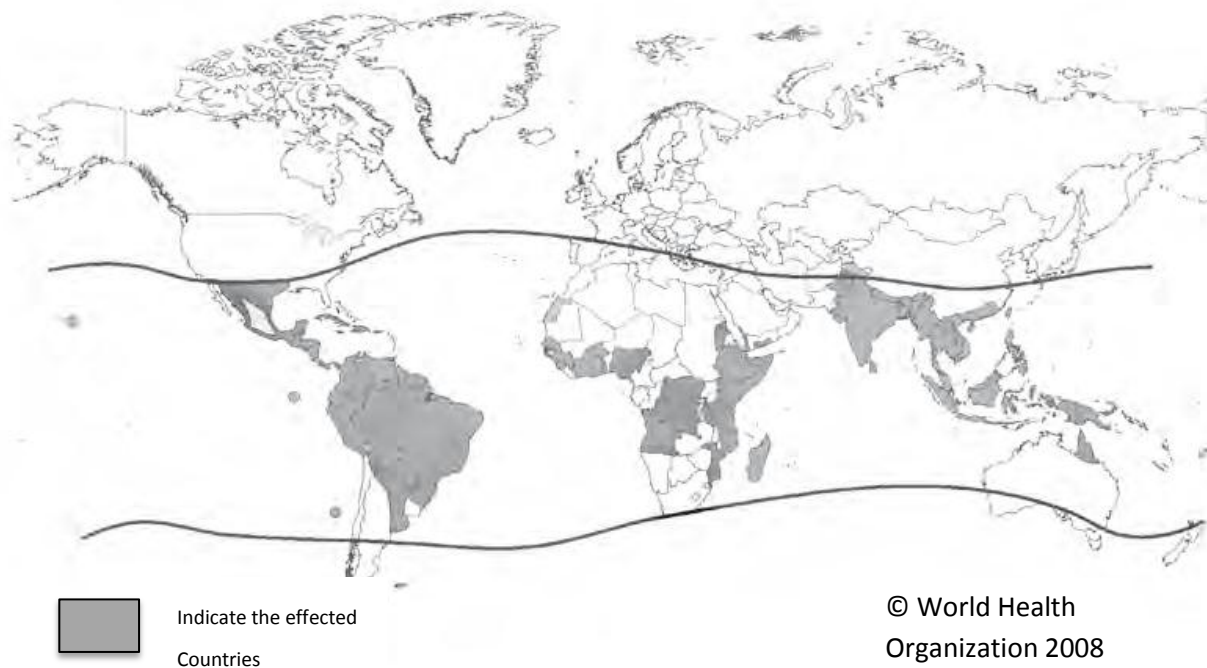
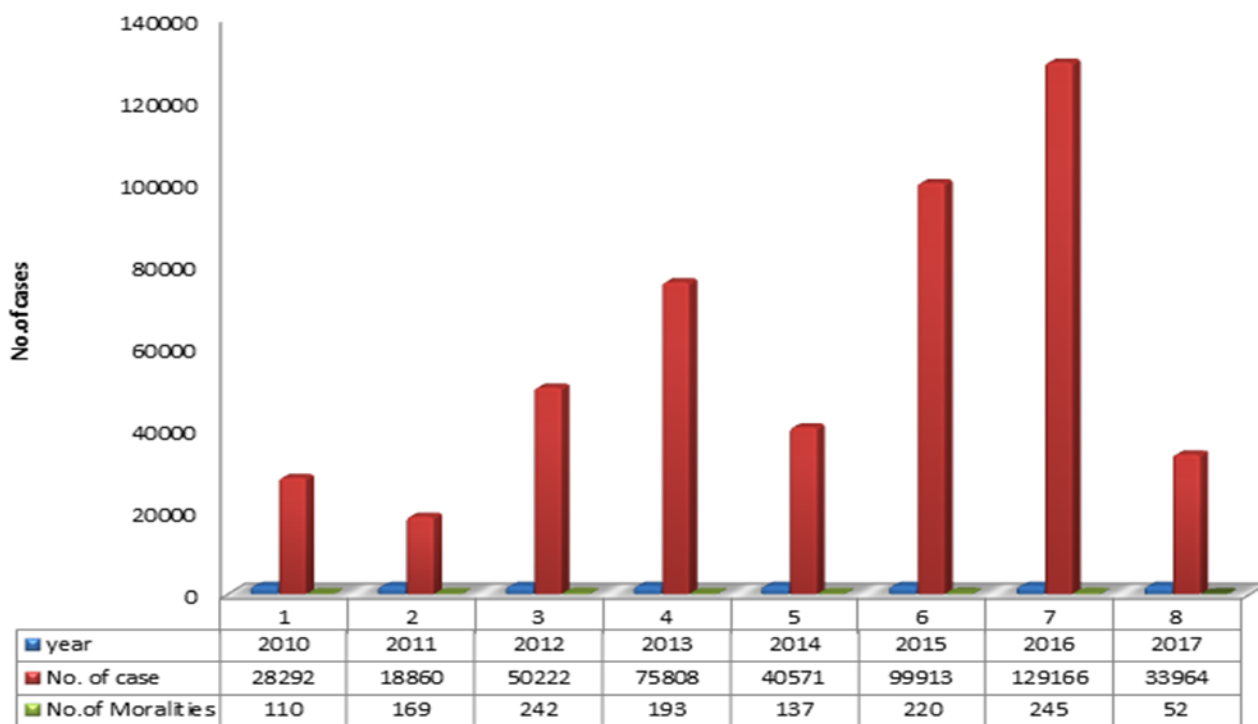


