

## ORIGINAL RESEARCH ARTICLE

**Detailed Comparative Pharmacognostical Evaluation of Different Combinations Formulation of Triphala****Gopinathan G\*<sup>1</sup>, K.S.Dhiman<sup>2</sup>, Harisha CR<sup>3</sup>**<sup>1</sup>Ph.D scholar, Department of Shalaky Tantra, I.P.G.T & R.A, Jamnagar, Gujarat, India<sup>2</sup>Professor & Head, Department of Shalaky Tantra, I.P.G.T & R.A, Jamnagar, Gujarat, India<sup>3</sup>Head, Pharmacognosy laboratory, Department of Shalaky Tantra, I.P.G.T & R.A, Jamnagar, Gujarat, India

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**ABSTRACT**

Only the knowledge about dravyas or dosas will not be sufficient till one does not know the quantity or amount of what he takes, gives, accepts, understands and demands. Triphala<sup>1</sup> (Haritaki, Vibhitaki and Amalaki) classified as an important medicine of the rasayana and cakshusya group which is mainly indicated in Prameha, Sthoulya and Kustha and also it is believed to promote health, immunity and longevity<sup>2</sup>. Though they are individually very potent drug and have their own specific mode of action on different disease conditions. Triphala in the sense of its Rasa, Vipaka and to some extent its prabhava is similar to its three contents but its Virya, Doshagnata and Guna are not exactly similar to the composing three drugs. This is due to samyoga samskara, by which the clinical efficacy of particular drug changes. There by physician by his Yukti he uses different combination in different clinical conditions. Several methods are adopted to prepare Triphala some uses equal proportions (1:1:1)<sup>3</sup> some in different proportions (1:2:4)<sup>4</sup> so in this study author made an attempt to study the physical changes in individual content and its combinations with the help of Pharmacognostical parameters.

**Key words:** Triphala, Cakshushya, Samyoga samskara, Pharmacognosy.**INTRODUCTION**

Triphala literally means three fruits. In Ayurveda, triphala has a wide range of applications. The three fruits are Haritaki (chebulic myrobalan, *Terminalia chebula*) Vibhitaki (Belleric Myrobalan, *Terminalia bellerica*) and Amalaki (Indian gooseberry, *Emblica officinalis*). It contributes to the balance of all the three doshas vata, pitta and kapha. Amalaki for pitta, Vibhitaki for kapha and Haritaki for vata. Ama, the accumulation of unwanted products or toxins in the body is the major reason for many diseases and physical conditions. The main advantages associated with Triphala are promotes good digestion, colon cleaning, blood purification, mental alertness, better eyesight etc.

Triphala is usually a combination of equal parts of all the three fruits in powdered form. But in classics depending upon the doshic combination and disease condition proportion of these three drugs varies. While treating eye diseases the proportion of Amalaki is increased whereas treating vata related diseases the proportion of Haritaki is increased. Till date there is no

scientific work has been published. Triphala individually, in equal proportion (1:1:1) and different proportion (1:2:4) with comparative microscopic evaluation. So in this study an attempt has been made to evaluate scientifically the all four categories i.e the drugs individually, equal proportions, in different proportions and their comparison.

**MATERIALS AND METHODS****Collection**

Mature fruits of Haritaki, Vibhitaki and Amalaki were collected from the Sasoi garden of I.P.G.T & R.A, GAU, Jamnagar and were authenticated by taxonomist. These fruits were shade dried for twenty days and then pulverised to fine powder (mesh no.80) and stored in air tight container individually (Sample 1), three fruits mixed in equal proportion 1:1:1 (Sample 2, T1) and then mixed in (Haritaki:Vibhitaki:Amalaki) 1:2:4 proportion (Sample 3, T2)

**Pharmacognostical evaluation:**

Ingradients are first studied morphologically then properly shade dried and powdered contamination

free ingredient of Haritaki, Vibhitaki and Amalaki (Sample 1), Sample 2, T1 and Sample 3, T2 were observed first with distilled water and then with phloroglucinol and concentrated HCl. Starch grains were observed under iodine mount. Microphotographs are taken by using Carl-Zeiss trinocular microscope attached with camera<sup>5</sup>.

#### Organoleptic characters:

Colour, taste, odour, and powder nature of individually and two samples were recorded by sensory characters<sup>6</sup>.

