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COMPARATIVE PHYTOCHEMICAL EVALUATION OF PSIDIUM GUAJAVA L. AND TERMINALIA ARJUNA ROXB. WHICH ARE USED IN THE MANAGEMENT OF HYPERTENSION

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ABSTRACT

Background: Hypertension, frequently referred to as high blood pressure, stands as a significant global health concern affecting millions. Characterized by the persistent elevation of blood pressure within the arteries, this often asymptomatic condition can insidiously increase the risk of severe cardiovascular events and other organ damage. Understanding the hypertension, its measurement, causes to its potential consequences and management strategies, is crucial for promoting individual and public health. Herbal drugs are being explored for their anti-hypertensive activity to produce a safe and effective medication for the management of hypertension. *Terminalia arjuna* Roxb. is most commonly used as a standard drug in Ayurveda for the management of hypertension. One of the herb drugs *Psidium guajava* L. has similar properties to *Terminalia arjuna* and can be used as an alternative medicine. Hence, the present study was aimed to compare the similarities in the phytochemicals of both these drugs, which have similar clinical profile.

Materials and methods: Phytochemical, HPTLC and TLC analysis of both the drugs are carried out using the standard guidelines mentioned in the API and other standard texts.

Results: The results of phytochemical screening showed the presence of Phenols, Tannins, Flavonoids, Proteins, Glycosides, Reducing sugar, Quinones, Saponins, Coumarin in both *Psidium guajava* L. and *Terminlia arjuna* Roxb. While Alkaloids and Acids are only present in *Terminalia arjuna* Roxb. and absent in *Psidium guajava* L.

Conclusion: The study showed there are many similarities between *Psidium guajava* and *Terminalia arjuna* with respect to phytochemicals, whereas no similar Rf values noted in the TLC except at 0.98 Rf value under Under White light after Derivatisation, indicating that the antihypertensive phytochemicals of both the drugs are different, but may be having similar efficacy in clinical profile.

Keywords: *Psidium guajava* L., *Terminalia arjuna* Roxb. Phytochemical, HPTLC, TLC

INTRODUCTION: Hypertension is the most significant and widespread risk factor for cardiovascular diseases (CVD), such as coronary artery disease, heart failure, stroke, myocardial infarction, atrial fibrillation, and peripheral artery disease, as well as chronic kidney disease (CKD) and cognitive decline. It is recognized as the leading individual cause of death and disability on a global scale. Effective prevention and control of hypertension are essential for decreasing the overall disease burden and enhancing life expectancy worldwide. When managing hypertension, it is more crucial to assess a person's estimated risk of atherosclerotic CVD rather than focusing solely on blood pressure levels, as those with higher CVD

risk benefit most from blood pressure reduction. Recent studies have demonstrated that hypertension can be effectively managed by inducing vasodilation of blood vessels, which lowers the heart rate in a dose-dependent manner and contributes to reducing elevated blood pressure[1].

In Ayurvedic line of management

Hypertension cannot be equated to any single entity mentioned in Ayurveda. But Ayurvedic physicians have compared this with various conditions like *Bhrama* (Giddiness*), Raktagata vata, Uccha Ratka chapa* 2. Even though the disease cannot be equated to one entity, *doshic* predominance in all the related conditions seems to be similar i.e., in all the conditions *vata* and *pitta* are the predominant *doshas* involved in the Hypertension. Due to *Kashaya rasa, Katu vipaka, sheeta veerya, kapha and pittahara*, it removes the obstruction of *vata* thus there will be increase in the flow of blood to various parts of the body, so it pacifies *vata*. There by causing symptoms like hrudayaspandna3 (Palpitations), giddiness (*Bhrama*). So, the primary line of management involves drugs which can reduce *Vata*, *Pitta* and has the property of *Hrudya*.

