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STANDARDIZATION OF SAIREYAKA MOOLA CHURNA (ROOT POWDER OF *BARLERIA PRIONITIS*); A FOLKLORE DRUG

Jindal Radha*[1], Jindal Dilbag[2], Koppala Narayana Sunil Kumar[3], Shailaja U[4]

[1]PG Scholar, [2]Consultant Panchakarma, [3]Senior Research Officer, [4]Professor&HOD
[1,4]Department of Post Graduate Studies in Kaumarabhritya,[2]SDM College of Ayurveda & Hospital, B. M. Road, Hassan 573201,Karnataka, India.
[3]SDM Centre for Research in Ayurveda and Allied Sciences, Lakshmi Narayana Nagar, Kuthpady, Udupi,574118, India.

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ABSTRACT

Introduction: Saireyaka, known as the porcupine flower, is a species of plants in the family Acanthaceae, native to India. In Ayurvedic classics it is described under Aragvadhadi, Veeratarvaadi and Varunadigana. Usage of Saireyaka churna in tundikeri (tonsillitis) is a folklore practice widely used in Karnataka.
Methods: This drug is also used in dental care but no records on its usage for tonsillitis. This study highlights microscopy, physico-chemical characterization, TLC photo-documentation and HPTLC densitogram profiling of saireyaka moola churna which can be applied for authentication of this drug. The roots of saireyaka (*Barleria prionitis* Linn.) were authenticated botanically. Churna was prepared in SDM pharmacy, Udupi and was subjected for detailed physico-chemical and HPTLC analyses.
Results: Set of standardization parameters were derived for the fine powder by microscopic examination, physico-chemical characterization and TLC/HPTLC fingerprint profiling. The tests proposed would serve as diagnostic parameters for the identity of this herbal formulation. HPTLC fingerprint profile which can serve as a fingerprint for the identification of the formulation has been obtained.
Conclusion: The standards obtained for Saireyaka Moola Churnawill aid in yielding a handy solution for usage of authentic drug with high potency.
Keywords: HPTLC, fingerprint profile, microscopy, physico-chemical, standardization.

INTRODUCTION

People around the country have woken up to visualize the efficacy of drug standards by all possible means to find efficacious and safe medicine. It is a necessity and compulsion for today world to go for quality control of the raw drugs as well as finished products.
In ancient time the drug were prepared by the physicians themselves as per requirement, so there was no doubt about authentication and quality. Nowadays due to large scale demand of Ayurvedic drugs in clinical practice most of the industries are manufacturing different Ayurvedic formulations in large scale level. At present, the quantity of raw material is not sufficient in market. Most of the pharmaceutical industries are using substitute drugs instead of authentic drugs. So to prepare the good quality drugs it is necessary to authenticate raw drugs. Herbal drug standardization is not new in Ayurveda. In the classics, we find Grahya Lakshana[1], method of collection for raw drug, Siddhi Lakshana[2]for final product, but all in codified format. Keeping the current trend in mind, Saireyaka Moola Churna was analysed for the fingerprint profile. From the current study genuinity indicating parameters for the drug *Barleria prionitis* were derived.

Corresponding author:
Radha Jindal
Department of Post Graduate Studies in Kaumarabhritya,[2]SDM College of Ayurveda & Hospital, B. M. Road, Hassan 573201,Karnataka, India
Email: drradhajindal@gmail.com

MATERIALS AND METHODS

PLANT MATERIAL

Saireyaka (*Barleria prionitis* Linn.) was collected from authorized raw drugs suppliers of SDM Ayurveda Pharmacy, Kuthpady, Udupi. The raw materials were identified and authenticated by experts at SDM Ayurveda Pharmacy, Kuthpady, Udupi and Hassan. A herbarium sheet was also prepared to keep the drug record. The plant was procured and was shade dried. Then the root part was obtained and was finely

powdered[3]. Drug was stored in air-tight zip-pouches. Packets were stored away from sunlight and rain.

