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Research Article

# VALIDATION OF WET AND DRY DRUG COLLECTION PRINCIPLE IN THE PREPARATION OF *VASA GHRITA* THROUGH QUANTITATIVE ESTIMATION OF VASICINE

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**ABSTRACT**

Principle of wet and dry drug collection is applied for collection of drugs while preparing any formulations i.e. wet state of drug is taken in double to its dry drug quantity but in case of exception, drug should be taken in wet state and also not taking in double to its prescribed quantity. Here, *Vasa* is mentioned as an exceptional drug for wet and dry drug collection principle. Hence, *Vasa Ghrita* were selected as a dosage form to validate this principle. Aim of present study was to validate the wet and dry drug collection principle in the preparation of *Vasa Ghrita* through quantitative estimation of Vasicine. Three samples of *Vasa Ghrita* were prepared as per the reference of Charaka Samhita from wet and dry state with equal quantity of *Vasa* and wet state and double quantity of *Vasa*. On comparing the data of three samples highest yield (94.16%) was found in *Vasa Ghrita* prepared from wet and equal quantity. The percentage of Vasicine was more in dry *Vasa Panchanga* (0.1914%) than wet state (0.0999%) in HPTLC quantification. Equal quantity and wet state of *Vasa Ghrita* showed more percentage of Vasicine (0.0032%) than dry state and equal quantity (0.0028%) while the percentage of Vasicine in wet state double quantity was in nearer range (0.0035%) to wet state and equal quantity of *Vasa Ghrita*. So, it can be concluded that *Vasa* should be used in wet state without taking in double quantity in *Vasa Ghrita*.

**KEYWORDS:** Wet and dry drug collection principle, *Vasa, Vasa Ghrita,* Vasicine.

## INTRODUCTION

Bhaishajya Kalpana includes complete knowledge of drugs including the basic principles of drug collection and pharmaceutics. Ayurvedic literature have mentioned the principle regarding the collection of drugs before preparing formulations i.e. wet state of drug should be taken in double quantity to the prescribed *Mana* (measurement). In Raj Nighantu[1], as indicated by Aacharya Narhari Pandit that new and wet state of drugs are *Suveerya* (best therapeutic potency), dry drug have medium potency and *Jeerna* (old) are *Nishphala* (least in potency). Drugs like *Aardraka*, *Pippali, Maricha*, *Kustumbari* have different properties in wet and dry state as the therapeutic potency of herbal drugs additionally varies as per their state.

Charaka Samhita[2], Sushruta Samhita[3], Ashtanga Hridaya[4] and Vangasena Samhita[5] stated exceptional *Mana* (measurement) excluding exceptional drugs for wet and dry drug principle in which *Shushka* (dry state of drug) and *Aardra* (wet state of drug) should be taken in equal quantity. Later on, the texts such as Sharangdhara Samhita[6], Bhavapraksha Nighnatu[7], Raja Nighantu[8], Kaideva Nighantu[9] and Bhaishajya Ratnavali[10] are stated some exceptional drugs for this principle in which drugs should be used in wet state but not taken in double quantity to the prescribed quantity of dry drugs. Under the heading of exceptional drugs list, *Guduchi, Vasa* and *Kutaja,* are commonly described.

*Vasa* is abundantly used drug in Ayurved with having property of *Kaphapittanashana*[11] and also included under the exceptional drug of principle for wet and dry drug collection. So, *Vasa* (*Justicia adhatoda* L.*)* as an exceptional drug for this principle and *Vasa Ghrita*[12] as a dosage form were selected. The rationale for selection of this dosage form was, looking to the therapeutic importance of *Vasa*, it is recommended as *Agreya Dravya* for *Raktapitta*[13] disease as well *Vasa Ghrita* is also used in *Raktapitta Chikitsa*. *Vasa* mainly contain alkaloid Vasicine, which is mainly shows broncho-dilatory activity[14], antitussive activity[15] etc.

The present study is aimed to evaluate the principle of wet and dry drug collection whether any significant difference happens if the state and quantity of drug change in preparation of *Vasa Ghrita* in context to Vasicine.

