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Original Research Paper

Ayurveda

PHARMACEUTICAL ANALYSIS OF DADIMADIAVALEHA- AN AYURVED FORMULATION

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ABSTRACT Ayurveda is a ancient science it promotes healthy life and also how to deals with the diseases.the use of herbal medicines for the betterment of mankind is well known from centuries. dadimadi ghrita is a herbal formulation is mentioned in the context of PanduRogachikitsa by charaksamhita.heredadimadi ghrita1 change into dadimadiavaleha for the better palatability in children.there has been increase demand for the herbal formulation of Ayurveda.the present study we have standardized herbs by pharmacognostical evaluation and selected chemical markers as part of quality control tool.the present study deals with organoleptic characterstics, physic chemical parameters and nutritional value analysis of final product.organolepticcharacterstics and physic chemical analysis revealed the specific characters of all active constituents used in the preparation.nutritional value , total sugar by UV, and iron value of dadimadiavaleha is also performed in this study.the HPTLC chromatographic fingerprint was also found according to ICH protocol.this study is prove that dadimadiavaleha is safe for the use in children.

KEYWORDS : dadimadiavaleha, ayurved, HPTLC, organoleptic characterstics, physic-chemical parameters.

INTRODUCTION:

Ayurveda is one of the greatest gifts of the sages of ancient India to the mankind.Ayurveda is not only a system of medicine in the conventional sense of curing disease. It is also a way of life that teaches us how to maintain and protect mental and physical health and achieve longevity.The Ayurveda have the special branch which deals with the preparation of formulations. One among them is Dadimadi ghritapopularly used in the management of various diseases like Pandu,Gulma, heart disease, splenomegaly and other conditions and it has been quoted as auspicious drug in classics.

Thisformulation in present era needs the standardization. In this study dadimadi ghrita is prepared as dadimadiavaleha because of consideration the palatability in children. DadimadiAvaleha prepared as per the quotations explained in the classics. The Dadimadiavaleha is a herbal preparation. The analytical study of Avaleha is performed with following parameters: organoleptic characteristics parameters i.e. colour, taste, odour, touch, consistency and physic-chemical parameters- pH value, Loss of Drying at 105c, total ash value , acid soluble ash, water soluble extractive, alcohol soluble extractive, rancidity are performed.HPTLC are performed for identification of chemical constituents.also nutritional value and total sugar byUV, and iron by gravimetry are performed.

MATERIALS AND METHODS

AIM AND OBJECTIVES:-

- Identification and authentication of raw drugs used for DadimadiAvaleha.
- Preparation of DadimadiAvaleha at GMP certified pharmacy as per classical explanation.
- Organoleptic characters, Physicochemical, and phytochemical analysis of Dadimadi Avaleha.

Drug review:-

The name of the drug, parts used and its quantity were mentioned in TABLE 1.

Collection, Identification and Authentication of Raw Drugs-

All the drugs were purchased from the local market of Vadodara city from the retailer.

Raw drugs identification and authentication was done by the Department of Dravyaguna ,Parul Institute of Ayurveda, Parul University, Vadodara.

Preparation of the Drug:

Classical method of dadimadiavaleha preparation:

The preparation of the drug was done as follows-

- firstlyshodhana karma is done of chitrakamool.
- Chitraka roots cut into small pieces and soaked in lime water for overnight, then taken out, washed and dried and after that chitaka root is used for avaleha preparation.
- Initially make fine powder of all the 5 constituents of dadimadiavaleha was prepared in given quantity.
- Take sitopala in given quantity and give it heat and make one tarachasani(sugar syrup).
- Then add all the powder form the drug and mix and stir them on the heat.
- Then add the ghrita.
- After preparation of the avaleha add 0.02% sodium benzoate as a preservative.
- After preparation the drug was stored in air tight containers.
- Total prepared dadimadiavaleha quantity- 30 kg
- Dadimadiavaleha is stored in 250gm and 500gm containers.

Methods of physicochemical and organoleptic characteristics evaluation:-

Dadimadiavaleha was analyses by using standard qualitative and quantitative parameters. All the procedures were conducted at G.M.P certified pharmacological lab, Vadodara. The physico- chemical parameters i.e. pH, Loss on Drying, total ash, acid soluble ash, water soluble extractive, alcohol soluble extractive, and organoleptic characteristics i.e. colour, odour, touch, consistency, taste are analysed.