## RESULTS

### Macroscopic: Individual (Sample 1)

**Amalaki:** Drug consists of curled pieces of pericarp of dried fruit occurring either as separate single segment; 1-2 long and united as 3-4 segments; bulk, pieces showing, a broad, highly shriveled wrinkled external convex surface to somewhat concave, transversely wrinkled lateral surface, external surface shows few whitish specks, occasionally some pieces show a portion of stony testa (Fig 1 & Plate 1).

**Vibhitaki:** Fruit nearly spherical to ovoid, 2.5 to 4 cm in diameter, fresh ripe fruit slightly silvery or with shiny whitish pubescent surface, mature fruits grey or grayish brown with slightly wrinkled appearance, rind of fruit shows variations in thickness from 3-5mm (Fig 2 & Plate 1).

**Haritaki:** Fruit is hardy stony drupe, greenish yellow in colour, odourless, ovate longitudinally wrinkled, 3.5 to 4 cm in length, 1.5 to 2.0cm wide and has five to six ridges. In some basal portion is narrower and somewhat elongated on tapering, taste astringent (Fig 3 & Plate 1).

### Organoleptic characters: Individual (Sample 1)

Colour, taste, odour, and powder nature of Haritaki, Vibhitaki, and Amalaki were recorded by sensory characters and results were depicted in (Table 1).

### Organoleptic characters: Combination (Sample 2, T1 and Sample 3, T2)

Colour, taste, odour, and powder nature of Sample 2, T1 and Sample 3, T2 were recorded by sensory characters and results were depicted in (Table 2).

### Powder microscopy: Individual (Sample 1)

Microscopic characters of Haritaki, Vibhitaki and Amalaki were depicted in (Table 3), (Fig 1, 2, 3, & Plate 2)

### Powder microscopy: Combination (Sample 2, T1 and Sample 3, T2)

Microscopic characters of Sample 2, T1 and Sample 3, T2 were depicted in (Table 4), (Fig 4, 5 & Plate 2)

**Table 1: Organoleptic characters: Individual**

Characters	Haritaki	Vibhitaki	Amalaki
Color	Yellowish Brown	Yellowish Brown	Dark Brown
Taste	Astringent & Bitter	Bitter & Astringent	Sour & Astringent ends in sweet
Odor	Characteristic	Characteristic	Characteristic
Touch	Fine	Fine	Rough

**Table 2: Organoleptic characters: Combination**

Characters	Triphala(1:1:1), T1	Triphala(1:2:4), T2
Color	Yellowish Brown	Dark yellowish Brown
Taste	Astringent	Astringent
Odor	Characteristic	Characteristic
Touch	Fine	Fine

**Table 3: Powder microscopic characters of individual drug (Sample 1)**

S.No	Amalaki (Plate3, Fig a to f)	Vibhitaki (Plate3, Fig g to k)	Haritaki (Plate3, Fig l to p)
1	Fibers	Fibers	Epicarp cells
2	Starch grains	Trichome base filled with tannin	Epidermal cells
3	Mesocarp cells	Mesocarp cells	Mesocarp cells
4	Stone cells	Rosette crystals	Lignified fiber
5	Stone cell in groups	Sclerides	Tannin
6	Silica crystals	Tannin	Pitted stone
7	Tannin	Compound starch grains	Pitted vessels
8		Stone cells	Sclerides
9		Stone cells+ Trichome	Starch grains-Simple & compound

**Table 4: Powder microscopic characters of combination**

S. No	Triphala(1:1:1) T1 (Plate4, Fig a to f)	Triphala(1:2:4) T2 (Plate5, Fig a to i)
1	Simple fibers	Large no. of Simple fibers
2	Mesocarp cells	Mesocarp cells
3	Pitted stone cells	Pitted stone cells
4	Pitted vessels	Pitted vessels
5	Rosette crystals	Rosette crystals clumped
6	Less quantities of Sclerides with Lumen	Large quantities of Sclerides with wide Lumen
7	Starch grains-Simple	Starch grains-Simple
8		Stone cells +Fiber
9	Stone cells in group	Stone cells in group+Parenchymatous cells
10	Stone cells Pitted	Stone cells + Pitted Parenchymatous cells
11	Tannin-Light & Dark	Tannin-Light & Dark
12	Trichomes with tannin	Trichomes without tannin
13	Fragment of pitted vessels	Fragment of annular and pitted vessels
14	Less no. of silica crystals	Large no. of silica crystals