## MATERIALS AND METHOD

### Procurement and Authentication of Raw Drug

**Wet state of drug:** Total 7 kg *Vasa Panchanga* and 400 g *Vasa Pushpa* were collected from Government Ayurved Pharmacy, Rajapipla in December 2020 by adopting Good Collection Practices guidelines [16]. The physical impurities such as dust, stone and infected parts were removed by cleaning and manually sorting. Then *Yavakuta* was made in M.S. chopper at Government Ayurved Pharmacy, Rajapipla. The raw material was identified and authenticated in the Pharmacognosy department, Food and Drug Laboratory (FDL), Vadodara.

**Dry Drug:** Among the three samples of *Vasa Ghrita*, one sample of *Ghrita* was prepared from dry state of *Vasa Panchanga*. Henceforth *Vasa Panchanga* and *Pushpa* were kept in separate S.S. tray on a thin layer cloth subjected to shed dry.

**Table 1: Result of Drying Process of *Vasa***

| Parameters | Results | |
|---|---|---|
| | ***Vasa Panchanga Yavakuta*** | ***Vasa Pushpa*** |
| Initially quantity of wet state of *Vasa Panchanga Yavakuta* and *Vasa Pushpa* (g) | 3800 | 250 |
| Total time taken for drying | 10 days | 8 days |
| Final quantity of dried *Vasa Panchanga Yavakuta* and *Vasa Pushpa* (g) | 1838 | 55 |
| Final yield in (%) | 48.3684 | 22 |
| Total loss (g) | 1962 | 195 |
| Total loss (%) | 51.64 | 78 |
| Reason of loss | Due to drying | Due to drying |

**Cow Ghee:** Cow Ghee was procured from Khadigram Udhyoga, Bhutadijapa, Vadodara with *fssai* standard.

### Preparation of Samples

*Vasa Ghrita* was prepared as per the reference mentioned in Charaka Samhita[17]. In this reference, ratio is not mentioned. Hence, *Anukta* ratio was adopted as 1:6:24 to *Kalka:Ghrita:Kwatha*[18]. *Kalka*[19] and *Kwatha*[20] were prepared as per mentioned in Sharangdhara Samhita. All the samples of *Vasa Ghrita* were prepared in pharmaceutical laboratory of PG Department of Rasashashtra evam Bhaishajya Kalpana, Government Ayurved College, Vadodara.

### Samples are Labeled as

VGWE- *Vasa Ghrita* prepared with equal quantity of wet state of *Vasa Panchanga*

VGWD- *Vasa Ghrita* prepared with double quantity of wet state of *Vasa Panchanga*

VGDE- *Vasa Ghrita* prepared with equal quantity of dry state of *Vasa Panchanga*

**Table 2: Proportion and Quantity For All Three Batches of VGWE, VGWD And VGDE**

| | Name of drug | Latin Name | Condition | Ratio | Quantity |
|---|---|---|---|---|---|
| **VGWE** | *Vasa Pushpa Kalka* | *Justicia adahtoda* L. | Wet | 1 | 35 ml |
| | *Go Ghrita* | - | - | 6 | 200 ml |
| | *Vasa Panchanga Kwatha* | *Justicia adahtoda* L. | Wet | 24 | 800 ml |
| **VGED** | *Vasa Pushpa Kalka* | *Justicia adahtoda* L. | Wet | 2 | 70 ml |
| | *Go Ghrita* | - | - | 6 | 200 ml |
| | *Vasa Panchanga Kwatha* | *Justicia adahtoda* L. | Wet | 48 | 1600 ml |
| **VGDE** | *Vasa Pushpa Kalka* | *Justicia adahtoda* L. | Dry | 1 | 35 ml |
| | *Go Ghrita* | - | - | 6 | 200 ml |
| | *Vasa Panchanga Kwatha* | *Justicia adahtoda* L. | Dry | 24 | 800 ml |

### Preparation of *Kalka*

*Kalka* was prepared from *Vasa Pushpa.* The wet state of *Vasa Pushpa* was cleaned with water, ground in a mixer and made a paste. The dry state of *Vasa Pushpa* was also converted into coarse powder form by grinding in a mixer. After that paste was prepared from the powder by adding sufficient quantity of water.