Figure 1

Dengue in india

Dengue is the most rapidly spreading mosquito-borne viral disease in the world. India reported 1.3 million cases in 2006 but no data on mortality were available. The history of dengue outbreaks in India has been recently reviewed. More recent and systematic data are now available because of the NVBDCP. The data on the web site of NVBDCP .

According to National Vector Borne Disease Control Program data from 2010 there are number of cases decrease or increase but the number mortality is decrease against the number of cases reported per year till 2017. That is possible due to the more awareness of people to dengue or the improvement in the medication of this disease . but we have to aware peoples more about this disease and about the preventions of it . so we can decrease the mortality in the coming years.⁽¹²⁾



Reported cases and mortalities from 2010 to 2017 ⁽¹³⁾

Contraindication

Dengue presents as a fever with body ache in the beginning, most people mistake it as a case of viral fever. They end up self-medicating themselves with either Aspirin or Ibuprofen. Now, this can be very dangerous and cause severe bleeding. ⁽¹⁴⁾

4.2 Review of the product

Shree Dhanwantri Herbals was founded by Vaidya Deen Dayal Singh Ji in the year 1952. The Pharmacy which started in a very humble way has grown by leaps and bounds under the able guidance of its directors, and tireless and sincere efforts put in by the workers in these years. C-Pill Tablets are manufactured by Shree Dhanwantri Herbals. Shree Dhanwantri C-Pill Tablets has composition of Eranda Karkati and Tulsi. C-Pill Tablets supports for fever.

4.3 Raw material review

4.3.1 Tulsi (*Ocimum sanctum*)

• API (The Ayurvedic Pharmacopeia of India)

Tulsi consists of dried whole plant of *Ocimum sanctum* Linn. (Fam. Lamiaceae) An erect, 30 - 60 cm high, much branched, annual herb, found throughout the country. ⁽¹⁵⁾⁽¹⁶⁾

Synonyms

Language	Synonymms
Sanskrit	Surasa, atulase, Bana Tulasi
Assamese	Tulasi
Bengali	Tulasi
English	Holy Basil
Gujrati	Tulasi, Tulsi
Hindi	Tulasi
Kannada	Tulasi, Shree Tulasi, Vishnu Tulasi
Malayalam	Tulasi, Tulas
Marathi	Tulas

Punjabi	Tulasi
Tamil	Tulasi, Thulasi, ThiruTheezai
Telugu	Tulasi
Urdu	Raihan, Tulsi

Description

a) Macroscopic

Root

Thin, wiry, branched, hairy, soft, blackish-brown externally and pale. Violet Internally.

Stem - Erect, herbaceous, woody, branched hairy, sub quadrangular, externally Purplish-brown to black, internally cream, coloured, fracture, fibrous in bark and short in Xylem, dour faintly aromatic.

Leaf

2.5-5 cm long 1.6 - 3.2 cm wide, elliptic oblong, obtuse or acute, entire or serrate, Pubescent on both sides; petiole thin, about 1.5-3 cm long hairy, odour, aromatic taste Characteristic.

Flower

Purplish or crimson coloured, small in close whorls; bracts about 3 mm long and broad, pedicels longer than calyx, slender, pubescent; calyx ovoid or campanulate 3-4 mm bilipped, upper lip broadly obovate or suborbicular, shortly apiculate, lower lip longer than upper having four mucronate teeth, lateral two short and central two largest, corolla about 4 mm long, pubescent; odour, aromatic; taste, pungent.

Fruit

A group of 4 nutlets, each with one seed, enclosed in an enlarged, membranous, veined calyx, nutlets sub-globose or broadly elliptic, slightly compressed, nearly smooth; pale brown or reddish with small black marking at the place of attachment to the thalamus; odour, aromatic; taste, pungent.