Terminalia arjuna Roxb. is most commonly used drug which has *Hrudya* property4 and can reduce *Vata* and *Pitta*. Psidium guajava L. is having similar appearance to Arjuna and also similar clinical profile as Arjuna in management of hypertension5. These two drugs are reported to be used in many ethnobotanical surveys for the management of Hypertension5. So pilot study has been taken up in S.V. Ayurvedic College clinically and comparatively in which both of them having the same clinical profile5. Hence, to understand much about the phytochemical constituents and their similarities and differences among these two drugs, this study has been taken up.

AIMS AND OBJECTIVES: To know phytochemical similarities and differences of Phytoconstituents of *Psidium guajava* L. and *Terminalia arjuna* Roxb

MATERIALS AND METHODS: Bark of *Terminalia arjuna* Roxb. and *Psidium guajava* L[6]. are collected from the premises of S.V. ayurvedic college campus, Tirupati dist. The plants were identified and authenticated by the department of Dravyaguna based on morphological characters and the volunteer specimens were deposited in the department of dravyaguna. The plant material were shade dried and used for Phytochemical and Pharmacognostic analysis.

Phytochemical screening: All phytochemical analyses were conducted following established standard protocols as outlined by Harborne JB in *Phytochemical Methods* (Chapman and Hall, London, 1973).[6]

HPTLC study: This study was carried out at SIDDHA CENTRAL RESEARCH INSTITUTE, Chennai, India.

***Terminalia arjuna* Roxb. (Arjuna tvak churna): 0**1g of *Terminalia arjuna* Roxb. was subjected to sonication with 10 ml of chloroform for 15 minutes, followed by filtration. The resulting solution was utilized for TLC/HPTLC analysis. Applied 12 µl chloroform extract of TLC plate using Camag's ATS4 applicator and developed by the mobile phase, Toluene: Ethyl acetate: Formic acid (6.5:3.5:0.5 v/v/v) up to 8 cm distance. After development, the plate was photographed using Camag's TLC Visualizer under UV light at 254 nm and 366 nm, and

subsequently scanned with Camag's Scanner 4 in absorption mode using a D2 lamp to record the extract's fingerprint profile. The plate was next treated by dipping it into a 5% vanillin-sulphuric acid reagent and subsequently heated at 105°C until the appearance of colored spots. It was then photographed under white light and scanned at 520 nm to record the fingerprint profile.

***Psidium guajava* L. (Parevata tvak churna)** Sample (1 g) was sonicated with 10 ml of ethanol for 15 minutes and filtered. This solution was used for TLC/HPTLC. Applied 12 µl ethanol extract of TLC plate using Camag's ATS4 applicator and developed by the mobile phase, Toluene: Ethyl acetate: Acetic acid (9.0:1.0:0.5 v/v/v) up to 8 cm distance. Following development, the plate was visualized using Camag's TLC Visualizer under UV light at wavelengths of 254 nm and 366 nm, and then analyzed using Camag's Scanner 4, Using a D2 lamp in absorption mode, the extract's fingerprint profiles were recorded. The plate was subsequently immersed in a 5% vanillin-sulphuric acid reagent and heated at 105°C until colored spots developed. Subsequently, the plate was imaged under white light and scanned at 520 nm to record the fingerprint profile.

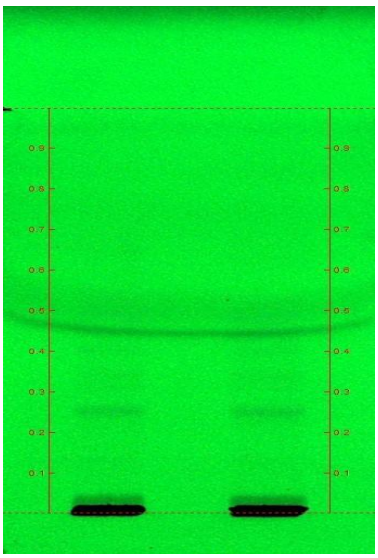
Table 1. Results of Phytochemical screening of *Psidium guajava* L. *(Parevata Tvak Curna*) and *Terminalia arjuna* Roxb. (Arjuna Tvak Curna)

