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HPTLC PROFILE OF CURCUMA ANGUSTIFOLIA ROXB. AND MARANTA ARUNDINACEA L.- TWO SOURCE PLANTS OF TAVAKSHEERA

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ABSTRACT

Ayurveda, the sciences of life rely on a holistic approach towards the health of an individual. Medicinal plants have been used in traditional medical practices since prehistoric times. "Tavaksheera " is a therapeutically potent drug mentioned in Ayurvedic Samhitas and Nighantus as rejuvenative, aphrodisiac and has been used in various diseases including upper respiratory infections. *Curcuma angustifolia* Roxb. and *Maranta arundinacea* L. has been used by practitioners in India in the name of 'Tavaksheera'. Phytochemical studies reveal the presence of some similar compounds like curcuminoides in *Curcuma angustifolia* Roxb.and *Curcuma longa* L. but was absent in *Maranta arundinacea* L. So there is need to do further evaluation techniques like high-performance thin layer chromatography to confirm the authenticity among the source plants of Tavaksheera.The present study mainly aims to provide information on HPTLC analysis of two source plants of Tavaksheera.

KEYWORDS: *Curcuma angustifolia* Roxb. and *Maranta arundinacea* L.

INTRODUCTION

Tavaksheera is one of the drug used in many ayurvedic formulations for treating a wide range of diseases including reproductive issues, upper respiratory infections,gastrointestinal disorders etc. The drug has been documented in Samhitas and Nighantus where it had some controversy in its identity. The pharmacological actions and its therapeutic efficacy has been well documented in Nighantus[1] where the drug has been placed in different vargas like Oushadhi varga, Pippalyadi varga, Haritakyadi Varga etc. This study was undertaken to provide information HPTLC fingerprint of two source of Tavaksheera i.e, *Curcuma angustifolia* Roxb. and *Maranta arundinacea* L. The rhizome and tuber of two source plants are made into a flour which forms a nutritious meal on addition with milk or water.

MATERIALS AND METHODS

Fresh rhizomes of *Curcuma angustifolia* Roxb. were obtained from germ plasm of CTCRI, Trivandrum and Maranta arundinaceae L., *Curcuma longa* L. from its natural habitat. The rhizomes and tuber were washed with deionized water, dried in the sun shade for one week and subjected to drying at 60 degree celsius in a hot air oven for 6 hours. Dried rhizomes were sliced into smaller pieces and then grounded in a pulveriser to prepare in powder form. Colour taste and odour of the powder were recorded as per the standard procedure described in API.

Preparation of Crude extract

About 2 grams of samples were taken and sonicated into 10 ml of methanol for 10 minutes.The extract was filtered and evaporated to 5 ml and for doing chromatography this extract has been used. By using CAMAG HPTLC system (CAMAG, Switzerland) equipped with Linomat V applicator, HPTLC analysis of samples were performed. CAMAG TLC Scanner 4, TLC Visualiser and win CATS software version 1.4.10 were also used. The analysis was done on an aluminium supported silica gel HPTLC plate 60 F254 (10 cm × 10 cm). Samples were loaded as bands of 6-mm width under a flow of N2 gas. The bands had been applied 14 mm apart, from a height of 10 mm from the plate tip. The development of the plate was carried out in CAMAG twin trough chamber (10 cm × 10 cm) with mobile phase Toluene: Ethanol (98:2)and the length of chromatogram has run till 80 mm, and TLC plates were subjected to air drying in a fuming hood by utilising hair dryer by suitable scanning.

Densitometric scan was done using Scanner 4 under 254nm from 8mm to 82mm to yield a densitogram. The chromatogram was then recorded using a CAMAG Visualiser under 254 nm, 366 nm and white light.[2]

RESULTS AND DISCUSSION

The Colour,taste and odour of rhizomes of *Curcuma longa*,*Curcuma angustifolia* Roxb.and tuber of *Maranta arundinaceae L.* have orange yellowish colour,creamy white and white colour.[3]

Table No. 1.

Botanical Name	Colour of officinal part	Taste of officinal part	Smell or odour of officinal part
Curcuma longa L.	Orange yellow	Bitter	Mustard smell
Curcuma angustifolia Roxb.	Creamy white	Bitter and pungent	Pleasant
Maranta arundinacea L.	White in colour	Sweetish	Odourless

Table No 1 shows all tracks at wavelength Sc4 showed similar compounds in Curcuma longa and for Curcuma angustifolia which could be assumed as Curcuminoids and no similarity in Maranta arundinacea.Maximum Rf value of Curcuma longa is 0.20,0.29,0.52, maximum Rf value of Curcuma angustifolia is 0.28 and 0.50, maximum Rf value of Maranta arundinacea is 0.96. The results show that similar peaks are obtained in Curcuma longa and Curcuma angustifolia which assumes the presence of Curcuminoids and thus it substantiates that drug has antioxidant and antiinflammatory properties.

