wjpmr, 2024, 10(11), 218-220

WORLD JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.wjpmr.com

SJIF Impact Factor: 5.922

Research Article

ISSN 2455-3301

WJPMR

A RESEARCH ARTICLE ON HPTLC FINGERPRINT PROFILE OF VARIOUS PLANT EXTRACTS VIZ., *ADOXA MOSCHATELLINA, ALPINIA GALANGA* AND *LAURUS NOBILIS* AND THEIR FORMULATION

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Article Received on 03/09/2024 **Article Revised on 23/09/2024** **Article Accepted on 13/10/2024**

ABSTRACT

The aim of present study was to report the chromatographic analysis and stability of individual formulation viz., *Adoxa moschatellina* (AM), *Alpinia galanga* (AG), *Laurus nobilis* (LN) and their combination-Polyherbal formulation (PHF) by using High Performance Thin Layer Chromatography (HPTLC) on 0,30,60 and 90 days samples. Each formulation was extracted using chloroform. Fingerprinting of formulations was done by using Silica gel plates and benzene: chloroform: methanol (2:4:0.5) as mobile phase using standard procedures and was scanned under 366 nm. The results showed that the formulation was stable and also showed good correlation between suspensions and standard. The corresponding R_f (Retardation factor) values for places 1, 2, 3, 4, 5, 6, 7, and 8 were 0.816, 0.828, 0.432, 0.529, 0.656, 0.386, 0.921 and 0.946. As a result, the HPTLC pattern remained unchanged for every formulation.

KEYWORDS: HPTLC, PHF, *Adoxa moschatellina, Alpinia galanga, Laurus nobilis,* Stability of formulation, R_f factor.

INTRODUCTION

One of the oldest systems of human medicine is Ayurveda, which is considered the science of life. This medical system is a treasure trove of information on almost every kind of ailment and treatment strategy. Rasayana has evolved in Ayurveda as rejuvenating treatments to help people live the optimal 100 years of life and maintain the activity of their brains. Rasayana is a term for general bodily feeding. This nutrition lengthens life and reduces cellular damage to the body. Due to their therapeutic advantages, affordability, and lack of negative effects, medicinal plants are the subject of extensive study worldwide.[1] Different herbs, *Adoxa moschatellina, Alpinia galanga* and *Laurus nobilis* are used and a formulation of these is developed. To check the quality of the formulations suitable analytical techniques are to be adapted and thus HPTLC was utilized.

HPTLC is extensively used to set up fingerprints of Polyherbal formulations against the standard preparations.[2,3] Assessing quality of PHF is a task when compared with that of synthetic compounds due to the complex chemical constituents present in them. This may be risky because if there is loss of any chemical constituent it leads to loss of pharmacological action of that particular herb. The complete identification, characterization and therapeutic action of all the compounds in the plant is a complex and difficult task because most of the constituents synergistically act and produce therapeutic effect. Thus, various quantitative/ qualitative fingerprinting methods are being employed for the quality control of herbs and their formulations.[4,5] It is utilized for identifying and finding potency of herbal formulations.[6] The benefit of HPTLC is that it can check many samples at a time utilizing same amount of mobile phase and hence taking less time for analysing samples as well as cost needed per analysis.[7] The fingerprints obtained helps in quality check of the herbs or herbal formulations.[8]

In the present study, HPTLC was utilized to characterize individual herbal formulations made from AM, AG and LN as well as PHF using ethanol as a solvent and compared with the standard.

MATERIALS AND METHODS

HPTLC Studies[9,10]

Instrumentation

Spotting Device: CAMAG Automatic TLC Sampler 4 (ATS4).
Syringe: 25 µl Hamilton
TLC Chamber: AMD II

Chromatography conditions

Stationary Phase: Silica gel 60 F_{254}
Mobile Phase:
Benzene: Chloroform: Methanol
(2:4:0.5)
Scanning Wavelength: 366 nm
Applied Volume: 10µl
Development Mode: Ascending mode.

PROCEDURE

Each formulation was individually extracted using chloroform. In summary, a formulation was introduced into chloroform and subjected to reflux for a duration of one hour.[11] Subsequently, the mixture was allowed to cool and then transferred onto a separating funnel. The specimen was used for High Performance Thin Layer Chromatography (HPTLC) after being removed from the chloroform layer.[12] Chromatography was carried out by spotting formulations on precoated Silica gel plate 60 F_{254} (10 cm x 10 cm and 250 µm thickness), CAMAG Automatic TLC Sampler 4 (ATS4) and 25 µl Hamilton syringe. The sample of 10 µl as a band with 8 mm length, placed 8 mm from the bottom and separated by a distance of 10 mm was administered using 25 µl syringe and nitrogen as spray gas. Plates were developed using benzene:chloroform:methanol (2:4:0.5) as mobile phase. The plates were later dried and scanned at 366 nm and kept at 50°C ± 5°C and 75 ± 5% RH and then the R_f (Retardation factor) values of all the formulations obtained were compared with that of standard on 0, 30, 60 and 90 days.