**Preparation of *Kwatha***

*Kwatha* was prepared from *Vasa Panchanga Yavakuta.* As *Vasa Panchanga Yavakuta* was light in weight, the drug absorbed all the water and the *Kwatha* could not be prepared well. So, volumetric measurement was selected for the drug preparation. The drug was measured in volume and took the 4 times water quantity to the volume of drug. The mixture was heated until 1/4$^{th}$ quantity of water remained. It was then filtered through a cotton cloth. For uniformity in the measurement, other ingredients i.e. *Kalka* and *Ghrita* were also taken volumetrically.

**Preparation of *Ghrita***

*Go-Ghrita* was taken in a S.S.vessel and heated over *Mrudu Agni* till complete evaporation of moisture content. Prepared *Kalka* was added to *Go-Ghrita* followed by addition of *Vasa Panchanga Kwatha.* Mild heat was applied with intermediate stirring. Temperature of *Ghrita* were in range of 90 - 99 ℃. Heating duration is adjusted so as to complete the *Sneha Paka* and process was carried out till *Sneha Siddhi Lakshana* appeared. The prepared *Ghrita* was filtered through cotton cloth in its warm stage and stored in a container after self-cooling. (Figure 1)

**Analytical Study**

Standard raw material leads optimum quality of product. Cogitating this, analysis of raw material was done foremost. To ensure reliability of finished product, analytical parameters were applied three batches of each sample which were prepared with same quantity, ratio, equipment specification and process.

**For Raw Drug:** Organoleptic parameters, physic-chemical parameter such as loss on drying[21], total ash[22], acid insoluble ash[23], water and alcohol soluble extractives[24-25], test for heavy metals[26], quantification of Vasicine by HPTLC.

**For Finished Product:** Organoleptic parameters, physicochemical parameter such as acid value[27], iodine value[28], saponification value[29], pH determination[30], specific gravity[31] and refractive index[32], test for heavy metals[33], quantification of Vasicine by HPTLC.

**High Performance Thin Layer Chromatography (HPTLC)**

Quantification of Vasicine through HPTLC in wet and dry state of *Vasa Panchanga*, all three sample of *Vasa Ghrita* i.e. VGWE, VGDE, VGWD were done.

High Performance Thin Layer Chromatography (HPTLC) method has been carried out for determining its major bioactive marker Vasicine in CAMAG Linomat 5– Applicator with MERCK- TLC/HPTLC Silica gel 60 $F_{254}$ on Aluminum sheets as Stationery Phase. The mobile phase consisted of Ethyl acetate: Methanol: Ammonia (8: 2: 0.2 v/v). the plates were developed to a distance of 16 mm in twin trough chamber, previously saturated for 30 minutes. Under these conditions, the retention factor ($R_f$) of Vasicine was 0.23 and it was quantified at 254 nm. (Figure 2, 3)

**OBSERVATION AND RESULT**

*Kalka* and *Kwatha* were added at ranging between 75-80℃ and 90-95℃ temperature of *Ghrita* respectively. The crackling sound was heard after adding of *Kalka*. *Phenodgama* (foams) occurs at early stage of *Sneha Paka* suggestive of the presence of water/moisture. *Shabdahino-agninikshipta* (not produces '*Chat*', '*Chat*' like sound while putting on fire) suggests complete loss of moisture which is observed in later stage of *Snehapaka*. At the end it is to be tested in *Kalka*[34]. At the time of filtration, the temperature of *Ghrita* was 90℃. It was pale yellow in color, bitter in taste and had Characteristic smell.

