

## Herbs Continued

There are 3 other triphalas:

- Madhura triphala
- Swelpa triphala
- Sugandhi triphala.

### Madhura triphala

Number	Name	Botanical Name
1	Drksha	Vitis vinefera
2	Kharjura	Phoenix sylvestris
3	Kashmari	Gmelina arborium

Actions: good for the eyes, digestion, and for long standing fever

### Swelpa thriphala

Number	Name	Botanical Name
1	Draksha	Vitis vinefera
2	Parushaka	Grewia asiatica
3	Kashmarya	Gmelina arboruim

Actions: reduces fatigue, tiredness after fever

## Sugandhi thripahal

Number	Name	Botanical Name
1	Jathiphala	Myristica fragrans
2	Ela	Elattaria cardamomum
3	Lavanga	Syzygium aromaticum

Actions: reduces vata and kapha, sangrahi and vibhandhanuth

## Trimadhura

- Honey
- Ghee
- Jaggery

## Khseerashtaka (8 types of milk)

1. Goat milk
2. Cow milk
3. Buffalo milk
4. Camel milk
5. Elephant milk
6. Horse milk
7. Sheep milk
8. Breast milk

### Properties:

- Rasa: sweet
- Guna: unctious
- Virya: cold
- Dosha karma: vata pitta  
hara

### Actions:

- Spermatogenesis
- Nourishing
- Strengthens the body
- Rejuvenation
- Longevity

## 8 types of urine

1. Sheep
2. Goat
3. Cow
4. Buffalo
5. Elephant
6. Camel
7. Haya (horse)
8. Khara (donkey)

### Properties:

- Rasa: pungent, salty, bitter
- Guna: hot, sharp, rough
- Virya: hot
- Indication: vata diseases

## Elective affinity of drugs

- Most of the drug has a certain affinity towards the tissues and srotas.
- Pramathy dravyas (drugs that expels waste products through the various channels ) clear obstructions from the srotas
  - Amlaki should be used for rasa dhathu and rasa vaha srotas
  - Manjishta for rakta and rakta vaha srotas
  - Ballathaka (Semecarpus anacardium) for mamsa and mamsa vaha srotas
  - Shilajatu (Asphaltum) for meda and meda vaha srotas
  - Pravala pishti (Coral calcium) for asthi and asthi vaha srotas
  - Shobhanjana (Moringa oleifera) for majja and majja vaha srota
  - Kapikachu (Mucuna pruriens) for sukra and sukra vaha srotas
  - Naga kesara (Mesua ferrea), lodra (Symplocos racemosa) and mochrasa (Salmalia malabarica) all are hemostatics but lodra acst better in uterine bleeding. Naga kesara acts on bleeding piles, mocharasa better in rakthathisara
  - Arjuna (Terminalia arjuna) acts on the heart
  - Kumari (Aloevera) on the liver
  - Pushkaramula (Inula racemosa) on the lungs
  - Shanka pushpi (Convolvulus pluricaulis) on the brain
  - Sarapukna on the spleen
  - Sarpagandha (Rauwolfia serpentina) on dhamanias

**Modern approach to pharmacological activities of Ayurvedic drugs proved through experimental studies**

## 1. Action on reproductive system

### a. Spermatogenic/aphrodisiac property

- i. *Withania somnifera* (aswagandha)
- ii. *Trivanga bhasma* (combination of 3 metals: naga (lead), vanga (tin), yashada (zinc))
- iii. *Mucuna prurieta* (kapikacchu)

### b. Antifertility action (male)

- i. *Plumbago zeylanica* (chitraka): anti androgenic
- ii. *Azadirachta indica* (nimba): spermicidal

### c. Antifertility activity (female)

- i. *Aloe indica* or *Aloe vera* (kumari)
- ii. *Carica papaya*
- iii. *Butea monosperma*
- iv. *Hibiscus rosa-sinensis*: anti implantation, abortifacient
- v. *Plumbago zeylanica*: antioviulatory

### d. Uterine activity

- i. *Asparagus racemosus*
- ii. *Abroma augusta*: oxytocic activity
- iii. *Cyperus rotundus*
- iv. *Carica papaya*
- v. *Gloriosa superba*