RESULTS AND DISCUSSION

HPTLC analysis was performed on the 0-day sample, 30, 60, and 90 day samples that were acquired after the formulations were stored at 50°C ± 2°C and 75 ± 5% RH. As a standard, the HPTLC profile for the first day was employed. The HPTLC profiles of the 30, 60, and 90-day samples were then compared to the standard to determine the stability of the formulations.

The first herbal suspension, or AM, showed 9, 8, 7, and 7 spots, respectively, for 0, 30, 60, and 90-day samples with varying R_f values, according to the HPTLC profile (Figure 1). AG showed 8 spots in 0 days and 7 in the HPTLC profiles after 30, 60, and 90 days. The 30th and 60th day samples showed the same R_f values, however the 90th day observations showed a significant change. Throughout the course of the investigation, the HPTLC pattern for the 0, 30, 60, and 90-day formulation LN samples remained consistent and showed nine conspicuous spots, each with an R_f value of 0.237, 0.303, 0.424, 0.473, 0.570, 0.636, 0.665, 0.903, and 0.956. In all of the samples, the HPTLC profile for the herbal formulation PHF showed the presence of eight spots that remained bright. The corresponding Rf values for places1, 2, 3, 4, 5, 6, 7, and 8 were 0.816, 0.828, 0.432, 0.529, 0.656, 0.386, 0.921 and 0.946. As a result, the HPTLC pattern remains unchanged for all the formulations.

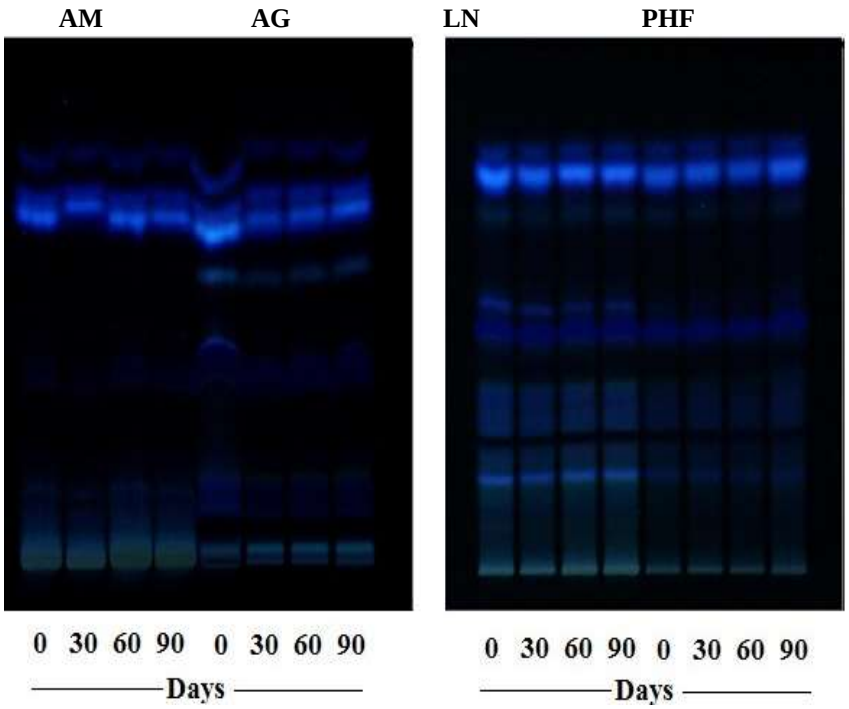

Figure 1: Shows the HPTLC profile for the formed suspensions of AM, AG, LN, and PHF at 366 nm for samples collected at 0, 30, 60, and 90 days.

CONCLUSION

HPTLC technique used in the present study helped in evaluating the quality, stability and consistency of herbal formulations and hence it is the most efficient method in assessing the quality and stability. It efficiently helped in finding the Retardation factor (R_f) value which was the same for all the formulations thus supporting the stability of formulation.

ACKNOWLEDGEMENT

I wish to acknowledge the assistance provided by my University management.

Conflict of Interest

Nil.

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