INSTRUMENTATION AND TECHNIQUES

Studies were done at SDM Centre for Research in Ayurveda and Allied Sciences, Kuthpady, Udupi as per standard procedure. A pinch of powder was warmed with drops of chloral hydrate on a microscopic slide and was mounted in glycerine. Slides were observed under microscope and diagnostic characters were noted, photographed using Zeiss AXIO trinocular microscope attached with Zeiss AxioCam camera under bright field light. Magnifications of the figures are indicated by the scale-bars[4].For assessing physico-chemical standards like loss on drying at 105°C, total ash, acid insoluble ash, water soluble extractive, and alcohol soluble extractive standard pharmacopoeial procedures were followed[5].1 g of the sample was extracted with 10 ml ethanol.5, 10 and 15 µl of the extracts were applied on a pre-coated silica gel F254 on aluminium plates to a band width of 6 mm using Linomat 5 TLC applicator. The plate was developed in Chloroform: Methanol: Formic acid (7: 2: 0.1) and the developed plates were visualized and scanned under 254, 366, under white light and after derivatization in vanillin-sulphuric acid spray reagent. R_f, colour of the spots, densitometric scan and superimposability of densitogram were recorded[6].

RESULTS

Physico-chemical standards for Saireyaka Churna are presented in Table 1. Rf values of the spots and their colour by TLC photo-documentation of alcohol extracts of Saireyaka Moola were developed.

Alcohol extract of Saireyaka at 254 nm showed 9 spots (0.04 Green, 0.09 Green, 0.14Green, 0.19 Green, 0.28 Green, 0.53 Green, 0.69 Green, 0.73 Green, 0.81 Light Green) whereas under 366 nm it showed 7 spots (0.04 Fluorescent (F) blue, 0.09 F blue, 0.14 F blue, 0.21 F blue, 0.42 F yellow, 0.53 F blue, 0.73 F blue) and 1 spot in white light (0.04 L Yellow) and after derivatization using toluene:ethyl acetate (6.5:2.5) as solvent system showed 10 spots (0.04bluish brown, 0.09 Yellow, 0.11 Yellow, 0.14 yellow, 0.21 Yellow, 0.28 Pink,0.53 Pink,0.69 Pink, 0.73 Pink 0.76blue)

DISCUSSION

The physicochemical standards would serve as preliminary test for the standardization of the formulation. Tests such as powder microscopy, plates depicting microscopy of powder, results of TLC photo-documentation, the unique Rf values, densitometric scan and densitogram obtained at different wavelengths can be used as fingerprint to identify the herbal drug of Saireyaka Moola Churna.

CONCLUSION

Despite the advent of modern technology in standardization of Ayurvedic formulations, only few are standardized so far. With the current standardization procedure, we get substantial information for proper identification.

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REFERENCES

1. Tripathi Brahmanand. Sharngadhara Samhita of Sharngadhara with Deepika Hindi vyakya. 1st. Varanasi: Chaukambha Surbharati Prakashan; 2006:p.22..
2. Tripathi Brahmanand. Sharngadhara Samhita of Sharngadhara with Deepika Hindi vyakya. 1st. Varanasi: Chaukambha Surbharati Prakashan; 2006:p.220.
3. Tripathi Brahmanand. Sharngadhara Samhita of Sharngadhara with Deepika Hindi vyakya. 1st. Varanasi: Chaukambha Surbharati Prakashan; 2006:p.172.
4. Betty P Jackson and Derek W Snowdon, Atlas of microscopy of medicinal plants, culinary herbs and spices, Belhaven Press, London, 1990.
5. Anonymous. The Ayurvedic Pharmacopoeia of India. Part II. Vol.2. Delhi: Controller of Publications, Civil Lines; 2008. p. 153-64.
6. Sethi PD. High Performance Thin Layer Chromatography (1st Edition). Vol. X. New Delhi: CBS Publishers and Distributors; 1996. p. 1–56.

Table 1: Physico-chemical parameters of *Saireyaka Moola*

Parameter	Result n = 3 (% w/w)
Loss on drying at 105°C	8.264
Total ash	4.669
Acid insoluble ash	0.993
Water soluble extractive	18.718
Alcohol soluble extractive	5.114

Table 2: R_f value of alcohol extract of *Saireyaka Moola*

At UV 254 nm	At UV 366 nm	Under white light	Post - derivatization
0.04 Green	0.04 F Blue	0.04 L Yellow	0.04 Bluish brown
0.09 Green	0.09 F Blue	-	0.09 Yellow
-	-	-	0.11 Yellow
0.14 Green	0.14 F Blue	-	0.14 Yellow
0.19 Green		-	-
-	0.21 F Blue	-	0.21 Yellow
0.28 Green	-	-	0.28 Pink
-	0.42 F Yellow	-	-
0.53 Green	0.53 F Blue	-	0.53 Pink
0.69 Green	-	-	0.69 Pink
0.73 Green	0.73 F Blue	-	0.73 Pink
-	-	-	0.76 Blue
0.81 L Green	-	-	-

