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PHYSICOCHEMICAL AND HIGH PERFORMANCE THIN LAYER CHROMATOGRAPHY EVALUATION OF *TRIVRITTADI CHURNA*

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ABSTRACT

Background: *Trivrittadi churna* contains *Trivritta* (*Operaculina turpethum* (Linn.), *Danti* (*Boliospermum montanum* Muell-Arg.) and *Triphala which is compound of Haritaki (Terminalia chebula), Bibhitaki (Terminalia belerica)* and *Amalaki (Emblica officinalis)*. This polyherbal formulation has enough potential to do therapeutic purgation. **Method:** *Trivrittadi churna* powder was evaluated for pharmaceutical analysis. **Results:** Results obtained in pharmaceutical parameters of *Trivrittadi churna* powder like loss on drying 8.2% w/w, Ash value 6.268%, Alcohol soluble extract 91.5% w/w etc. are within limit mentioned by Ayurvedic Pharmacopoeia of India. HPTLC profile of *Trivrittadi churna* powder showed similarities in number of spots. **Conclusion:** From the study, data developed can be espoused for laying down the standards for *Trivrittadi churna*.

KEYWORDS: HPTLC**,** Pharmaceutical analysis, *Trivrittadi churna.*

INTRODUCTION

Theuseofherbsasmedicineistheoldestformofhealthcareknowntohumanityandhasbeen usedinall culturesthroughouthistory.[2] During the past decade, there has been increasing public interest and acceptance of natural therapies in both developing and developed countries. Due to poverty and limited access to modern medicine, about 80% of the world's population, especially in the developing countries uses herbal medicine as their source of primary healthcare.[3]

Theproblemsassociatedwithunregulatedherbal products highlight the major public health issues that can arise when their herbal ingredients have not been authenticated correctly. Herbal ingredients must be accurately identified by macroscopic and microscopic comparison with authentic material or accurate descriptions of authentic herbs.[4] With the help of identity, purity, content, and other chemical, physical, or biological properties, or by the manufacturing processes quality can be defined as the status of a drug.

The advantage of HPTLC in the analytical testing of herbal products is that it provides positive identification as well as visualization of the separated fractions of the sample component and helps in quantitative, qualitative analysis with the same system.

So, current study is anticipated to evaluate *Trivrittadi churna* powder through physico-chemical and HPTLC analysis.

AIM

To authenticate the *Trivrittadi churna* as per pharmacopeial (Ayurvedic Formulatory of India and Ayurvedic Pharmacopeia of India) method.To evaluate the quality of drug.

MATERIALS AND METHODS

Collection and preparation of the drug

All drugs were collected from the pharmacy of IPGT & RA, Jamnagar. The obtained drugs were shade dried, equal amount of had taken and made into a fine powder with help of mechanical grinder. Ingredients of *Trivrittadi churna* are summarized at [Table 1].

Table 1: Ingredients of *Trivrittadi churna.*

Drug	Latin Name	Parts used
Trivritta	*Operaculina turpethum* (Linn.)	Root bark
Danti	*Boliospermum montanum* (Muell-Arg.)	Root
Haritaki	*Terminalia chebula(*Retz.*)*	Fruit
Bibhitaki	*Terminalia belerica (*Roxb.*)*	Fruit
Amalaki	*Emblica officinalis*(Gaertn.)	Fruit

Organoleptic Evaluation

Various parameters of the material such as colour, odour, touch and taste of the *churna* powder were observed and recorded.[5] [Table 2].

Table 2: Organoleptic characters of *Trivrittadi churna.*

No.	Organoleptic Characters	Results
1	Colour	Creamy-Brownish
2	Odour	Aromatic
3	Taste	Bitter
4	Touch	fine
5	Appearance	Powder

Physico-chemical Analysis

Physico-chemical analyses were carried out by following the parameters. Physico‑chemical analysis like loss on drying at 110°C[7], pH value[8], ash value[9], water soluble extractive[10], methanol soluble extractive[11] were recorded.

Preliminary Phytochemical Investigation

Preliminary phytochemical investigations are carried out by following standard procedure of API.[12]

High Performance Thin Layer Chromatography

HPTLC was performed as per the guidelines provided by API.[13] A CAMAG (Switzerland) HPTLC system equipped with a sample applicator Linomat V was used for application of samples. Methanol extract of *churna* powder was used for spotting. Toluene: Ethyl acetate: Acetic acid (7:2:1 v/v) was selected as solvent system. CAMAG TLC Scanner 3, Reprostar and Wincats 1.3.4 were used for scanning the plates. CAMAG twin trough glass chamber was used for developing the plates. The developed plate was visualized under visible day light, short UV (254 nm), long UV (366 nm) and after spraying with vanillin‑sulphuric acid reagent and again observed in daylight. The Rf values were recorded.

Instrumental Conditions

Application mode: Camag Linomat V, development chamber: Camag twin trough chamber, plate: Pre coated Silica Gel GF 254 plate, chamber saturation: 30 min, development time: 30 min, development distance: 10 cm, scanner: Camag scanner III**,** detection: Deuterium lamp and mercury lamp, data System: Win CATS software.

OBSERVATIONS AND RESULTS

Analytical Study

Results of the analytical study of *Trivrittadi churna* powder are as follows.

Physico-chemical Constants

The results are depicted in [Table 4]

Table 3: Physico-chemical Constants of *Trivrittadi churna.*

NO.	Parameters	Result
1	Loss on drying	8.2 % w/w
2	Ash Value	6.268 %
3	Water Soluble Extract	28.4% w/w
4	Alcohol Soluble Extract	91.5 % w/w
5	pH	6.5

High Performance Thin Layer Chromatography (HPTLC)

In HPTLC, in short UV-254 nm, maximum 8 spots were observed in *Trivrittadi churna*. Similarly in long UV-366nm, maximum 8 spots were observed also [Table 5].

Table 4: Chromatographic results of *Trivrittadi churna.*

Conditions	Rf values (8 spots each)
Short ultra violet (254 nm)	0.00,0.08, 0.13, 0.54, 0.58, 0.68, 0.80, 0.89
Long ultra violet (366 nm)	0.00, 0.08, 0.13, 0.51, 0.58, 0.72, 0.88, 0.94

Nature of adsorbed components, if with different polarity, formerly total number of components and respective Reference values also differs. In short, nature of different matrix modulates both the studied parameters.

DISCUSSION

Results obtained in physicochemical parameters of *Trivrittadi churna* are within limit mentioned by Ayurvedic Pharmacopoeia of India. HPTLC profile of *Trivrittadi churna* showed similar in number of spots. This profile can be used for the identification of the medicinally important formulation of *Trivrittadi churna*. Present work can be considered as the first step towards identifying the followed methods through HPTLC analysis. This is a preliminary analysis and meticulous nature along with the depiction is to be carried-out.

CONCLUSION

India can arise as the major country and play the lead role in production of standardized, therapeutically effective Ayurvedic formulation. This can be accomplished only if the herbal

formulations are evaluated and analyzed using urbane modern techniques of standardization such as HPTLC and other methods.

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