Chromatography

HPTLC (high-performance thin layer chromatography) is a sophisticated form of TLC, which provides superior separation efficiency. The HPTLC concept includes validated methods for qualitative and quantitative analysis, and fulfils all quality requirements for use in fully regulated environments. In this study HPTLC has been performed for drug analysis. It is an enhanced form of TLC. A number of enhancements can be

made to the basic methods of TLC to automate the different steps, to increase the evolution achieved and to allow more accurate quantitative measurements. Method and other procedures followed for DadimadiAvaleha.
HPTLC as shown in IMAGE 1

RESULTS AND DISCUSSION

1.Organoleptic evaluation:

Organoleptic Characteristics of dadimadiavaleha details are mentioned in the TABLE 2.

2. Physico-Chemical Parameters:

Details of physico-chemicals values are mentioned in TABLE 4.

Loss on drying at 105c : On drying the samples indicate that the samples were devoid of excess water content and there was no microbial overgrowth or insect infestation present. In this sample loss on drying is 5.47%, it indicates the samples may have good shelf-life and may not decayon storage.

Total ash and Acid soluble ash: It indicates of contamination, substitution, adulteration. The Low total ash and Acid soluble ash signifying low levels of inorganic matter and silica content in the finished product. In this Total Ash and Acid soluble Ash: 5.47% and 0.83%,.

Water soluble extract and Alcohol soluble: Water soluble extract and Alcohol soluble extract are 25% and 18.75% respectively.

pH: The pH was measured to note the acidity or alkalinity of the aqueous solution of the drug. This helps in understanding the pharmacological basis of drug absorption and metabolism. In this sample pH is 6% so it is alkaline in nature.

4. High-performance Thin Layer Chromatography study:

Preparation of test solution (T):

The chromatographic techniques carried out are mentioned in materials and methods section. Solvent system which was designed for HPTLC i.e. Toluene (10): Ethyl acetate(3): Formic acid(1) was used for HPTLC studies. The results are tabulated as under **(IMAGE 1).** Preparation of spray reagent (Vanillin sulphuric acid reagent).

Details of HPTLC profile of all tracks at 254nm. Under the 254 nm wavelength- track-1 of DadimadiAvaleha(5□L) – 7 spots were detected and starts with respect to retardation factor 0.06, 0.29, 0.44, 0.55, 0.66, 0.72, and 0.77.**(IMAGE 2)**

Details of HPTLC profile of all tracks at 366 nm. Under the 366 nm wavelength- Track- 1 of DadimadiAvaleha(5µL) – 4 spots were detected and starts with respect to retardation factor 0.44, 0.55, 0.59, and 0.66.**(IMAGE 3)**

Details of HPTLC profile of all tracks at 540 nm. Under the 540 nm wavelength- Track-1 of DadimadiAvaleha(5µL) – 5 spots were detected and starts with respect to retardation factor 0.14, 0.29, 0.55, 0.66, and 0.77.**(IMAGE 4)**

CONCLUSION

Any plant or formulation which is used medicinally requires detail study prior to its use because the therapeutic efficacy is depends on the quality of ingredients used for the medicine preparation. In this study, dadimadiavaleha was prepared according to the classical textual standard operative procedure mentioned in classic. The raw drugs were indentified and authenticated before using for preparation. The prepared drug dadimadiavaleha was pharmacologically subjected for physicochemical analysis, HPTLC, nutritional value and qualitative study of drug. The ground work requisites for the standardization of dadimadiavaleha were tried to cover in this study.

Table no.1 - Ingredients of DadimadiAvaleha

Sr. No.	DRUG	LATIN NAME	PART USE	QUANTITY
1	Dadima	Punicagranatum	Fruit	8 Part
2	Pippali	Piper longum	Fruit	1 Part
3	Dhanayaka	Coriandrumsativum	Seeds	4 Part
4	Shunthi	Zinziberofficinalis	Rhizome	2 Part
5	Chitraka	Plumbagozeylanica	Root bark	2 Part
6	Ghee	Cow's Ghee	-	QS
7	Sharkara	Suagar	-	60% w/v

Table no.2-Organoleptic characterstics-

SAMPLES	DADIMADI AVALEHA
Colour	Brownish
Odour	Aromatic and sweetish
Touch	Soft
Consistency	Semi solid
Taste	Sweet

Table no. 3 - Qualitative Analysis-

SAMPLE	DADIMADI AVALEHA
SOLVENT	PRESENT(+)/ABSENT(-)
Alkaloid	+
Vitamin C	+
Volatile Oil	+
Flavanoid	+
Saponin	-
Glycoside	+