**Table 3: Comparative Observational Average Data of Three Sample of *Vasa Ghrita***

| Sr.No. | Parameter | Average parameters for 3 batches | | |
|---|---|---|---|---|
| | | VGWE | VGWD | VGDE |
| 1. | Initial Temp of *Ghrita* (℃) | 40 | 39 | 41 |
| 2. | *Kalka* added at (Min) | 05 | 05 | 05 |
| 3. | Temp.(℃) at Addition of *Kalka* | 71.33 | 74.33 | 75 |
| 4. | *Kwatha* added at (min) | 10 | 10 | 10 |
| 5. | Temp. (℃) at Addition of *Kwatha* | 88.33 | 88.43 | 87 |
| 6. | Filtration (min) | 129 | 161 | 125 |
| 7. | Temp. (℃) at filtration | 90 | 92 | 94 |
| 8. | Maximum temp of *Ghrita*(℃) | 99 | 99 | 99 |
| 9. | Total days of *Ghrita Paka* | 1 | 1 | 1 |
| 10. | Total duration (min) | 130 | 163.33 | 126.6 |

**Table 4: End Point Parameters**

| S.No. | Parameters | | Average parameters for 3 batches | | |
|---|---|---|---|---|---|
| | | | VGWE | VGWD | VGDE |
| 1. | *Vartivata Sneha Kalka* | (min) | 122 | 153 | 120 |
| | | Temp. (℃) | 97 | 93 | 95 |
| 2. | *Phenashanti* | (min) | 126 | 157 | 122 |
| | | Temp. (℃) | 96 | 94 | 94 |
| 3. | *Shabdhahina Agni Nikshipta* | (min) | 129 | 162 | 125 |
| | | Temp. (℃) | 98 | 93 | 95 |

**Table 5: Details Average Data of Pharmaceutical Preparation of VGWE, VGWD and VGDE**

| Sr.no. | Parameter | Average parameters for 3 batches | | |
|---|---|---|---|---|
| | | VGWE | VGWD | VGDE |
| 1. | *Kalka* (ml) | 35 | 70 | 35 |
| 2. | Initial *Ghrita* (ml) | 200 | 200 | 200 |
| 3. | *Kwatha* (ml) | 800 | 1600 | 800 |
| 4. | Total yield (ml) | 188.33 | 185.66 | 187.33 |
| 5. | Total yield (%) | 94.16 | 92.83 | 93.665 |
| 6. | Total loss (ml) | 11.66 | 14.34 | 12.66 |
| 7. | Total loss(%) | 5.8 | 7.17 | 6.33 |
| 8. | Total duration (min) | 130 | 163.33 | 126.6 |

**Analytical Study**

**Table 6: Organoleptic Characters of Wet And Dry State of *Vasa Panchanga Yavakuta***

| Sr.no. | Characteristics | Wet state of *Vasa Panchanga Yavakuta* | Dry state of *Vasa Panchanga Yavakuta* |
|---|---|---|---|
| 1. | Color | Dark greenish brown | Light greenish Brown |
| 2. | Appearance | Corse powder | Corse Powder |
| 3. | Texture | Corse | Corse |
| 4. | Taste | Bitter and Astringent | Bitter and Astringent |
| 5. | Odor | Characteristic | Characteristic |

**Table 7: Physico-Chemical Analysis of Wet And Dry State of *Vasa Panchanga Yavakuta***

| S.no. | Parameters | Results | |
|---|---|---|---|
| | | Wet state of *Vasa Panchanga* | Dry state of *Vasa Panchanga* |
| 1. | LOD (%w/w) | 53. 41 | 12. 6785 |
| 2. | Ash value (%w/w) | 2.9320 | 3. 2276 |
| 3. | Acid insoluble ash (%w/w) | 0.825 | 0.990 |
| 4. | Alcohol soluble extractive (%w/w) | 0.67 | 2.1946 |
| 5. | Water soluble extractive (%w/w) | 0.97 | 13.51 |

**Table 8: Heavy Metal Analysis of Wet And Dry State of *Vasa Panchanga***

| Sr. No | Heavy Metal Content | Wet state of *Vasa Panchanga* | Dry state of *Vasa Panchanga* | Permissible Limits as per API |
|---|---|---|---|---|
| 1 | Lead | 0.5656 ppm | 1.0932 ppm | 10 ppm |
| 2 | Cadmium | Not Detected | Not Detected | 0.3 ppm |
| 3 | Arsenic | Not Detected | Not Detected | 3 ppm |
| 4 | Mercury | Not Detected | Not Detected | 1ppm |