### e. Emmenagogues (to increase menstrual flow)

- i. *Aloe vera*
- ii. *Saraca asoca*
- iii. *Ferula asafoetida*

## 2. NSAID Activity

### a. Anti inflammatory or anti-arthritis activity

- i. *Glycyrrhiza glabra*
- ii. *Curcuma longa*
- iii. *Cassia fistula*
- iv. *Azadirachta indica*
- v. *Allium sativum*
- vi. *Tinospora cordifolia*

### b. Analgesic and antipyretic

- i. *Taxus baccata*
- ii. *Sisymbrium irio*

## 3. Action on the Gastrointestinal tract

- a. Anti peptic ulcer activity
    - i. *Asparagua racemosus*
    - ii. *Emblica officinalis*
  - b. Purgative property
    - i. *Cassia fistula*
    - ii. *Capparis decidua*
4. Action on the cardiovascular system
- a. Cardiac stimulants
    - i. *Bacopa monnieri*
    - ii. *Asclepias curassavica*
  - b. Cardiac depressants: antihypertensive and diuretic
    - i. *Azadirachta indica*
    - ii. *Acorus calamus*
  - c. Antianginal and hypocholesterolemic
    - i. *Terminalia chebula*
    - ii. *Inula racemosa*
    - iii. *Allium sativum*
  - d. Antihypertensives
    - i. *Allium cepa*
    - ii. *Withania somnifera*
    - iii. *Achyranthes aspera*
    - iv. *Bacopa monnieri*
    - v. *Curcuma longa*
    - vi. *Emblica officinalis*
  - e. Hypolipidemic and hypoglycemic
    - i. *Piper nigrum*
    - ii. *Zingiber officinale*
  - f. Other cardioactive drugs
    - i. *Aegle marmelos*
    - ii. *Calotropis procera*
    - iii. *Digitalis lanata*
    - iv. *Dacus carota*
5. Drugs acting on the blood
- a. Anticoagulant
    - i. *Calotropis procera*
    - ii. *Plumbago zeylanica*

- iii. *Ocimum americanum*
- b. Haemostatic
  - i. *Rubia cordifolia*
  - ii. *Jatropha curcas*
- 6. Action on the central nervous system
  - a. Depressants
    - i. *Indigofera tinctoria*
    - ii. *Luffa echinata*
    - iii. *Nerium indicum*
    - iv. *Ocimum sanctum*
  - b. Muscle relaxants
    - i. *Jatropha curcas*
    - ii. *Lepidium satvum*
    - iii. *Nordostachys jatamamsi*
  - c. Antispasmodic
    - i. *Symplocos spicata*
    - ii. *Hedychium spicatum*
  - d. Stimulants
    - i. *Piper longum*
    - ii. *Mangifera indica*
  - e. Anaesthetics
    - i. *Tephrosia purpurea*
    - ii. *Ansviera roxburghiana*
- 7. Anti diabetic activity
  - a. *Curcuma longa*
  - b. *Cassia fistula*
  - c. *Aegle marmelos*
  - d. *Gmelina arborea*
  - e. *Allium sativum*
  - f. *Asparagus racemosus*
- 8. Anti cancer activity
  - a. *Abrus precatorius*
  - b. *Alstonia scholaris*
  - c. *Bacopa monniera*
  - d. *Asparagus racemosus*
  - e. *Withania somnifera*

- f. Datura metel
- g. Aloe vera
- 9. Carcinogenic activity
  - a. Argemone Mexicana

## Divisions of areas and soil

### (1) Jangala desa

Features	Characteristics
Land	Clear sky and the land is even, very few and small hills and occurrence of mirages
Soil type	It is rough, sandy and mixed with gravel
Water/rain	Less rainfall and less water in lakes, well, etc.
Air	Hot air and dry, strong winds
Plants	Few small and thorny trees
People	They usually have stable and lean bodies
Dosa	Vata and pitta are dominant

### (2) Anupa desa

Features	Characteristics
Land	Uneven land and many large mountains, rivers are long and reach the ocean, lands are covered with thick forests
Soil type	It is rough, sandy and mixed with gravel
Water/rain	Heavy rainfall and a lot of water resources
Air	Mild winds and soft , cold winds
Plants	Many large trees and land covered with many soft plants
People	Well built

Dosa                    Kapha and vata are predominant

### (3) Sadharana desa

They have characteristics of both the desa that is, jangala and anupa desa. Here, all of the factors are in a balanced state, ie, tridosa, air, water etc. That is why it is called *sadharana desa*

### Classification of soil based on panchamahabhuta

There are further classifications of soil based on panchamahabhuta: prithvi, apya, agneya, vayavya and akasha. Each one has different colors of soil and different characters of the land and plants.