Secondary metabolite	Inference	
	***Psidium guajava* L. (Parevata Tvak Curna)**	***Terminalia arjuna* Roxb. (Arjuna Tvak Curna)**
Test for Phenol	+	+
Test for Tannin	+	+
Test for Flavonoids	+	+
Test for Triterpenoids	-	-
Test for Proteins	+	+
Test for Glycosides	+	+
Test for Reducing Sugar	+	+
Test for Anthraquinones	-	-
Test for Quinones	+	+
Test for Alkaloids	-	+
Test for Saponins	+	+
Test for Cardiac glycoside	-	-
Test for Steroids	-	-
Test for Coumarin	+	+
Test for Acids	-	+

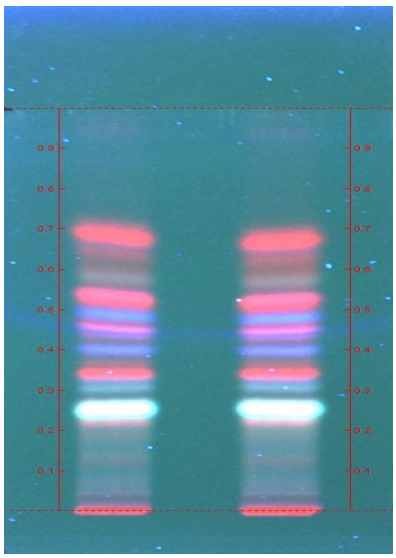
The results of preliminary phytochemical screening showed the presence of Phenols, Tannins, Flavonoids, Proteins, Glycosides, Reducing sugar, Quinones, Saponins, Coumarin in both *Psidium guajava* L. and *Terminalia arjuna* Roxb. While Alkaloids and Acids are only present in *Terminalia arjuna* Roxb. and absent in *Psidium guajava* L.

Fig. 1 TLC photo documentation of *Psidium guajava* L.

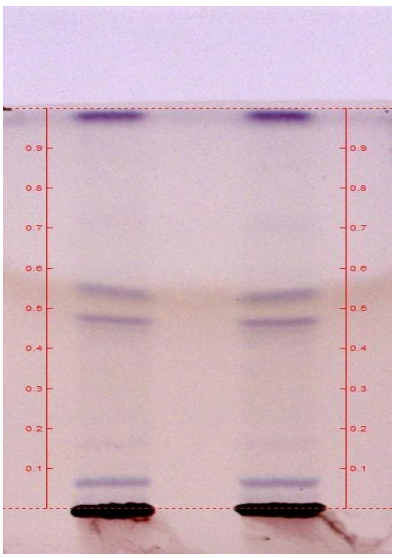
TLC Photo Documentation of Ethanol extract



Under Short UV (254 nm)



Under Long UV (366 nm)



Under White light after Derivatisation

R f	Color	R f	Color	R f	Color
0.04	Green	0.12	Red	0.07	Purple
0.14	Green	0.26	Aqua	0.16	Purple
0.25	Green	0.30	Green	0.45	Purple
0.35	Green	0.35	Red	0.48	Yellow
		0.40	Blue	0.50	Purple
		0.46	Red	0.54	Purple
		0.49	Blue	0.98	Purple
		0.53	Red		
		0.57	Green		
		0.63	Red		
		0.69	Red		