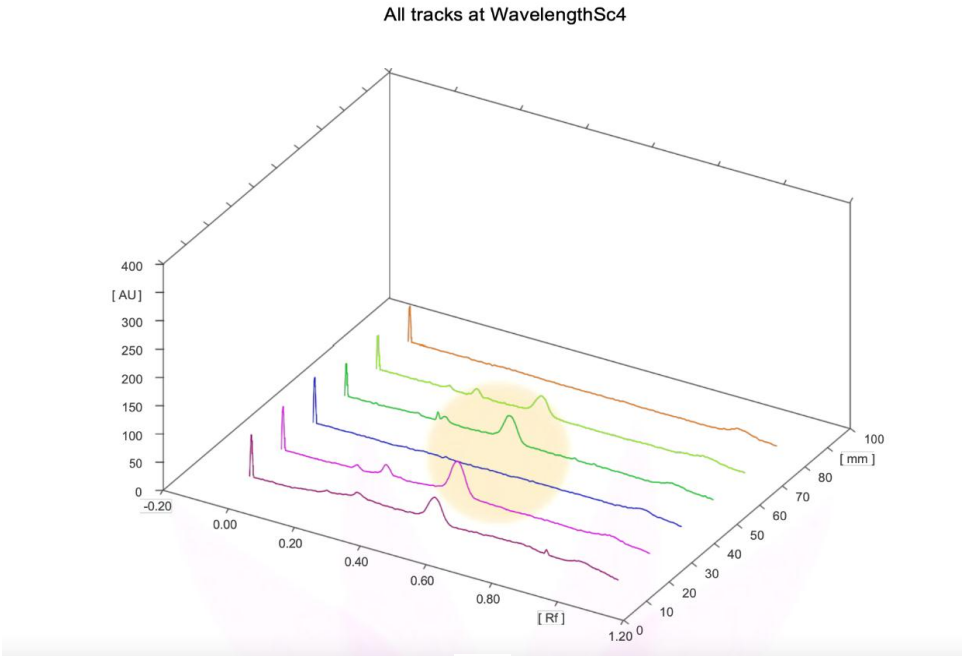

Fig.1

Track 1, ID: *Curcuma longa* L.

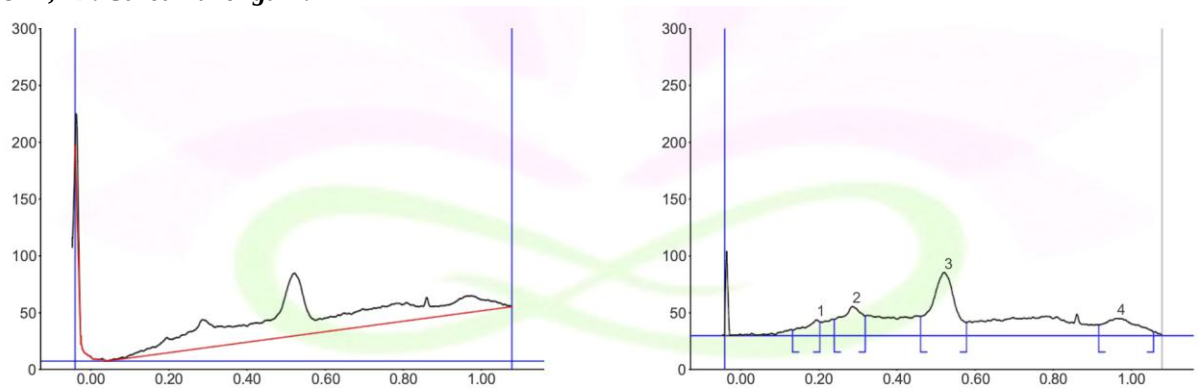

Table No.2.

PEAK	Max Rf	Area%	Assigned substance
1	0.20	8.54	unknown
2	0.29	21.26	unknown
3	0.52	50.60	unknown
4	0.59	20.00	unknown

Track 2, ID*: Curcuma angustifolia* Roxb.