L - Light, F- Flourescent

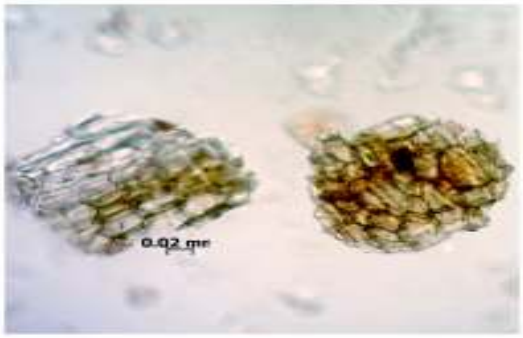


Fig. 3.1: Cork cells

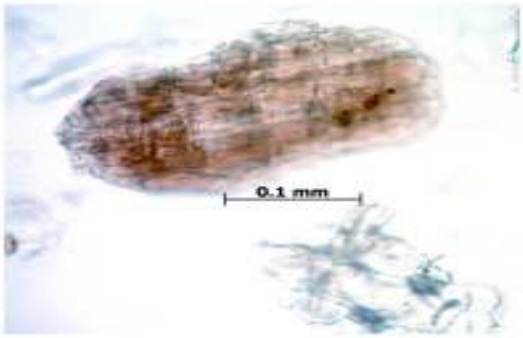


Fig. 3.2: Group of sclerenchyma

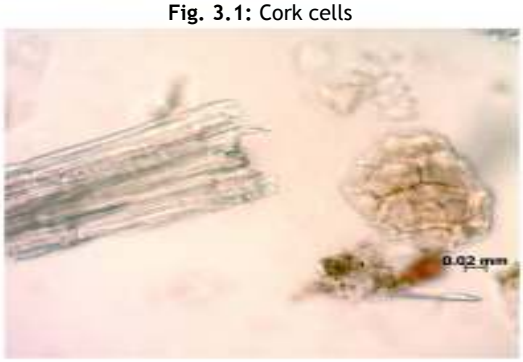


Fig. 3.3: Fibres and cork cells

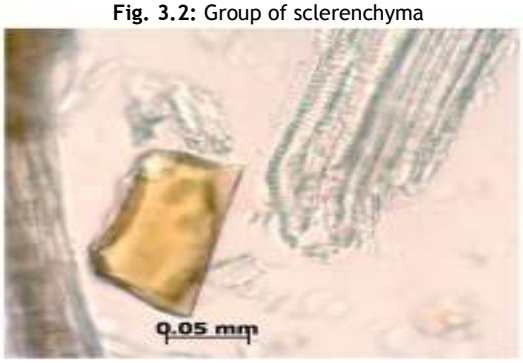


Fig.3.4: Cell with content and pitted fibres

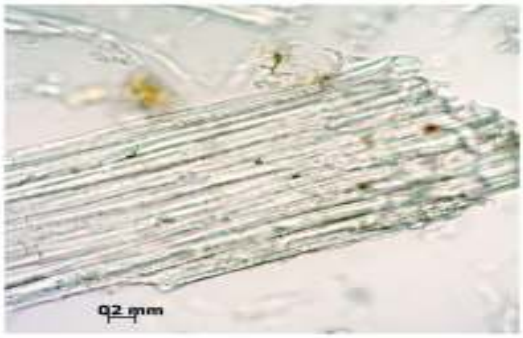


Fig. 3.5: Pitted fibres

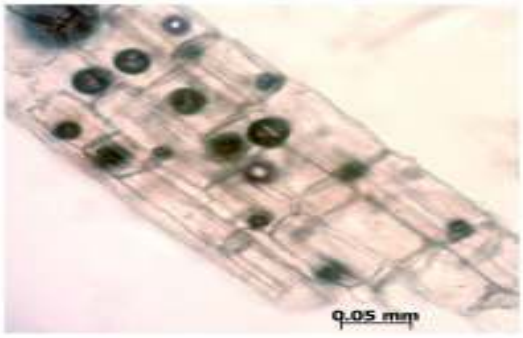


Fig. 3.6: Parenchyma from the pith

Figure3: Powder microscopy of *Saireyaka Moola*

Fig. 3.7: Cork cells in surface view