Graph 1 HPTLC finger print profile of scanning 254 nm

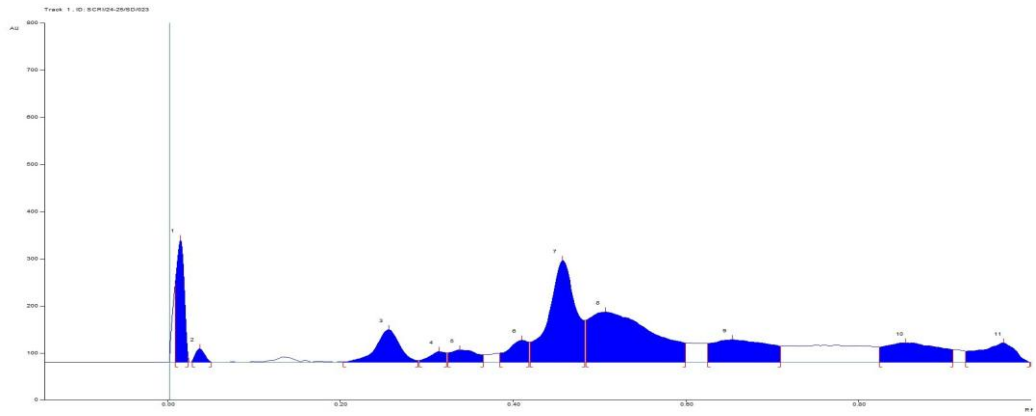


Table 2 @ Peak 254 nm

Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.01 Rf	167.3 AU	0.01 Rf	259.9 AU	28.67 %	0.02 Rf	13.4 AU	1902.3 AU	8.14 %
2	0.03 Rf	3.4 AU	0.04 Rf	28.7 AU	3.17 %	0.05 Rf	0.1 AU	243.5 AU	1.04 %
3	0.20 Rf	0.6 AU	0.26 Rf	69.4 AU	7.65 %	0.29 Rf	3.6 AU	1536.4 AU	6.58 %
4	0.29 Rf	3.7 AU	0.31 Rf	22.6 AU	2.50 %	0.32 Rf	20.3 AU	343.4 AU	1.47 %
5	0.32 Rf	20.1 AU	0.34 Rf	26.2 AU	2.89 %	0.37 Rf	15.8 AU	660.1 AU	2.82 %
6	0.38 Rf	19.4 AU	0.41 Rf	46.7 AU	5.15 %	0.42 Rf	42.7 AU	874.4 AU	3.74 %
7	0.42 Rf	42.8 AU	0.46 Rf	216.2 AU	23.85 %	0.48 Rf	88.6 AU	5345.2 AU	22.88 %
8	0.48 Rf	89.3 AU	0.51 Rf	106.7 AU	11.77 %	0.60 Rf	41.1 AU	6398.2 AU	27.38 %
9	0.63 Rf	40.1 AU	0.65 Rf	47.7 AU	5.27 %	0.71 Rf	34.2 AU	2548.2 AU	10.91 %
10	0.82 Rf	32.0 AU	0.85 Rf	41.0 AU	4.52 %	0.91 Rf	27.0 AU	2150.0 AU	9.20 %
11	0.92 Rf	23.3 AU	0.97 Rf	41.2 AU	4.55 %	1.00 Rf	0.5 AU	1364.7 AU	5.84 %