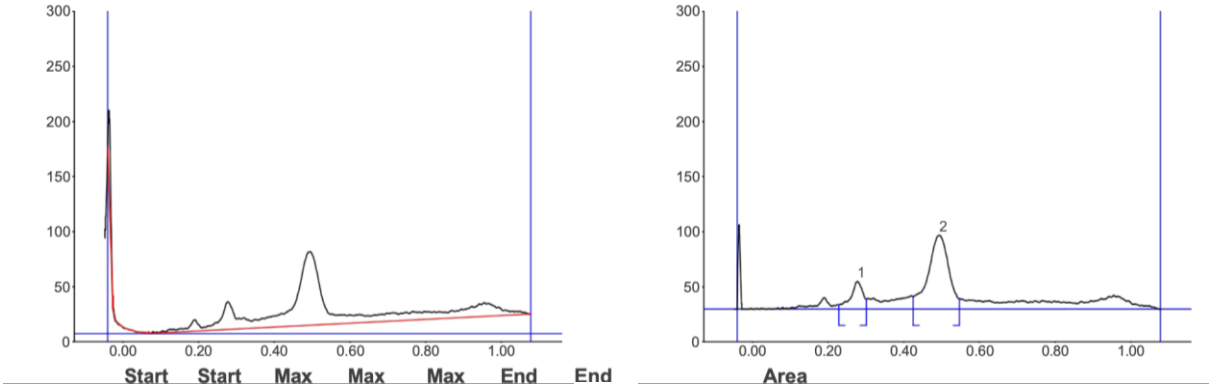

Fig.4.

Table No 3.

PEAK	Max Rf	Area%	Assigned substance
1	0.28	18.21	unknown
2	0.50	81.29	unknown

Track 3, ID: *Maranta arundinacea* L.

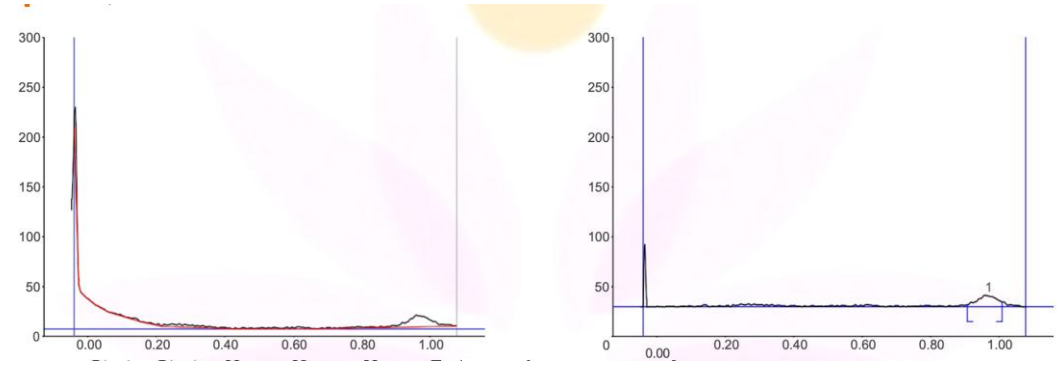

Fig.5.

Table No 4;

PEAK	Max Rf	Area%	Assigned substance
1.	0.96	480.8	unknown

TLC photo documentation of methanolic extract of *Curcuma angustifolia*. Roxb.

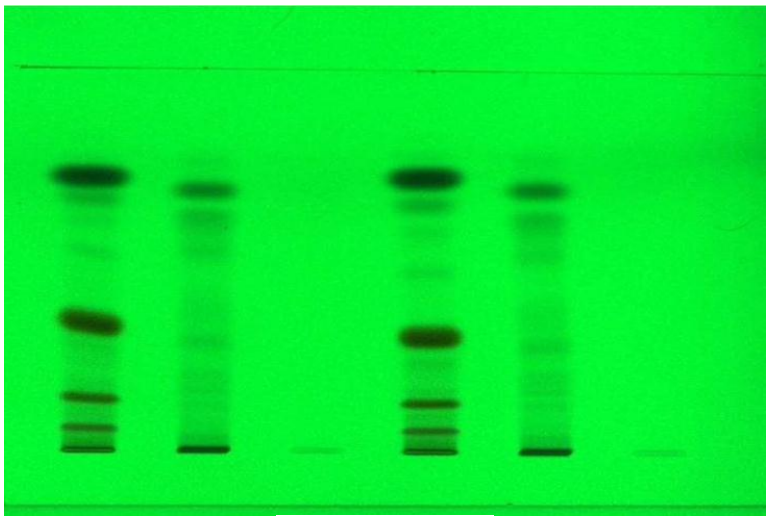

Fig.6: At Short Uv.