Fig. 3.8: Fibrosclereids

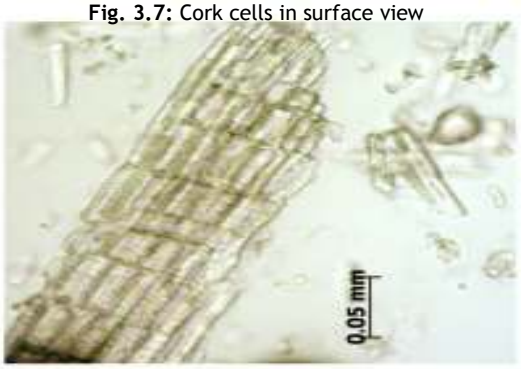


Fig. 3.9: Pitted tracheids

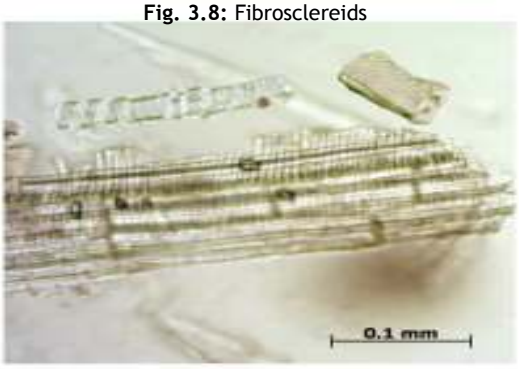
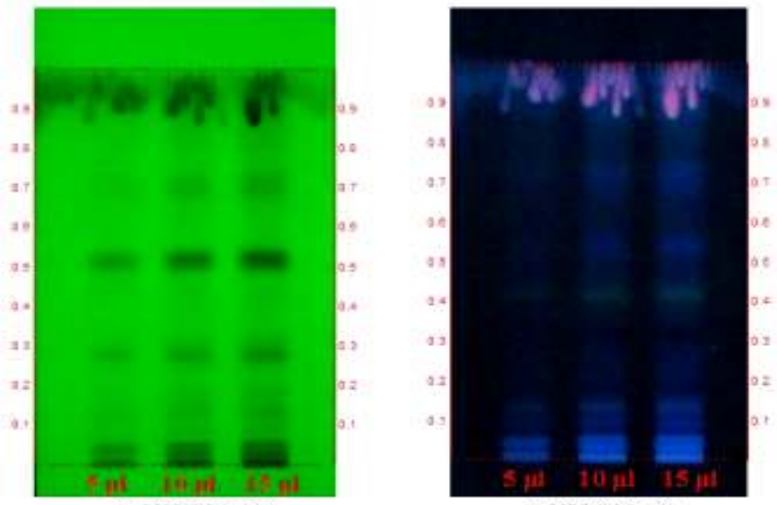


Fig. 3.10: Pitted and spiral vessels

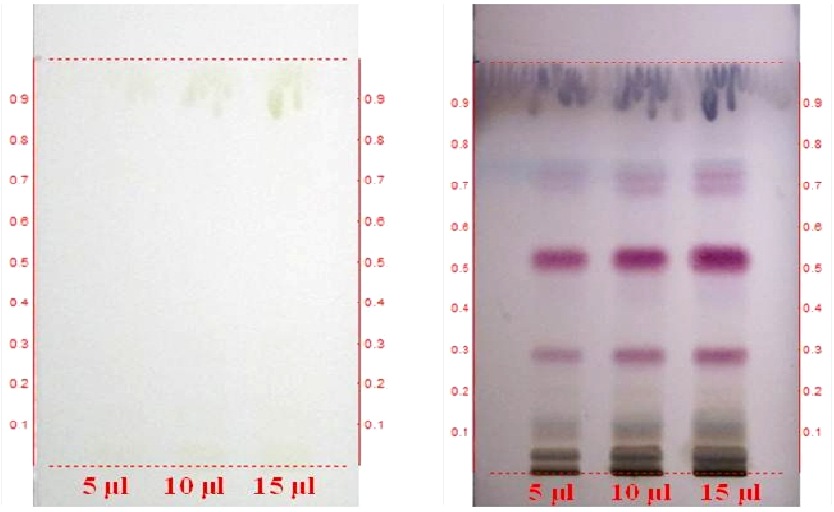
Fig. 3.11: Thin walled fibres

Fig. 3.12: Fibres and content cells



At UV 254 nm At UV 366 nm

Figure 4: hotodocumentation of alcohol extract of *Saireyaka Moola*



Under white light Post derivatisation

Solvent system – Chloroform : Methanol : Formic acid (7 : 2 : 0.1)