Table no. 4 - Physico-Chemical Parameters-

SAMPLE	DADIMADI AVALEHA
Parameters	Value
Loss of Drying at 105c(%w/w)	5.47
Total Ash Value(%w/w)	2.77
Acid Soluble Ash(%w/w)	0.83
Water Soluble Extractive(%w/w)	25
Alcohol Soluble Extractive(%w/w)	18.75
PH Value	6
Rancidity	Negative

Table no. 5 –m Nutritional Value-

PARAMETERS	RESULT
Protein(%)	15.12
Fat(%)	1.73
Carbohydrate(%)	81.72
Fiber(%)	0.102
Total Sugar by UV (%)	45.39
Iron by Gravimetry (%)	0.34

Image 1

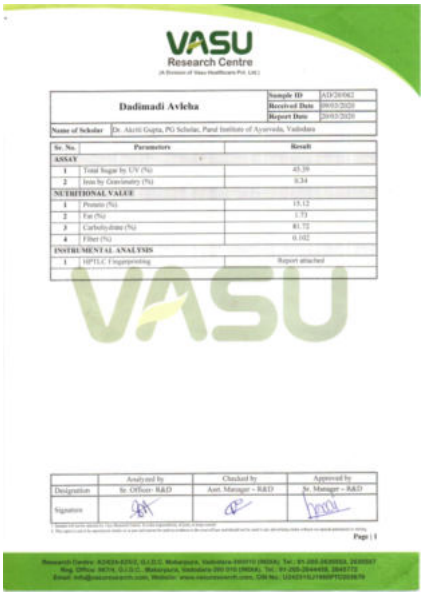
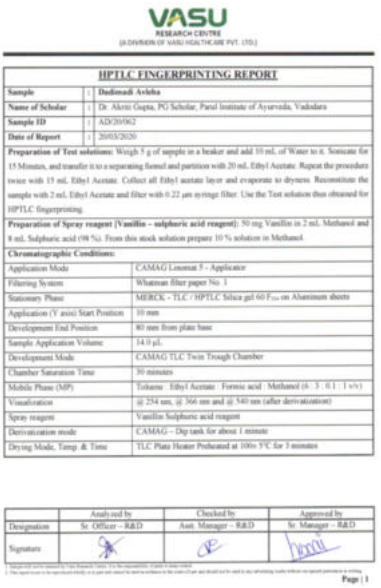


Image 2



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HPTLC FINGERPRINTING REPORT

Sample	:	**Dadimadi Avleha**
Name of Scholar	:	Dr. Akriti Gupta, PG Scholar, Parul Institute of Ayurveda, Vadodara
Sample ID	:	AD/20/062
Date of Report	:	20/03/2020

Preparation of Test solutions: Weigh 5 g of supple in a beaker and add 10 mL of Water to it. Sonicate for 15 Minutes, and transfer it to a separating funnel and partition with 20 mL Ethyl Acetate. Repeat the procedure twice with 15 mL Ethyl Acetate. Collect all Ethyl acetate layer and evaporate to dryness. Reconstitute the sample with 2 mL Ethyl Acetate and filter with 0.22 µm syringe filter. Use the Test solution thus obtained for HPTLC fingerprinting.

Preparation of Spray reagent (Vanillin – sulphuric acid reagent): 50 mg Vanillin in 2 mL Methanol and 8 mL Sulphuric acid (98 %). From this stock solution prepare 10 % solution in Methanol

Chromatographic Conditions:

Application Mode	CAMAG Linomat 5 - Applicator
Filtering System	Whatman filter paper No. 1
Stationary Phase	MERCK - TLC / HPTLC Silica gel 60 F_{254} on Aluminum sheets
Application (Y axis) Start Position	10 mm
Development End Position	80 mm from plate base
Sample Application Volume	14.0 µL
Development Mode	CAMAG TLC Twin Trough Chamber
Chamber Saturation Time	30 minutes
Mobile Phase (MP)	Toluene : Ethyl Acetate : Formic acid : Methanol (6 : 3 : 0.1 : 1 v/v)
Visualization	@ 254 nm, @ 366 nm and @ 540 nm (after derivatization)
Spray reagent	Vanillin Sulphuric acid reagent
Derivatization mode	CAMAG – Dip tank for about 1 minute
Drying Mode, Temp. & Time	TLC Plate Heater Preheated at 100o 5°C for 3 minutes

	Analyzed by	Checked by	Approved by
Designation	Sr. Officer – R&D	Asst. Manager – R&D	Sr. Manager – R&D
Signature			