Seed

Rounded to oval; brown, mucilaginous when soaked in water, 0.1 cm long, slightly notched at the base; no odour; taste, pungent, slightly mucilaginous.

b) Microscopy

Root

Shows a single layered epidermis followed by cortex, consisting of seven or more layers of rectangular, round to oval polygonal, thin-walled, parenchymatous cells, filled with brown content, inner layers of cortex devoid of contents; phloem consisting of sieve elements, thin-walled, rectangular parenchyma cells and scattered groups of fibres, found scattered in phloem; xylem consists of vessels, tracheids, fibres and parenchyma, vessels pitted; fibre tracheides, long, pitted with pointed ends; fibres thick walled and with pointed ends.

Stem

Shows a single layered epidermis with uniseriate, multicellular covering trichomes having 5-6 cells, occasionally a few cells collapsed; cortex consists of 10 or more layers of thin-walled, rectangular, parenchymatous cells; phloem consists of sieve elements, thin-walled, rectangular parenchyma cells and fibres; fibres found scattered mostly throughout phloem, in groups and rarely in singles; xylem occupies major portion of stem consisting of vessels, tracheids fibres and parenchyma; vessels pitted, fibres with pointed ends; centr; pith consisting of round to oval, thin-walled, parenchymatous cells.

Leaf-Petiole

Shows somewhat cordate outline, consisting of single layered epidermis composed of thin-walled, oval cells having a number of covering and glandular trichomes; covering trichomes multicellular 1-8 celled long, rarely slightly reflexed at tip, glandular trichomes short, sessile with 1-2 celled stalk and 2-8 celled balloon shaped head, measuring 22-27 in dia; epidermis followed by 1 or 2 layers and 2 or 3 layers of thin-walled, elongated, parenchyma cells towards upper and lower surface respectively; three vascular bundles situated centrally, middle one larger than other two, xylem surrounded by phloem.

Midrib

Epidermis, trichomes and vascular bundles similar to those of petiole except cortical layers reduced towards apical region. Lamina - epidermis and trichomes similar to those of petiole; both anomocytic and diacytic type of stomata present on both surfaces, slightly raised above the level of epidermis; palisade single layered followed by 4-6 layers of closely packed spongy

parenchyma with chloroplast and oleo-resin; stomatal index 10-12-15 on upper surface and 14 - 15 - 16 on lower surface; palisade ratio 3.8; vein islet number 31 - 35.

Powder

Greenish: shows thin-walled, parenchymatous cells, a few containing reddish brown contents, unicellular and Multi-cellular trichomes either entire or in pieces; thin walled fibres, xylem vessels with pitted thickenings, fragments of epidermal cells insurface view having irregular shape, oil globules, rounded to oval, simple as well as compound starch grains having 2-5 components, measuring 3-17 μ in diameter.

IDENTITY, PURITY AND STRENGTH

Foreign matter	Not more than 2 per cent.
Total Ash	Not more than 10 per cent.
Acid-insoluble ash	Not more than 1.5 per cent.
Alcohol-soluble extractive	Not less than 4 per cent.
Water-soluble extractive	Not less than 8 per cent.

T.L.C.

T.L.C. of Tulasi oil obtained by stem distillation is carried out on Silica gel 'G' plate using Toluene :Ethyl acetate (93:7) Tulasi oil is diluted in chloroform-toluene (1:10). Eugenol to be applied as standard also diluted in 130 ratio and 10 μ l of each to be applied in band form. After running distance of 10 cm the plate is air drying for 15minutes and then kept in the oven for 2 to 5 minutes. On cooling spray, in thoroughly vanillin- Sulphuric acid reagent and heat the plate at 110° C for 5 - 1- minutes under observation. Record Rf. values of eugenol and caryophyllence. Eugenol (orange brown) approx. Rf. value 0.7, caryophyllence (reddish violet) runs to solvent front.

Constituents

Essential Oil.

Properties and action

Characters	Properties
Rasa	Katu, Tikta, Kashya
Guna	Laghu, Ruksha
Virya	Ushna

Vipaka	Katu
Karma	Depana, Hirnya, Kaphahara, Rucya, Vatahara, Pittavardhine, Durgandhihara

Important formulations

Tribhuvanakerti Rasa, Muktapanchamrta Rasa, MuktadiMahaanjana

Therapeutic uses

Chardi, Hikka, Kasa, Karmiroma, Netraroga. cold, headache, cough, influenza, earache, fever, colic pain, sore throat, bronchitis, asthma, hepatic diseases, ⁽¹⁵⁾⁽¹⁶⁾

Dose

1-3 ml of the drug in juice form.