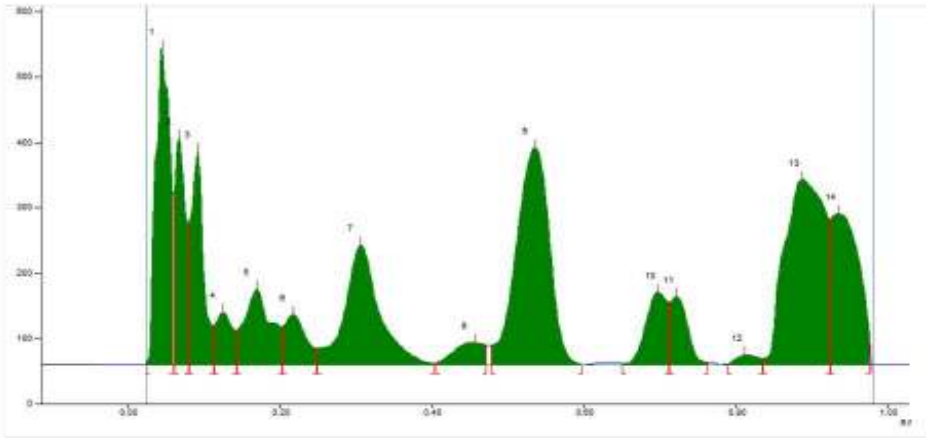


Figure 5: Densitometric scan of alcohol extract of Saireyaka Moola at 254 nm

Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.02 Rf	1.6 AU	0.05 Rf	483.8 AU	17.77 %	0.06 Rf	57.1 AU	7464.9 AU	11.38 %
2	0.06 Rf	263.5 AU	0.07 Rf	347.3 AU	12.75 %	0.08 Rf	15.2 AU	3985.1 AU	6.08 %
3	0.08 Rf	216.8 AU	0.09 Rf	326.8 AU	12.00 %	0.11 Rf	59.5 AU	4306.7 AU	6.57 %
4	0.11 Rf	60.3 AU	0.13 Rf	79.8 AU	2.93 %	0.14 Rf	52.4 AU	1419.2 AU	2.16 %
5	0.14 Rf	52.8 AU	0.17 Rf	116.3 AU	4.27 %	0.20 Rf	57.7 AU	3261.8 AU	4.97 %
6	0.20 Rf	58.2 AU	0.22 Rf	76.6 AU	2.81 %	0.25 Rf	25.2 AU	1748.9 AU	2.67 %
7	0.25 Rf	25.2 AU	0.31 Rf	182.8 AU	6.71 %	0.40 Rf	2.3 AU	6793.3 AU	10.36 %
8	0.41 Rf	2.5 AU	0.46 Rf	34.2 AU	1.26 %	0.47 Rf	30.3 AU	1129.8 AU	1.72 %
9	0.48 Rf	30.2 AU	0.54 Rf	332.7 AU	12.22 %	0.60 Rf	0.1 AU	11787.4 AU	17.97 %
10	0.65 Rf	2.0 AU	0.70 Rf	110.8 AU	4.07 %	0.71 Rf	95.7 AU	2536.8 AU	3.87 %
11	0.71 Rf	96.0 AU	0.72 Rf	103.5 AU	3.80 %	0.76 Rf	3.7 AU	1922.0 AU	2.93 %
12	0.79 Rf	1.3 AU	0.81 Rf	15.4 AU	0.57 %	0.84 Rf	9.6 AU	356.8 AU	0.54 %
13	0.84 Rf	9.7 AU	0.89 Rf	282.7 AU	10.38 %	0.92 Rf	22.3 AU	12045.6 AU	18.37 %
14	0.93 Rf	222.6 AU	0.94 Rf	230.7 AU	8.47 %	0.98 Rf	42.7 AU	6827.8 AU	10.41 %