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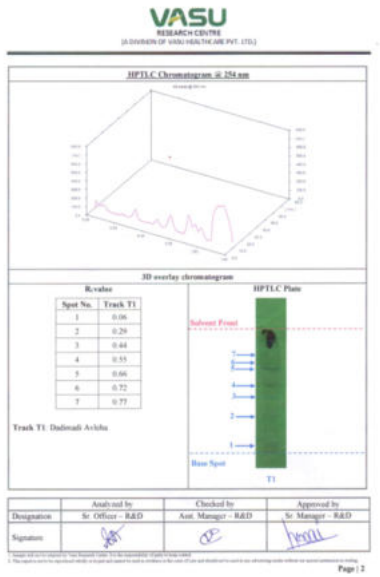
Image 3



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HPTLC Chromatogram @ 254 nm

3D overlay chromatogram

R$_f$ value

Spot No.	Track T1
1	0.06
2	0.29
3	0.44
4	0.55
5	0.66
6	0.72
7	0.77

Track T1: Dadimadi Avleha

HPTLC Plate

Solvent Front

Base Spot

T1

	Analyzed by	Checked by	Approved by
Designation	Sr. Officer – R&D	Asst. Manager – R&D	Sr. Manager – R&D
Signature			

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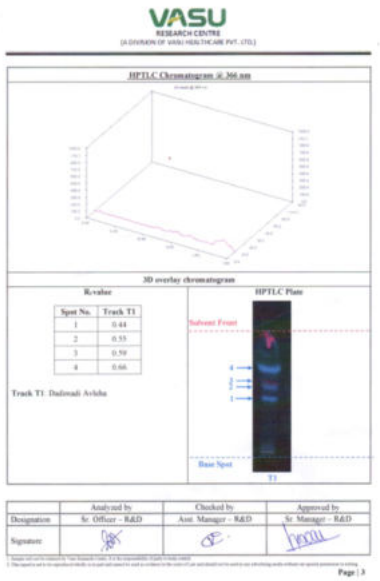
Image 4



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HPTLC Chromatogram @ 366 nm

3D overlay chromatogram

R$_f$ value

Spot No.	Track T1
1	0.44
2	0.55
3	0.59
4	0.66

Track T1: Dadimadi Avleha

HPTLC Plate

Solvent Front

Base Spot

T1

	Analyzed by	Checked by	Approved by
Designation	Sr. Officer – R&D	Asst. Manager – R&D	Sr. Manager – R&D
Signature			

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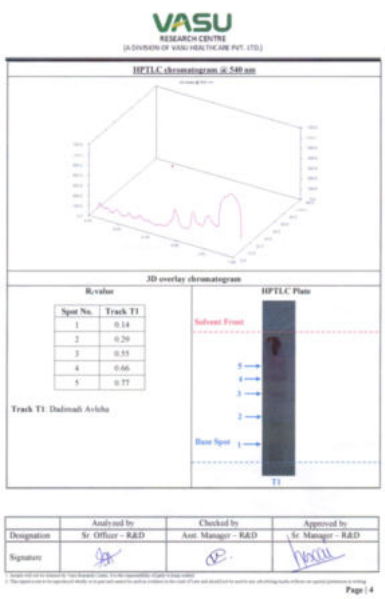
Image 5



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HPTLC chromatogram @ 540 nm

3D overlay chromatogram

R$_f$ value

Spot No.	Track T1
1	0.14
2	0.29
3	0.55
4	0.66
5	0.77

Track T1: Dadimadi Avleha

HPTLC Plate

Solvent Front

Base Spot

T1

	Analyzed by	Checked by	Approved by
Designation	Sr. Officer – R&D	Asst. Manager – R&D	Sr. Manager – R&D
Signature			

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Conflict of Interest: None.

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REFERENCES

1. Dr. Brahmanand Tripathi, CharakaSamhita vol. 2, Panduchikitsa, Chaukhambha Surbharati Prakashan ,page no. 598.
2. The Ayurvedic Formulary of India (Part-2) page no.3.
3. Joshi D. (2017) Quality Control and Standardization of Ayurvedic Medicines. Varanasi: ChaukhambhaOrientalia. Pp.284,206.
4. Lavekar GS, Padhi M M, Pant Pramila, Sharma M M, Verma Chandra Subhash, Singh Arjun . Laboratory guide for Siddha and Ayurveda formulations. New Delhi: CCRAS, 2010, P.31,33,42,53,74,103.