**Table 9: Organoleptic Characters of VGWE, VGDE and VGWD**

| Sr.No. | Characteristics | VGWE | VGWD | VGDE |
|---|---|---|---|---|
| 1. | Color | Pale yellow | Dark yellow | Pale yellow |
| 2. | Touch | Cold, unctuousness | Cold, unctuousness | Cold, unctuousness |
| 3. | Taste | Bitter | Bitter | Bitter |
| 4. | Odor | Characteristic to *Vasa* and *Ghrita* | Characteristic to *Vasa* and *Ghrita* | Characteristic to *Vasa* and *Ghrita* |

**Table 10: Average Value of Physico Chemical Parameters of Three Batches of VGWE, VGWD and VGDE**

| Sr. No. | Parameters | Average value of three batches | | |
|---|---|---|---|---|
| | | VGWE | VGWD | VGDE |
| 1 | Refractive index at $40^{o}C$ | 1.4543 | 1.4541 | 1.4540 |
| 2 | Iodine value | 35.5367 | 35.5713 | 35.5543 |
| 3 | Saponification value | 208.3 | 209.66 | 210.33 |
| 4 | Acid value | 1.0394 | 1.067 | 1.0691 |
| 5 | Specific gravity | 0.7511 | 0.7402 | 0.7604 |
| 6 | pH | 5.22 | 5.47 | 5.14 |

**Table 11: Heavy Metal Analysis of VGVE, VGWD AND VGDE**

| Sr. No | Heavy Metal Content | VGWE | VGWD | VGDE | Permissible Limits as per API |
|---|---|---|---|---|---|
| 1 | Lead | 1.1252 ppm | 1.0552 ppm | 0.9028 ppm | 10 ppm |
| 2 | Cadmium | Not Detected | Not Detected | Not Detected | 0.3 ppm |
| 3 | Arsenic | Not Detected | Not Detected | Not Detected | 3 ppm |
| 4 | Mercury | Not Detected | Not Detected | Not Detected | 1ppm |

**Table 12: Shows $R_f$ Value And No. of Spot Found In *Vasa Panchanga* (Wet And Dry) and 3 Samples of *Vasa Ghrita* Visualized Under 245 Nm**

| Solvent system (v/v) | Standard and Sample | Visualization | $R_f$ value | No. of spots |
|---|---|---|---|---|
| Ethyl acetate: Methanol: Ammonia (8: 2: 02 v/v) | Vasicine | 245 nm | 0.23 | 2 |
| | Wet state of *Vasa Panchanga* | | 0.19, 0.23 | 2 |
| | Dry state of *Vasa Pnchanga* | | 0.19, 0.23, 0.72, 0.75 | 4 |
| | VGWE | | 0.19, 0.23, 0.36, 0.75 | 4 |
| | VGWD | | 0.19, 0.23, 0.32, 0.75, 0.86 | 5 |
| | VGDE | | 0.19, 0.23, 0.27, 0.36, 0.75 | 5 |

**Table 13: Showing HPTLC Quantification of Vasicine**

| Sample | Vasicine standard | Wet state of *Vasa Panchanga* | Dry state of *Vasa Panchanga* | VGWE | VGWD | VGDE |
|---|---|---|---|---|---|---|
| Weight (mg) | 10.4 | 2077 | 2018 | 2384 | 2402 | 2146 |
| Area | 6367.6 | 1963.5 | 3657.2 | 1219.1 | 1328.3 | 967.5 |
| % Vasicine | - | 0.0999% | 0.1914% | 0.0032% | 0.0035% | 0.0028% |