#### Prithvi Mahabhutha

Characteristics	Stable and heavy
Color of the soil	Black
Characteristics of the land	Stable and heavy stony region
Characteristics of the plants	Large and stout trees

#### Apya Mahabhutha

Characteristics	Unctuous, cool
Color of the soil	Shukla
Characteristics of the land	Abundance of water resources
Characteristics of the plants	Delicate plants like grasses

#### Agneya Mahabhutha

Characteristics	Light
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Color of the soil	Different
Characteristics of the land	Having smaller stones
Characteristics of the plants	Trees are few and small with whitish colour
Vayavya Mahabhutha	
Characteristics	Dry
Color of the soil	Ash colored
Characteristics of the land	Having smaller stones
Characteristics of the plants	Trees are less in number and hollow trees
Akash Mahabhutha	
Characteristics	Air, soft
Color of the soil	Black
Characteristics of the land	Even and water is devoid of any taste
Characteristics of the plants	Mountainous region with large trees which are dry

### Classification based on Rasa

Like 6 rasas, the soil also has six rasas

In the olden days, acharyas gave more importance to ahara dravyas as well as more importance to medicinal plants. Today, due to industrialization, commercialization, and a worldwide demand for medicinal plants in the healthcare industry, it leads to grave consequences such as extinction, adulteration, and substitution.

The following drugs should be collected:

1. Plants that are not affected by the worms or not infested
2. Plants that are not affected by toxins nor weapons
3. Should be fully grown plants
4. Plants that are not affected by extreme heat

5. Plants that are not affected by winds
6. Plants that are not affected by fire, floods or moisture
7. Plants that are not destroyed or damaged by rampage
8. They must be the best quality, well grown, and nourished
9. Plants should possess abundant, deep-rooted bark and also we need to give importance for collecting parts from Northern directions.

### **Plantation of drugs**

When we are planning to grow medicinal plants, there must be some characteristics of the soil:

1. It should be devoid of gravel, stones, anthills, graveyards, temples or auspicious places, sand, brittle, saline or alkaline
2. Water resources should be nearby on digging
3. Even land and ability to germinate seeds
4. Qualities of soil should be unctuous, soft, and stable

### **Collection of drugs**

For further processing and formulating medicines, collection of medicinal plants are important. Drugs are collected when they contain a maximum concentration of active constituents and also when there is favourable environmental conditions.

Few criteria on the basis of which the plants are collected:

1. Part of the plant
2. Season
3. Time
4. Method
5. Purpose
6. Drug potency

### **Drug collection procedure**

1. Drugs shouldn't be collected from areas with anthills, marshy areas, graveyards, alkaline and dirty places
2. Drugs affected by insects or germs, fire, moisture, etc., should not be used
3. The person who collects the drug should do it during the early morning hours, with consciousness, be neat and tidy mentally and physically
4. While collecting, a person should be quite and facing east or northwards and chanting mantras
5. One author comments that *Uttarasrita* (means collect roots which are suitable in northern directions)

### Collection of wet or dry, new and old drugs

Drugs should be collected immediately after they are fully grown and matured. Few exceptions are *Embelia ribes* (vidanga), *Piper longum* (pippali), etc., are used when old (ie, only one year old).

All drugs should be dry and new, except some *Tinospora cordifolia* (Guduchi), *Withania somnifera* (Aswagandha), *Asparagus racemosus* (Satavari), *Holarrhena antidycentrica* (kutaja), *Adhathodavasica* (vasa), *Benincasa cerifera* (kusmanda), *Paederia foetida* (prasarini), *Nilgiranthus ciliatus* (sahacara), and *Anethum sowa* (satapuspa).