1-2 g of the drug in powder form (seed). ⁽¹⁵⁾

• Indian medicinal plant

In this book botanical source, synonyms, description, varieties, and therapeutic uses are mentioned. ⁽¹⁷⁾

• Dravyaguna vigyan

In this book this botanical source, gana, synonyms, description, varieties, constituents, action on different systems of body, properties and action, formulations, therapeutic uses, part use, dose is mentioned. ⁽¹⁸⁾

• Sushruta samhita

In sushruta samhita mentioned in the sutra sansthan under the sursadi gana ⁽²⁰⁾

• Major herbs of Ayurveda

In this book botanical source, habitat, botanical description, traditional uses, ethnoveterinary usages, chemical constituents, pharmacological activities like immunomodulatory activity, antistress, antimicrobial, anti-inflammatory, antiasthmatic, anti-cancer, hypotensive activity, analgesic activities are mentioned. ⁽²¹⁾

4.3.2 Eranda Karkati ⁽²²⁾

Botanical Name- *Carica papaya*

Family- *Caricaceae*

Vernacular name:

Language	Vernacular name
Hindi name	Papita
English name	Papaya fruit
Bengali Name	Papeya
Kannada Name	Parangimara
Telugu name	Boppayi
Tamil Name	Pappali

Synonyms

Nalaparni- The stalk of leaves are cylindrical.

MadhuKarkati, Erandachirbhata

Habitat

Papaya plant is a native of West Indies and Central America. It is now cultivated all over India in moderate climate. It is a small tree growing to a height of 4-6 m. The ripened papaya fruit is well known for its health benefits.

Properties

Characters	Properties
Rasa	Katu (Pungent), Tikta (Bitter)
Guna	Laghu (Light for digestion), Ruksha (Dry), Tikshna (Pungent)
Vipaka	Katu (Undergoes to pungent taste conversion after digestion)
Veerya	Ushna (Hot)
Karma	Kaphavatahara (pacifies Kapha and Vatadosha), Hridya(Benefits the heart)

Part used- Fruit, Leaf, Latex, Seed

Dosage- Leaf infusion 40-80 ml

Seed powder- 0.5- 1g

Latex- 3-6 g

Chemical composition:

The green parts of the plant and seeds of the papaya contain an alkaloid carpaine. The seeds also contain carpasamine. The latex of the plant contains papain, chymopapain and pseudocarpaine. The ripened fruit of papaya contains vitamin A, thiamine, riboflavin, niacin and vitamin C. The latex of the unripe fruit is collected by giving a cut and the collected latex is dried under shade. papaya contains the digestive enzyme, papain. It is used in treating sports injuries, other causes of trauma, and allergies. Being rich in Vitamin A, pro-vitamin A carotenoid phytonutrients and C, Papaya fruit is an excellent anti-oxidant. ⁽²²⁾⁽²³⁾

Uses

The milk from the raw papaya is applied over mouth ulcer to treat the milk of the raw papaya is applied over insect bites, scorpion bitten area to relieve the pain. The cold infusion prepared from the leaves of papaya is given in a dose of 20-30 ml to treat local swelling, fever, difficulty during micturition. The ripened fruit of papaya is consumed to relieve constipation. The raw papaya is consumed as vegetable to treat intestinal worm, piles and hepatomegaly. The milk from raw papaya is applied over wounds and bleeding piles to treat it. The leaves of the papaya plant are slightly heated and applied locally over the part of the body to relieve pain and swelling. The milk of raw papaya is applied locally to relieve skin diseases like eczema, ringworm. The papaya fruit is consumed to strengthen the muscles of the heart. ⁽²²⁾⁽²³⁾

Ayurvedic Indications

Kasa, Shwasa, Yakrutodara, Pleehodara, Mandagni, Shotha, Visha.

- **Drvyaguna vijyan**

In this book this botanical source, gana, synonyms, description, verities, constituents, action on different systems of body, properties and action, formulations, therapeutic uses, part use, dose is mention. ⁽²⁴⁾

- **Major herbs of Ayurveda:**

In this book botanical source, habitat, botanical description, traditional uses, ethnoveterinary usages, chemical constituents, pharmacological activities like antifertility, diuretic activity, hypotensive, hypolipidaemic, anti ulcerogenic, anthelmintic, wound healing, antiabiotic, antimicrobial and safety profile and dose is mention. ⁽²⁵⁾

- **Indian medicinal plants:**

In this book botanical source, synonyms, distribution, botanical description, part uses, properties and uses are mention