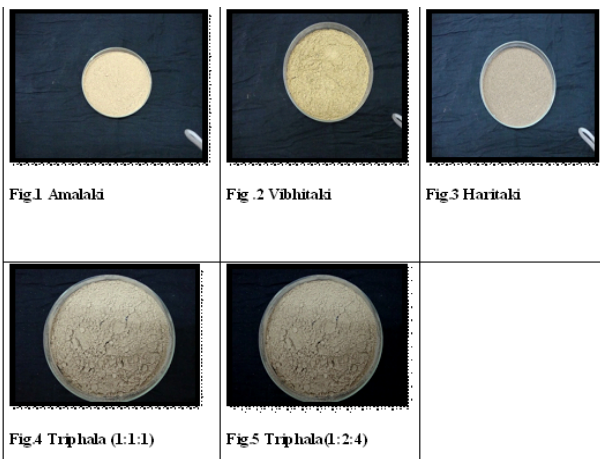
### Macroscopic charactericts:

#### Plate 1:



**Powder Microscopy:**

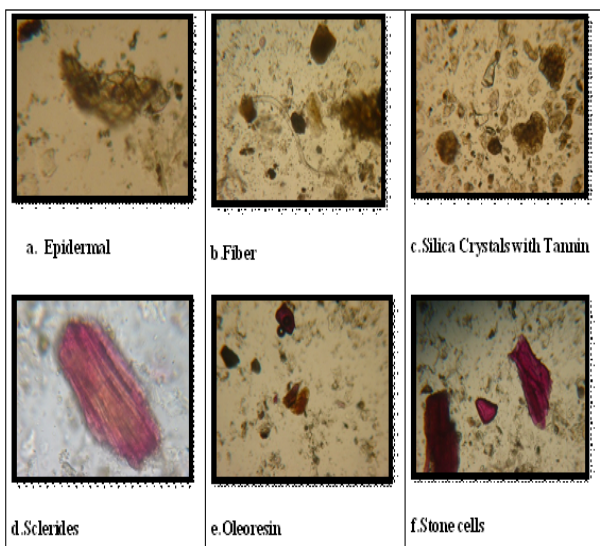
Plate 2:



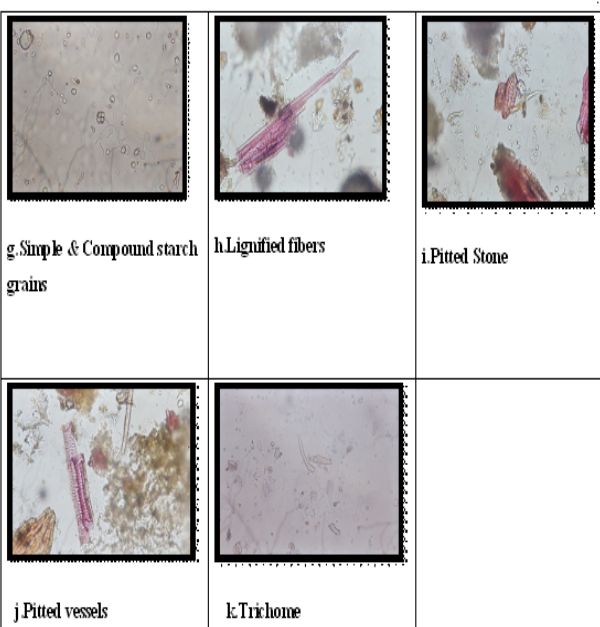
**Powder microscopic characters:**

Plate 3:

Amalaki:



Vibhitaki :



Haritaki:

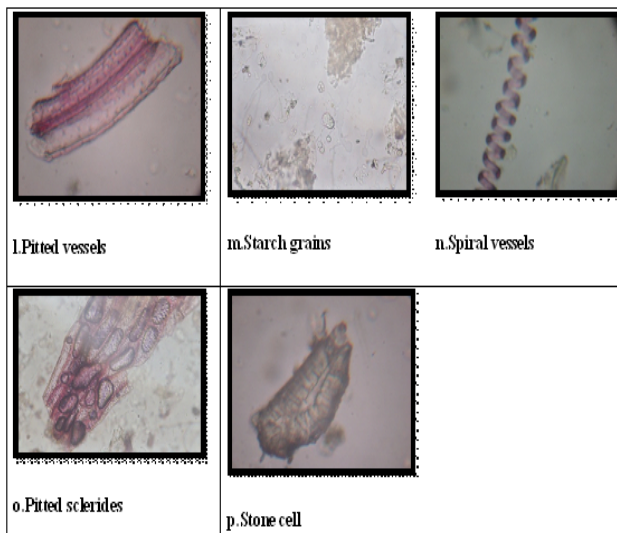


Plate 4:

Triphala: 1:1:1

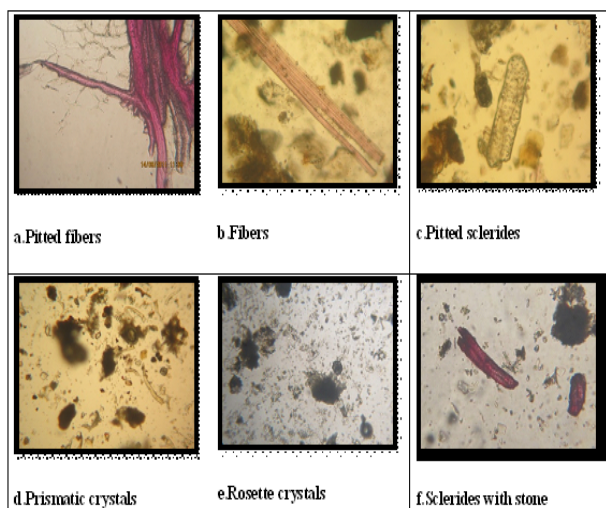
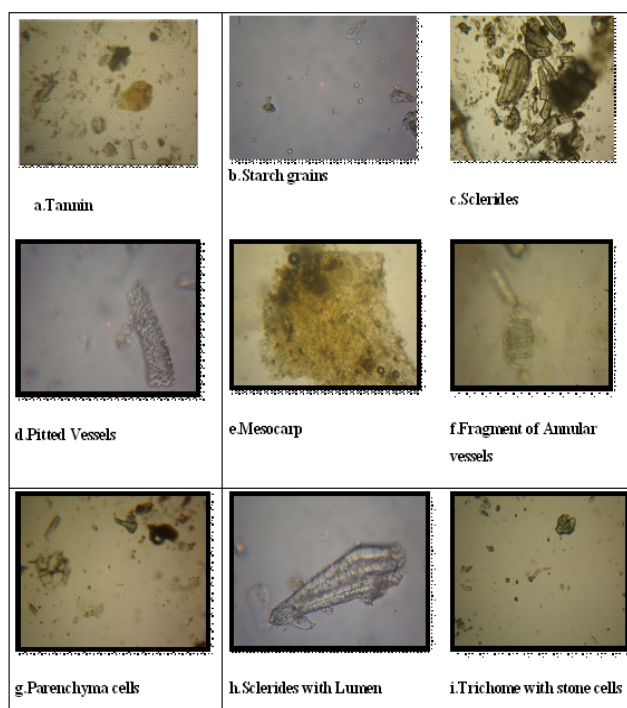


Plate 5:

Triphala: 1:2:4



**DISCUSSION****Organoleptic characters:**

Organoleptic characters of individual raw drug vary in color, odor and taste. When they are combined together, quantitatively also there is a definite change in the characters. Here Triphala (1:1:1) when equally mixed their taste becomes astringent, color yellowish brown with characteristic odor whereas 1:2:4 mixture also shows strong astringent, dark yellowish brown and characteristic taste, color and odor respectively.

**Microscopic characters:**

Microscopic characters of individual raw drugs as such shows definite variation, the compound formulation in different proportion also varies microscopically this may be due to the effect of Panchamahabuta constitution. The main interaction of Panchamahabhuta are Pitted stone cells with wide lumen, fibers with wide lumen indicates that characters may be influenced by Vayu and Akash. The specific cells and characters were loosely arranged with the influence may be Jala. The clumping and dissolving nature of rosette crystals because of excess addition of Amalaki indicating influence of Agni ultimately integrate the potency of the formulation. The 1:1:1 shows less number of simple fibers, silica crystals and sclerides with lumen, trichome with tannin and clear rosette crystals. Whereas 1:2:4 results shows large number of simple fibers, silica crystals and sclerides with lumen, trichome without tannin and clumped rosette crystals. The characters which are less concentration with lumen, clumping nature of crystals and silica crystals mainly may due to variant ingredient proportion and also influence of Panchamahabuta constitution. The efficacy of the drug too changes in both the combinations.

**CONCLUSION**

Though it is the proven fact that individual and different proportions of Triphala act differently in many clinical conditions. This study scientifically reveals that the compound formulation in both combinations shows genuineness of the finished product (representing Haritaki, Vibhitaki and Amalaki ) but some of the characters are changed due to the combination, quantity and influence of Panchamahabuta constitution; these points are taken into consideration and highlighted for further research development.

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