**Table 14: Observation and Interpretation of Quantified Vasicine in Raw Material and Finished Product**

| Initial material and % Vasicine | | Finished product and % Vasicine | | Extraction of Vasicine in final product (e =d/b%) |
|---|---|---|---|---|
| Raw material | % Vasicine | *Vasa Ghrita* | % Vasicine | |
| a | b | c | d | e |
| Wet state of *Vasa Panchanga* | 0.0999% | VGWE | 0.0032% | 3.2% |
| | | VGWD | 0.0035% | 3.5% |
| Dry state of *Vasa Panchanga* | 0.1914% | VGDE | 0.0028% | 1.46% |

## DISCUSSION

Ancient literature has mentioned the principle of wet and dry drug collection in context of weight measurement for the preparation of formulation i.e., wet state of drug should be taken in double quantity to the prescribed quantity. The persuaded reason behind this is mentioned in *Bhaishajya Ratnavali* that dry state of drug is having *Guru* (heavy) and *Tikshna* (strong) properties. So, dry drug is used half to wet state of drug. The exceptional drugs for this principle are not mentioned in former manuscripts but some formulations are available in which state of drug is specifically mentioned. Acharya Sharangadhara is the first author who has listed the exceptional drugs for this principle. *Vasa* is quoted as an exceptional drug for this principle in five classical texts.

Among all the dosage form of *Vasa* mentioned in various classics, maximum number of formulations is found of *Kwatha* (290) than *Ghrita Kalpana* (112). Total 13 references are found in *Samhita* and *Samgraha Grantha* regarding *Vasa Ghrita* and first ever reference found in Charaka Samhita. Another total 99 *Ghrita* are found in which *Vasa* used as an ingredient.

Standardization is need for scenario of Globalization of Ayurved. Here, to develop SMP, three batches of each sample of *Vasa Ghrita* labeled as VGWE, VGWD and VGDE were prepared as per the reference of Charaka Samhita. Method of preparation and ingredients were revealed in concerned reference that *Vasa Pushpa* and *Panchanga* were used as *Kalka* and *Kwatha Dravya* respectively but the ratio of ingredients is not defined. So, *Anukta* ratio for preparation of *Ghrita* was followed as 1:6:24 of *Kalka: Ghrita: Kwatha*. For preparation of VGWD, the ratio of *Kalka* and *Kwatha Dravya* were taken double than prescribed quantity. While method of preparation was same in all three sample of *Vasa Ghrita*. Quantity and state of drug does not affect the final yield of all sample of *Vasa Ghrita* but VGWD consumed more time for preparation than VGDE and VGWE.

### Analytical Study

Analytical study was conducted to distinguish any physical and chemical alterations happened to raw material to finished product.

### Raw Material

Wet and dry state of *Vasa Panchanga* showed major difference in LOD, WSE and ASE due to wet state of *Vasa Panchanga* consists more water content than dry state while Total Ash and Acid Insoluble Ash didn't show any substantial difference between them.

Dry state of *Vasa Panchanga* contained more Vasicine (0.1914%) than wet state (0.0999%). This result may be due to the dry drug is more concentrated than wet form. This result supports that after shed drying of *Vasa Panchanga*, alkaloids of it i.e. Vasicine does not deteriorate.

### Finished Product

Organoleptic parameters were similar in VGWE, VGWD and VGDE except its color i.e. VGWD was dark yellow while VGWE and VGWD were pale yellow in color.

Physico-chemical parameters like Refractive index, Saponification value, Iodine value, pH and Specific gravity of VGWE, VGWD and VGDE were about to nearer. It concludes that quantity and state of drug doesn't alter physical and chemical attributes.

Among all heavy metal, lead was detected in raw material as well as all the samples of *Vasa Ghrita* within permissible limit. As raw material contains lead, finished product also bears lead within permissible limits. The growing condition of plant, chemical treatments, type of plant species, processing steps, and storage condition are important factors affecting the levels of different metals in herbal preparations.

Quantitative HPTLC showed that the percentage of Vasicine was 0.0032% and 0.0035% in VGWE and VGWD respectively. Extraction of Vasicine from wet state of *Vasa Panchanga* to VGWE and VGWD were 3.2%, 3.5% correspondingly which was almost nearer to each other. Using double quantity of wet state of drug (VGWD) to prescribe quantity does not increase the percentage of Vasicine in finished product.