Collection procedures:

1. Leaves: they are collected when the plant is active, sap movement and leaves contains maximum percentage of active constituents. Example: Swarnapatri, leaves are picked up individually from plant and in some other plants leaves are collected with the flowering tops.
2. Bark: collected only after 3-8 years of plant growth. Usually collected in the spring or early summer. Barks are usually collected by making longitudinal and transverse incisions on the stem/root of plant.
  - a. Different methods of bark collection:
    - i. Felling
    - ii. Uprooting
    - iii. Coppicing: stems of plants of definite age and diameter are cut at a certain distance above the ground and bark is collected. From the stumps above soil, new shoots arise, etc.
  - b. Examples:
    - i. Asoka: outer rough; inner is soft, smooth, and reddish brown in color
    - ii. Arjuna: outer surface is dark brown, rough with cracks and fissure; inner surface is dark brown to black longitudinally striated.
3. Seeds: when fruits are ripe and in exceptional condition, plants like bilva, unripe fruits are collected.
  - a. Examples:
    - i. *Strychnos nux vomica* (kupilu): ripe fruits are collected and seeds are removed

4. Fruit: suitable time is early autumn or when ripe but still firm. Sometimes when the oldest fruits are just ripe, fruits are harvested. Early morning hours are the apt time for collection.

### Mode of collection

- Picked individually or cut in branches, sometimes machines are used.
  - Example:
    - Fennel: stems are cut with a sickle and dried.
    - Caraway/Krishna jeeraka (*Carum carvi*): when oldest fruits are just ripe, the crop are harvested with machines, then after 2-3 weeks they are dried.
    - Flowers: usually in spring or summer because collection of flowers must be done about the time of pollination.

### Condition during collection

- Dry weather and in the morning after a few hours of sunshine when the dew has dissipated and then they are dried in the sun.
  - Examples:
    - Clove flowers become crimson red and these are picked out in dry weather
    - Saffron: collection made around sunrise during September and November and then those flowers are hand picked and put into baskets and later stigmas are removed.
- Stem-collected after the plant has begun to flower
  - Annual plants: collected by cutting them 5-10 cm above ground
  - Perennial plants: stems are cut higher, above ground for further crops.
    - Example: Chirata (*Swertia chirata*): the entire plant is collected when the flowering is well advanced.
- Root/Rhizome/Corn/Bulb-roots are collected only after plant growth usually during spring or autumn season. Roots from annual plants are generally not collected
  - Examples: Liquorice (*yastimadhu*): in the third year when the leaves fall, plants are dug up, buds and rootlets are removed, and the roots are dried in the sun and finally heated in a chamber.
- Heartwood (wood): commercial woods consists of heartwood by which it is understood that xylem tissue which have dead cells has ceased to perform any conduction.
  - Example: Sandalwood: tree is uprooted and bark is removed and part of sapwood is taken
- Sap/latex: it is collected in spring season or at the end of autumn season
- Galls-galls (the outgrowths which are formed on the twigs of trees): collected before the escape of insects or during August and September

## Collection of food products

There are specific instructions on how to collect food materials, whether it is of plant or animal origin

- Dhanya or grains
  - Grains are grown in the off-season: grains that are infested, grains that are immature, grains that are grown in infertile or bad soil, grains within one year unfit for usage
  - Grains within one year will vitiate Dosa Dhathu, Malas and Srothas
- Shaka or leafy vegetables
  - Very rough and hard, very old, infested, and unseasonal and unnatural habitat, vegetable leaves that are not good for usage
- Kanda or tubers
  - Immature, unseasonal, old /dried, diseased, infested by worms, and not properly grown. These tubers are not usable
- Phala or fruits
  - Diseased, eaten by insects or infested, over ripe and unseasonal and unripe, immature fruits are not usable. The fruits that are well grown and mature are fit for collection except for Vilwa. In Vilwa, unripe fruits are better.