4.4 Review of formulation

4.4.1 Phytosome

Preparation of medicine from the different parts of the herbal material is followed from the ancient time. Today is time of phyto medicine and phytosome is one of them which are a novel drug delivery system in herbal medicine field. The term "phyto" means plant while "some" means cell-like. ⁽²⁶⁾ Phytosomes forms a bridge between the convectional delivery system and novel delivery system. Phytosomes show better stability as chemical bond is formed between phsospholipid molecule and phytoconstituent. It enhances the absorption of lipid insoluble polar phytoconstituents through oral as well as topical route showing better bioavailability, reduce dose. ⁽²⁷⁾⁽²⁸⁾

Advantages over the conventional dosage form ⁽²⁹⁾

1. Phytosome are better bioavailable botanical extracts, dramatically enhance bioavailability due to their complex with phospholipids and delivers faster and improved absorption in intestinal tract.
2. Phytosome permeates the nonlipophilic botanical extract to be better absorbed in intestinal lumen.
3. Phytosome will be given in small quantity and desired results can be achieved.
4. Phytosome is widely used in cosmetics due to there more skin penetration and have a high lipid profile.
5. Phytosome are been used to give liver protectant flavonoids because they were easily bioavailable.

Chapter 5

EQUIPMENT, MATERIAL, AND EXPERIMENTAL SETUP

5.1. List of Equipment

S. No.	Equipment
1.	Digital pH meter
2.	Hot Plate
3.	Hot Air oven
4.	Muffle Furnace
5.	UV spectrophotometry
6.	Disintegration apparatus
7.	Dissolution apparatus
8.	Roche Friabilator apparatus
9.	Monsanto hardness tester
10.	Compound microscope
11.	TEM
12.	SEM
13.	Electron Microscope
14.	Abbe's refractometer

5.2. List of Chemicals

Ethanol	Dragendroff reagent	Iodine	Benedict reagent
Methanol	Wagner reagent	Fehling B	Biuret's reagent
Hydrochloric acid	Ferrous chloride	Fehling A	Dichloromethane

Mayer reagent	Lead acetate solution	Sudan 3	Soya lecithin
Salphuric acid	Acetone	Hexane	Sodium Hydrooxide
Pyrimidine	Acetic acid	N-hexane	Potassium Dihydrogen Orthophosphete
Toluene	Copper acetate	Sodium carbonate	Sodium nitripros
Ethyleacetate	Slica gel G	Sodium citrate	

5.3.List of drugs

- Tulsi
- Papaya leaves

Chapter 6

RESEARCH METHODOLOGY

- Procurement of raw herbs from the local market of Jalandhar (Punjab)
- Authentication of raw herbs
- To study the classical and recent literature review regarding the disease and herbs used in formulation
- Pharmacognostic and phytochemical study of raw herbs
 - Microscopic and macroscopic study of raw herbs.
 - Phytochemical investigation of raw herbs.
- Physicochemical analysis of raw herbs
 1. LOD at 110⁰C
 2. FM
 3. Total ash at 450⁰C
 4. Acid insoluble ash
 5. Water soluble extractive
 6. Alcohol soluble extractive
 7. Prepare the different dosage form
- Evaluation of prepared formulation
 - Tablets
 - a) Size and shape
 - b) Appearance
 - c) Uniformity of weight
 - d) Disintegration test
 - e) Dissolution test
 - f) Mechanical strength
 - g) Friabilty test
 - h) Thin layer chromatography TLC
 - i) High performance thin layer chromatography HPTLC
 - **Capsule**
 - a) Uniformity of weight

- b) Disintegration test
- c) Dissolution test
- **Phytosome**
 - a) Determination of % yield
 - b) Determination of particle size
 - c) Determination of entrapment efficiency
 - d) Determination of drug content
 - e) Scanning electron microscopy (SEM)
 - f) Fourier-transform infrared spectroscopy (FTIR)
 - g) pH measurement
 - h) Thin layer chromatography(TLC)
 - i) High performance thin layer chromatography (HPTLC)
- **Syrup**
 - a) Description, Colour
 - b) Odour
 - c) Total – ash
 - d) Acid – insoluble ash
 - e) Water-soluble extractive
 - f) Alcohol – soluble extractive
 - g) PH
 - h) Total sugar content
 - i) Viscosity
 - j) Thin layer chromatography (TLC)
 - k) High performance thin layer chromatography(HPTLC)
 - l) Test for heavy metals
 - m) Phytochemical analysis of formulation.
 - Stability study of prepared dosage form.
 - Comparative study of prepared formulation.