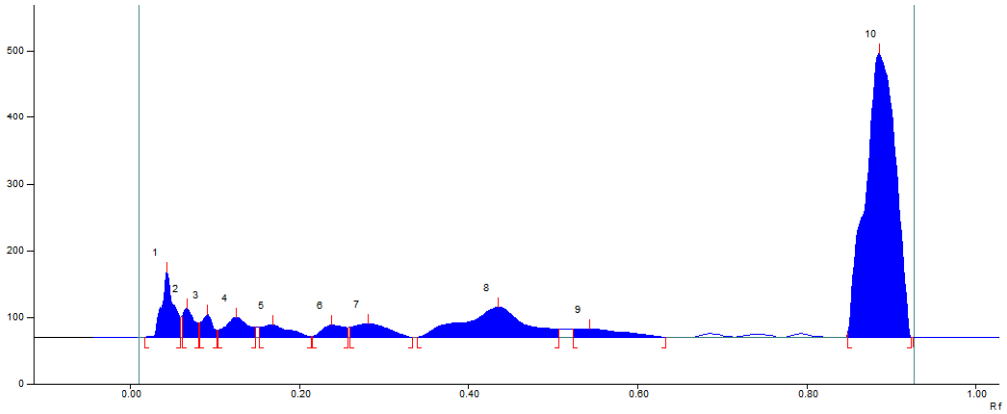
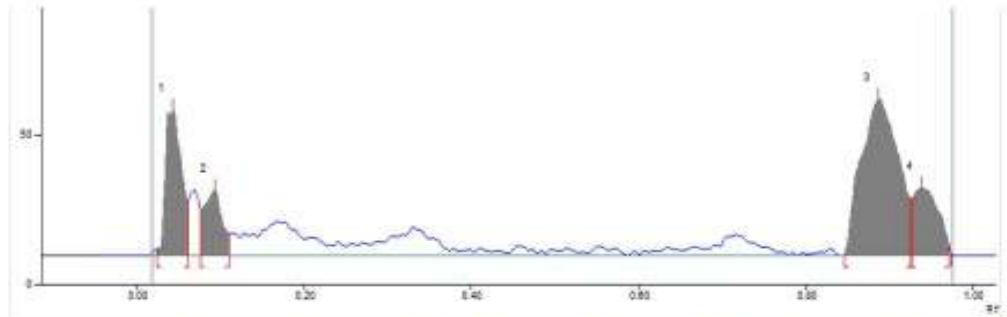


Figure 6: HPTLC Densitometric scan of alcohol extract of *Saireyaka Moola*at 366 nm

Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.02 Rf	0.6 AU	0.04 Rf	98.0 AU	13.09 %	0.06 Rf	29.9 AU	1102.1 AU	5.62 %
2	0.06 Rf	31.7 AU	0.07 Rf	43.3 AU	5.78 %	0.08 Rf	21.6 AU	483.8 AU	2.47 %
3	0.08 Rf	21.9 AU	0.09 Rf	34.6 AU	4.63 %	0.10 Rf	10.7 AU	357.9 AU	1.83 %
4	0.10 Rf	11.0 AU	0.13 Rf	30.1 AU	4.02 %	0.15 Rf	15.1 AU	651.5 AU	3.32 %
5	0.15 Rf	14.9 AU	0.17 Rf	18.7 AU	2.49 %	0.21 Rf	1.0 AU	502.9 AU	2.57 %
6	0.22 Rf	1.1 AU	0.24 Rf	18.3 AU	2.45 %	0.26 Rf	14.7 AU	407.9 AU	2.08 %
7	0.26 Rf	14.8 AU	0.28 Rf	20.8 AU	2.78 %	0.33 Rf	0.1 AU	691.6 AU	3.53 %
8	0.34 Rf	0.2 AU	0.44 Rf	45.5 AU	6.07 %	0.51 Rf	12.4 AU	2641.5 AU	13.47 %
9	0.52 Rf	11.8 AU	0.54 Rf	13.0 AU	1.74 %	0.63 Rf	0.2 AU	606.4 AU	3.09 %
10	0.85 Rf	6.0 AU	0.89 Rf	426.6 AU	56.96 %	0.92 Rf	0.4 AU	12157.9 AU	62.02 %



Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.02 Rf	2.2 AU	0.04 Rf	48.6 AU	33.47 %	0.06 Rf	18.7 AU	767.0 AU	21.36 %
2	0.08 Rf	15.4 AU	0.09 Rf	21.8 AU	15.03 %	0.11 Rf	7.3 AU	387.5 AU	10.79 %
3	0.85 Rf	0.1 AU	0.89 Rf	52.3 AU	36.04 %	0.93 Rf	18.9 AU	1883.2 AU	52.45 %
4	0.93 Rf	19.2 AU	0.94 Rf	22.4 AU	15.47 %	0.97 Rf	3.8 AU	552.7 AU	15.40 %

Figure-7: HPTLC Densitometric scan of alcohol extract of *Saireyaka Moola* at 540 nm

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