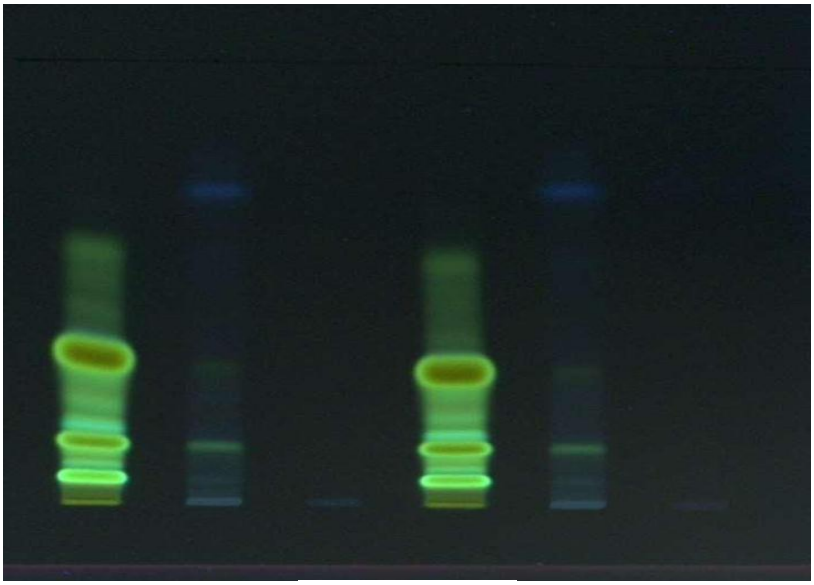

Fig.7: At Long UV.

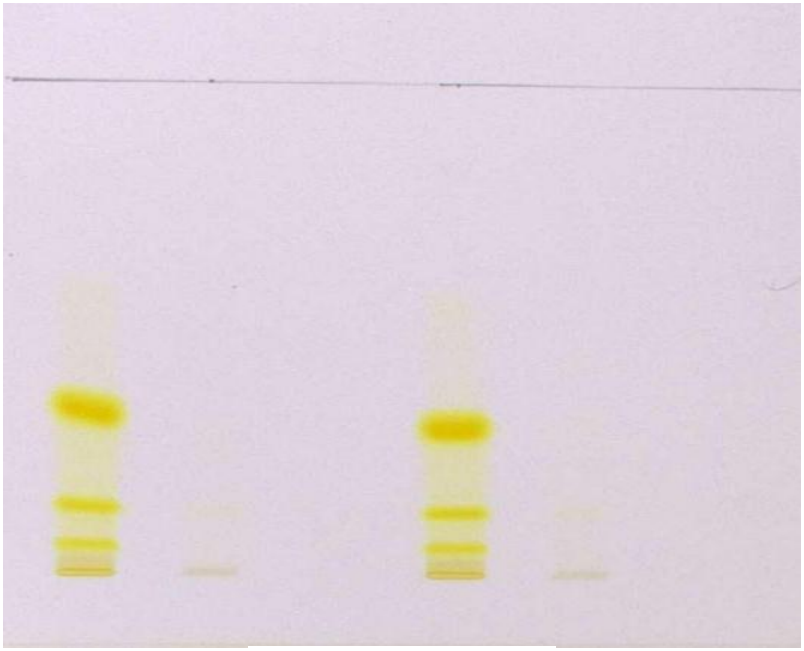

Fig 8. After Derivatization.

CONCLUSION

The amount of starch present in the rhizome of *Curcuma angustifolia* Roxb. is found to be more than *Maranta arundinacea* Roxb. The chemical constituents of starch and rhizomes of both the source plants are partially similar to each other from the previous physico-chemical studies and hence, the therapeutic activities may be similar. HPTLC serves as a powerful tool for qualitative and quantitative analysis. This in-turn helps for drug identification, authentication and to prevent adulteration. The HPTLC Reports revealed the presence of zones in 254 nm and 366 nm with similar compound in the track oF *Curcuma longa* and *Curcuma angustifolia* Roxb. which may be assumed as curcuminoides and showed dissimilarity with *Maranta arundinacea* L. Moreover, *Curcuma angustifolia* Roxb. shows more medicinal effect than *Maranta arundinacea* L. So we can suggest that the previous one can be used as a medicine and later as a food source.So further studies are needed to find out the medicinal properties of *Curcuma angustifolia* Roxb.

ABBREVIATION

CTCRI Central Tuber Crops Research Institute.

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