Chapter 7

EXPECTED OUTCOMS

Dengue is the most rapidly spreading mosquito-borne viral disease in the world. There are not specific treatment of this is available .five type of dengue virus are founded these are DENV-1,DENV-2,DENV-3, DENV-4 and DENV-5 which is discover in the 2014. Only symptomatic treatment of it is available and different drug is used for different symptom.. In this study we are trying overcome these problems and One of the ingredient of C-pills papaya leaves have bitter taste by preparing different dosage forms of C-pills like phytosomes, syrup and capsule. Phytosomes are noval drug delivery system and that could be a promising new therapeutic approach for the treatment by the herbal drugs. Phytosome are better bioavailable botanical extracts, dramatically enhance bioavailability due to their complex with phospholipids and delivers faster and improved absorption in intestinal tract. During this study we try to make C-pills more effective by the addition of some other herbs in to it.

Chapter 8

PURPOSED WORK PLAN AND TIME LINES

PURPOSED WORK PLAN AND TIME LINES																			
		Month List																	
Sr. no	Work List	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	Indentification of topic	■	■	■															
2	Review	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
3	Procurement of raw material				■	■													
4	Authentification of raw material						■	■											
5	pharmacognostic & phytochemical study								■	■	■								
6	Perpration of formulation											■	■	■					
7	Evaluation of prepared formulation														■				
8	Stability study of prepared dosage form															■	■	■	
9	Data interpetation & Report writing				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

Chapter 9

Result & discussion

1. Authentication of raw herbs
2. Procurement of raw herbs
3. Macroscopic characters of (Tulsi)

S.no	Characters	Tulsi leaf	Papaya leaf
1	Colour	Green	Green
2	Odour	Aromatic	Characterstic
3	Taste	Characteristic	Better
4	Size	2.5-5 cm long, 1.6-3.2 cm wide	15 -25 cm diameter
5	Shape	elliptic-oblong	Palmate
6	Surface	Smooth at dosel surface	Smooth
7	Features	Hairs present on ventrel surface	5-10 cm long stalk is present

4. Phytochemical parameters

Sr.No	Paremeters	Drugs	Sample 1	Sample 2	Sample3	Average	Standard
1	Foreign matter	Tulsi	1.4%	2.1%	1.9%	1.8%	NMT ⁽³²⁾ 2%
		Papaya	3.2%	2.8%	5.2%	3.7%	-
2	Loss on drying	Tulsi	7.1%	8.4%	7.9%	7.8%	
		Papaya	11.5%	10.8%	11.9%	11.4%	9.57% ⁽³⁰⁾
3	Total ash	Tulsi	13%	10%	12.5%	11.83%	NMT ⁽³²⁾ 19%
		Papaya	13.5%	14%	13%	13.5%	12.7% ⁽³⁰⁾

4	Acid insoluble ash	Tulsi	2%	2%	1.5%	1.83%	NMT 3% ⁽³²⁾
		Papaya	2%	2.5%	2.5%	2.3%	1.75% ⁽³⁰⁾
5	Alcohol soluble extractive	Tulsi	7.2%	4.8%	7.2%	6.4%	NLT 6% ⁽³²⁾
		Papaya	10.4%	13.6%	9.6%	11.2%	8.4% ⁽³¹⁾
6	Water soluble extractive	Tulsi	11.2%	12.8%	15.2%	13.06%	NLT ⁽³⁰⁾ 13%
		Papaya	26.4%	31.2%	30.4%	29.3%	17.7% ⁽³¹⁾

5. Phytochemical screening

S. no	Name of Phytoconstituents	Name of test	Tulsi	Papaya
1	Alkaloids	(a) Mayer, s test	+	+
		(b) Wagner, s test	+	+
		(d) Dragendroff's Test	+	+
2	Carbohydrates	(a) Molisch's Test	+	+
		(b) Benedict's Test	-	-
		(c) Fehling's Test	+	+
3	Glycosides	(a) Modified Borntrager's Test	-	-
4	Flavonoid	(a) Alkaline reagent test	+	+
		(c)) NH ₄ OH test	+	+
5	Tanin	(a) Ferric chloride	+	+

6	Phenolic compound	(a)Farric chloride	-	-
7	Steroid	(a)salkowski's	+	-

Chapter 10
SUMMARY & CONCLUSION

Yet to be done

Chapter 11

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Appendices I

Present a poster in SPER(Society of Pharmaceutical Education & Resarch) ICP-2017 LPU



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Apasmara (epilepsy) : An Ayurvedic assessment
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 Scholar M. Pharmacy Ayurveda*, Associate Professor**
 Lovely School of Pharmaceutical Science
 Lovely Professional University, Phagwara, Punjab



**Society of Pharmaceutical
Education & Research (SPER)**

ABSTRACT

Apasmara (epilepsy) is the second most common neurological disease. It has the dubious distinction of affecting all the walks of life of an individual suffering from the disease. Apasmara (epilepsy) from time immemorial has been a disease of myths and social stigma. The nidamas (treatment) of apasmara (epilepsy) are found scattered in the classics indicating its complexity. The factors responsible for the susceptibility to the disease have been emphasised giving them prime importance. The mutual dependence and involvement of saririka and manasika dosas are highlighted revealing the intricate nature of the samprapti. The word 'Apasmara' (epilepsy) consists of 'Apa' upasarga and 'Smr' dhatu by applying 'Nid' pratyaya which means loss of memory (during attack). According to Mr. Hughlings Jackson "epilepsy is the name for occasional, sudden, excessive, rapid and local discharges of the grey matter". In Ayurveda numbers of individual and combination kalpas are mentioned which are reputed for the action on the epilepsy.