For VGDE, the percentage of Vasicine was 0.0028% in VGDE. So, based upon this quantitative method of HPTLC, it can be said that the extraction of Vasicine from dry state of *Vasa Panchanga* to VGDE was 1.46%, almost half in compare to VGWE. This was happened even though raw material of VGDE i.e. dry state of *Vasa Panchanga* had more percentage of Vasicine than raw material of VGWE i.e. wet state of *Vasa Panchanga*.

## CONCLUSION

*Vasa Ghrita* prepared from wet state and equal quantity showed highest yield 94.16%. Organoleptic and physico-chemical attributes of all three samples of VGWE, VGDE and VGWD doesn't change except its color. Physicochemical parameters and the percentage of Vasicine content in wet (0.0999%) and dry (0.1914%) state of *Vasa Panchanga* showed remarkable difference which concludes that bio-active constituents are higher in dry state of *Vasa Panchanga*. Based on the result obtained from HPTLC method, *Vasa Ghrita* prepared from wet state equal and double quantity [VGWE (0.0032%), VGWD (0.0035%)] bears the almost similar Vasicine content while *Vasa Ghrita* prepared from dry state and equal quantity [VGDE (0.0028%)] bears the least Vasicine content than *Vasa Ghrita* prepared from wet state and equal quantity [VGWE (0.0032%)]. Henceforth, it can be concluded that *Vasa* listed as exceptional drug for principle of wet and dry drug collection should be taken in wet state without taking double quantity to its prescribed quantity.

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**Figure 1: Preparation of *Vasa Ghrita***