## Storage and preservation

Acharya Caraka says:

- Properly collected drug should be stored in a container having similar qualities.
- Store in the house, built in a suitable place with proper ventilation every day.
- The storehouse should be worshipped after cleaning.
- It should be devoid of fire, water, moisture, smoke, dust, rats and other insects
- Storehouse should not be situated at or near circle or junction

Preservation techniques in ayurveda

- The collected drugs are kept in either ragged clothes, earthen pots, plank or on a pillar post are to be kept clean

## Expiry period of Ayurvedic formulations(shelf life)

- Churna powder: 2 months
- Tablets: 1 year
- Confections: 1 year
- Ghee: 4 months
- Oil: 4 months
- Asavarishta: Infinity
- Dhatus (metals) and rasa: Infinity

## Mana

Mana is an entity through which weight, volume, and/or length of the substance are measured. For prescribing medicine and advising food, mana is very important.

According to caraka, there are 2 different types of mana

1. Kalinga mana (belongs to Orissa)
2. Magadha mana (belongs to Bihar)

According to amerakosha, there are 3 types of mana:

1. Pautuva mana
2. Druvaya mana
3. Payya mana

Pautuva mana: to measure weight

2 ratti = 250gm

8 ratti = 1 gm

24 ratti = 3gm

48 ratti = 6gm

1 Tola = 12 gm

2 Tola = 24 gm

4 tola = 48 gm

64 tola = 768 gm

1024 tola = 12.288 kg

2048 tola = 24.576kg

4096 tola = 49.152kg

Druvaia mana : it is to measure volume

1 Bindu = a drop that drops from a finger that is dipped in water upto two proximal phalangeal joints.

Payya mana: to measure length. Here, 1 angula = 0.75 inches

1 Vitasti = 12 angula (9 inches)

1 Aiatni = 22 angula (16.5 inches)

1 Hasta = 24 angula (18 inches)

1 Rajahasta = 27 angulas (22 inches)

1 Vyama = 4 hasta (72 inches)

## Purification of Dravya

Usually, there are 3 impurities for plants and minerals

1. Natural impurities: Some impurities will be seen naturally in the plants themselves, namely vatsanabhi, cannabis, opium
2. Physical impurities: impurities like mud, sand, grass, wooden pieces, or something similar to the drugs, will be mixing . This also known as adulteration this is the common issue in ayurvedic manufacturing industries
3. Chemical Impurities: Type of impurities that are seen in a mineral drug

## Shodhana

Purification of substances through various procedures is known as *Shodhana*

Different types of shodhana:

- **Bhavana**: trituration of medicines with a water decoction, etc., and dried
  - Eg: opium is purified by giving 7 times grinding with ginger juice
- **Dhalana**: after heating any dravya, immersing it in liquid media like a decoction, and juice or milk, etc., is known as *dhalana*
  - Eg. gold dipping in tila tyla
- **Avapa**: liquefied materials are dipped in different liquids, like milk decoctions, etc.
  - Eg: liquified sulphur dipped in milk
- **Nirvapa**: red hot metals are dipped in specific liquid for purification; it is done mainly in Rasa sastra

- Swedana: is a method where medicines are suspended in alkaline sour liquids or a decoctions of various drugs filled in dola yantra and heated for a specific duration
  - Eg. guggulu in triphala kwatha
- Mardana: pounding drugs with alkaline or any other substances is called *Mardana*; t is used to remove external impurities
- Bharjana: frying substances in a pan using ghee, oil, etc.
  - Eg: asafoetida is fried in ghee to lose its sharpness

Purification of some drugs

- Opium: clean opium should be triturated with ginger juice for seven times and dried
- Ganja: dried leaves are dipped in water for sometime and then dried in sunlight,these dried leaves are fried with Ghee and then it is used.

Posology

Age	Dosage	Age	Dosage	Age	Dosage
1 month	125 mg	12 months	1500 mg (1.5 g)	12 years	12.5
2 months	250 mg	2 years	2.5 g	13 years	13.5
3 months	375 mg	3 years	3.5	14 years	14.5
4 months	500 mg	4 years	4.5	15 years	15.5
5 months	625 mg	5 years	5.5	16 - 70 years	16.5
6 months	750 mg	6 years	6.5	71 years	15.5
7 months	875 mg	7 years	7.5	72 years	14.5
8 months	1000 mg (1 g)	8 years	8.5	73 years	13.5
9 months	1125 mg	9 years	9.5	74 years	12.5
10 months	1250 mg	10 years	10.5	75 years	11.5
11 months	1375 mg	11 years	11.5		