INTRODUCTION

India is the nation which is blessed rich biodiversity where numbers of medicinal plants are found with the power to treat any disease epilepsy is one of them. Epilepsy is a neuroleptic disorder. Reason behind it is the over discharge of neurotransmitter substance. There are number of drugs available for treatment of epilepsy in modern therapy but these drugs have the numbers of side effects. Due to the side effects of modern medicine public and scientist are now interested or come back on the herbal medicines. There are numbers of courses of this like head trauma, brain injury, stroke their number other reason for it. The Indian system medicine Ayurveda have number of herbal drugs are mention in the ancient literature have the action on the CNS (Central Nervous System) and used to treat neuroleptic disorders. There are numbers of plants which are reputed for the action on the epilepsy. This article is review about medicinal plants which are used or reputed for the anti-epileptic activity. There are numbers of herbs like vacha, bharami, mandukaparni

GENERAL MECHANISM OF ACTION OF ANTI-EPILEPTIC DRUGS



TYPE OF EPILEPSY

S.no	According to Ayurveda	According to modern concept
1	Vataj Apsmara:- Redness of skin, Phenoudgam (form from mouth), Difficulty in breathing.	Focal seizures:- Due to the neuronal network either discretely located within one cerebral hemisphere or more broadly distributed but still within the hemisphere. Depending on the presence of cognitive impairment.
2	Pittaj Apsmara:-Yellowish skin, body temperature increase.	Generalized seizures:-They are typical absence seizures, atypical absence seizures, generalized tonic clonic seizures, clonic seizures, tonic seizures, atonic
3	Kaphaj Apsmara:- feeling of heaviness, loma harsh, whitish skin clour	Unclear:-Unclassifiable until additional evidence allows a valid classification. Epileptic spasms are such an example.
4	Sanipataj:- Combination of all upper three doshas	Epileptic syndromes:-which epilepsy is a predominant feature, and there is evidence (e.g., through clinical,

OTHER TREATMENT METHODS

Number of different dietary modifications, nutritional supplements, and hormones may help prevent seizures or improve other aspects of health in patients with epilepsy. Supplementation with specific nutrients should also be considered for the prevention and treatment of nutritional deficiencies resulting from anticonvulsant drugs. Ketogenic diet should be given to the patient. In this diet high fat, low carbohydrate, and adequate protein taken.

AYURVEDIC HERBS AND HERBAL FORMULAS

Ayurvedic Herbs	Herbal formulations
1. Sankhapuspi (Convolvulus pluricaulis)	1. Saraswatarista
2. Mandukaparni (Centella asiatica)	2. Aswagandharist
3. Brahmi (Bacopa monnieri)	3. Smriti sagar rasa
4. Vaca (Acorus calamus)	4. Krisna chaturmukha rasa
5. Jatamansi (N. jatamansi)	5. Unmada gajankusa rasa
6. Ashwagandha (Withania somnifera)	6. Unmada gajakeshri rasa
7. Sarpagandha (Rauwolfia serpentina)	
8. Jyotismati (Celestus panniculatus)	

CONCLUSION

Epilepsy is a neurological disease which can be treated by the herbal medicine and other dietary modifications. There are number of other herbal medicines apart of this poster. Commonly herbs and herbal medicines which are used are discussed in this poster. There are number of other herbs like ginger, garlic, hing and panch karma, aroma therapy are also used for the treatment of this.

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Appendices II

Present a poster in Seminar on Scope and Development of Entrepreneurship in Pharma and Recent Advances in Pharmaceutical Research 26th October, 2017, HHRC Amritsar



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An Assessment on Biomedical Waste Management, Awareness and Practices

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HERBHEAL
CARE BY NATURE

ABSTRACT

Bio-medical Waste (BMW), which is generated by hospitals, nursing homes, clinics, dispensaries, veterinary institutions, animal houses, pathological laboratories, blood banks, AYUSH hospitals, clinical establishments, research or educational institutions, health camps, medical or surgical camps, vaccination camps, blood donation camps, first aid rooms of schools, forensic laboratories and research labs activities mentioned in Schedule I and compliance with the standards provided in Schedule II. In India, BMW (Management and Handling) Rules, 1998 was published vide notification number S.O. 630 (E) dated the 20th July, 1998 and further amendments were passed for the regulation of BMW and its management on dated 28th Mar 2016 by the Ministry of Environment and Forests, Government of India for appropriate disposal and implementing of BMW act regulations state pollution control board in respect of States and pollution control committee in respect of Union territories will be responsible. The act emphasizes all the legal aspects with procedure to categorize, segregate, handle, transport, treat and dispose the BMW. The act rule and regulations is applicable to those who generate, collect, receive, store, transport, treat, dispose, or handle any type of BMW.