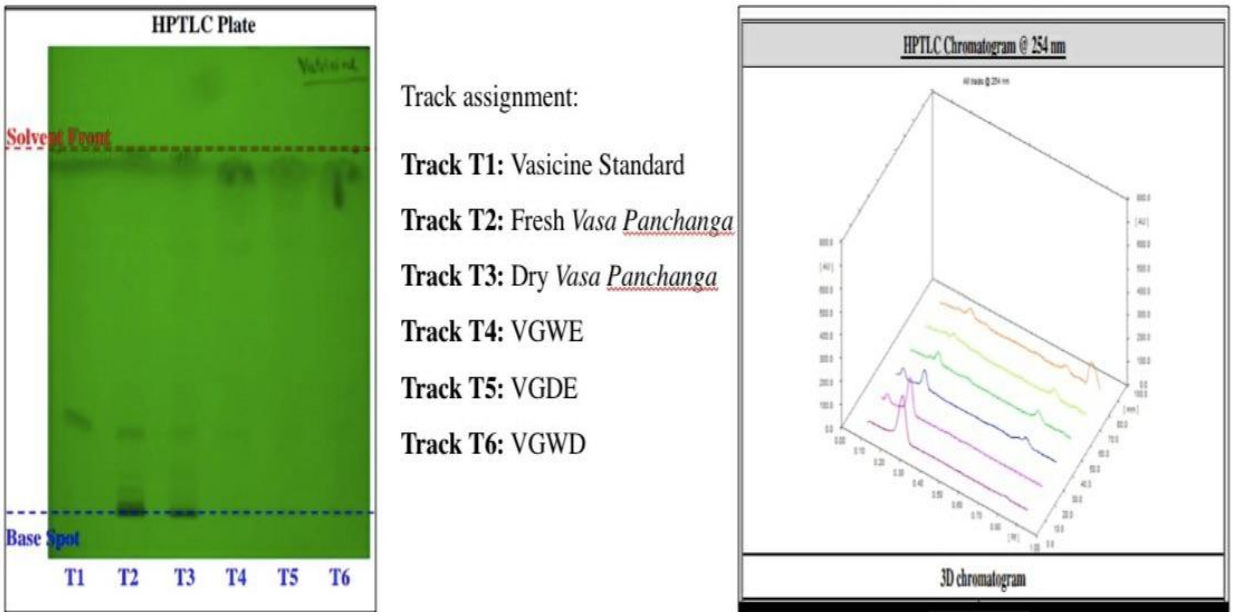


**Figure 2: HPTLC Fingerprinting and 3 D Chromatogram**

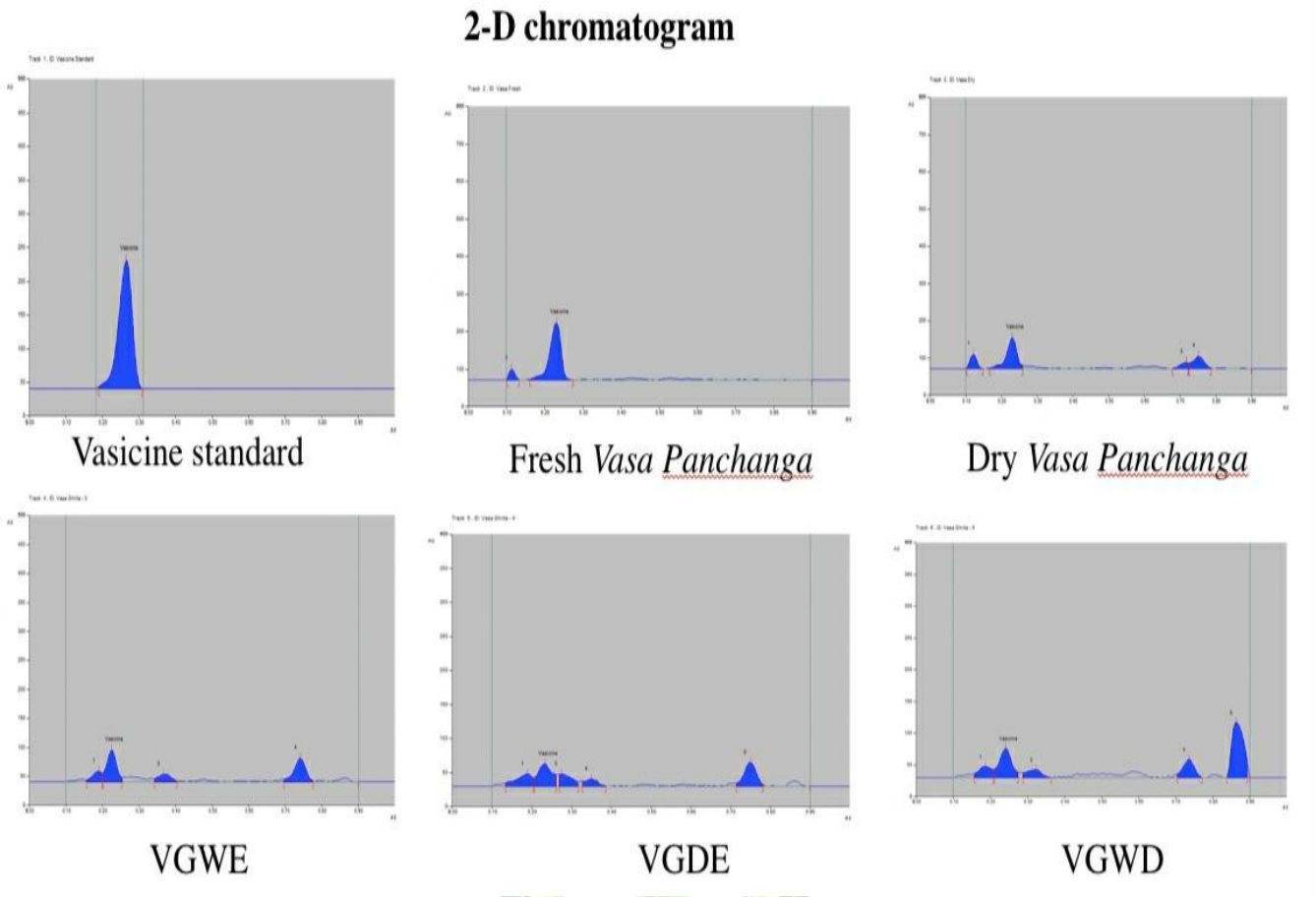


**Figure 3: 2D Chromatograms**