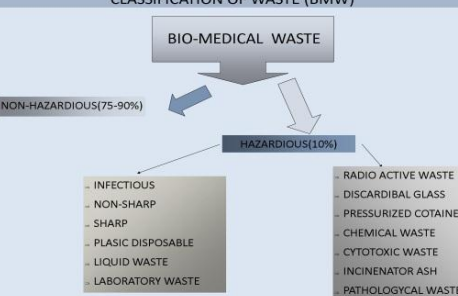
INTRODUCTION

Bio-medical waste means any waste, which is generated during the diagnosis, treatment or immunization of human beings or animals or in research activities pertaining thereto or in the production or testing of biological products. Government of India in the erstwhile Ministry of Environment and Forests, provided a regulatory frame work for management of bio-medical waste. According to BMW rule 1998 bins are categorized in to four types these are red, blue & white, black, yellow. But these are changed in BMW rule 2016, According to its black is not there and white mention as separate category, Bio-medical waste.

STEPS OF WASTE MNGEMENT



CLASSIFICATION OF WASTE (BMW)



MANGEMENT

YELLOW CATEGORY	RED CATEGORY	WHITE CATEGORY	BLUE CATEGORY
HUMAN ANATOMICAL WASTE ANIMAL ANATOMICAL WASTE SOLID WASTE EXPIRED AND DISCARDED MEDICINE CHEMICAL WASTE CLINICAL LAB WASTE	CONTAMINATED WASTE RECYCLEABLE MATERIAL LIKE TUBING, BOTELS, INTRAVENOUS TUBES, URINE BAGS, SYRINGES & GLOVES.	SHARPE WASTE INCLUDING METALS BLEADS NEEDAELS SRINGES WITH FIXED NEEDAELS	GLASSWEARS MEATLIC IMPLANTS MEDICINE VIALS AMPULES
			

PROCESS OF DISPOSING BMW



CONCLUSION

The safe and effective management is not legal necessity but also a social responsibility. Proper collection and segregation of the BMW is also good for our health. There is proper labeling of waste is required. We have to try to reduce waste generation and try to use the recyclable products. We have to participate individually to reduce waste and pollution.

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TOPIC APPROVAL PERFORMA

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Program : 5303H::B. Pharmacy (Ayurveda) – M. Pharmacy (Ayurveda)(Dual Degree)

COURSE CODE : APH625 **REGULAR/BACKLOG :** Regular **GROUP NUMBER :** PHRRGD0056

Supervisor Name : Dileep Singh Baghel **UID :** 15210 **Designation :** Associate Professor

Qualification : _____ **Research Experience :** _____

SR.NO.	NAME OF STUDENT	REGISTRATION NO	BATCH	SECTION	CONTACT NUMBER
1	Davinder Kumar	11203537	2012	Y1653	9988954422

SPECIALIZATION AREA : Ayurvedic Pharmacy **Supervisor Signature:** _____

PROPOSED TOPIC : Pharmaceutical standardization, product development and quality control aspect of C- Pills a marketed product

Qualitative Assessment of Proposed Topic by PAC		
Sr.No.	Parameter	Rating (out of 10)
1	Project Novelty: Potential of the project to create new knowledge	6.50
2	Project Feasibility: Project can be timely carried out in-house with low-cost and available resources in the University by the students.	7.00
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PAC Member 2 Name: Saurabh Singh	UID: 12208	Recommended (Y/N): Yes
PAC Member 3 Name: Dr. S. Tamilvanan	UID: 16391	Recommended (Y/N): Yes
PAC Member 4 Name: Dr. Navneet Khurana	UID: 18252	Recommended (Y/N): Yes
DAA Nominee Name: Dr. Sazal Patyar	UID: 17050	Recommended (Y/N): NA

Final Topic Approved by PAC: Pharmaceutical standardization, product development and quality control aspect of C- Pills a marketed product

Overall Remarks: Approved

PAC CHAIRPERSON Name: 11045::Dr. Monica Gulati

Approval Date: 25 Apr 2017