- Maximum peak shown at a value of 0.01 Rf followed by 0.42 Rf

Graph 2 HPTLC finger print profile of scanning 520 nm

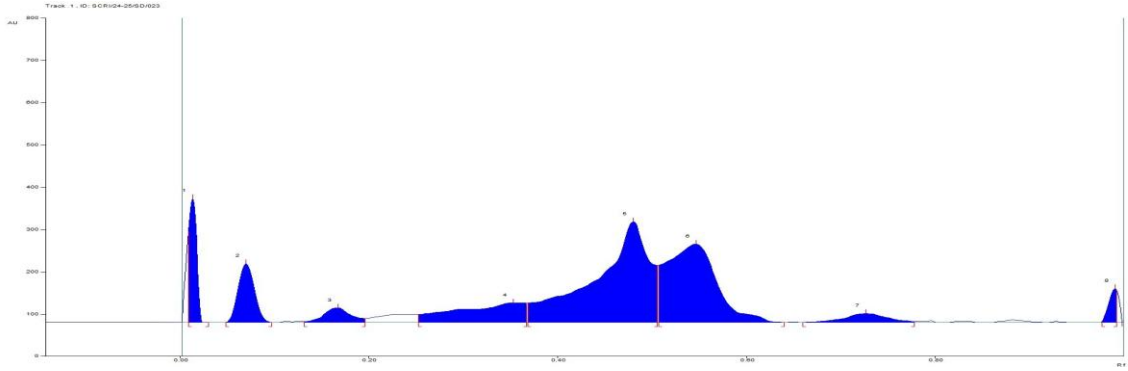


Table 3 @ Peak 520 nm:(Post Derivatized) with vanillin-sulphuric acid

Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.00 Rf	38.0 AU	0.02 Rf	369.6 AU	30.81 %	0.03 Rf	2.9 AU	3419.4 AU	11.29 %
2	0.05 Rf	1.2 AU	0.07 Rf	147.3 AU	12.28 %	0.10 Rf	0.0 AU	2096 AU	6.92%
3	0.13 Rf	0.1 AU	0.17 Rf	30.7 AU	2.56 %	0.19 Rf	6.8 AU	651.2 AU	2.15 %
4	0.24 Rf	21.0 AU	0.30 Rf	34.2 AU	2.85 %	0.31 Rf	33.3 AU	1477.4 AU	4.88 %
5	0.32 Rf	33.3 AU	0.35 Rf	51.2 AU	4.27 %	0.36 Rf	48.8 AU	1526.3 AU	5.04 %
6	0.37 Rf	48.8 AU	0.47 Rf	263.9 AU	22.00 %	0.50 Rf	43.4 AU	11075.3 AU	36.57 %
7	0.50 Rf	143.5 AU	0.54 Rf	203.9 AU	17.00 %	0.63 Rf	1.9 AU	8765.3 AU	28.94 %
8	0.68 Rf	6.4 AU	0.71 Rf	25.3 AU	2.11 %	0.77 Rf	0.1 AU	811.5 AU	2.68 %
9	0.98 Rf	0.4 AU	0.99 Rf	73.1 AU	6.10 %	0.99 Rf	70.2 AU	466.7 AU	1.54 %

- Maximum peak shown at a value of 0.00 Rf followed by 0.37 Rf

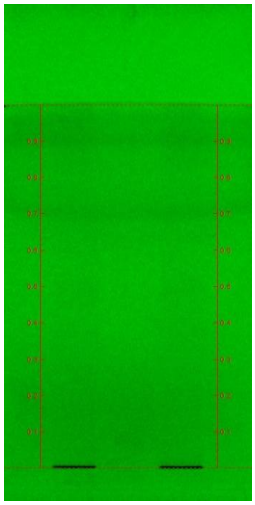
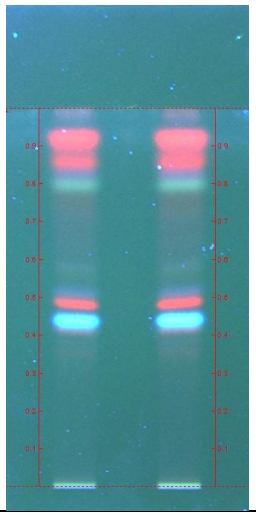
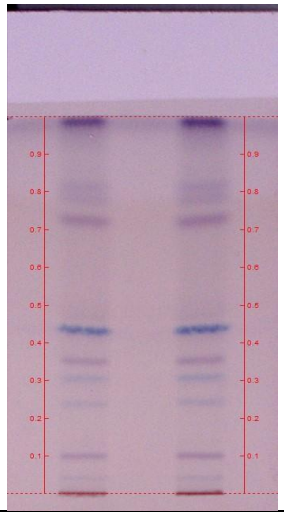
Interpretation of Data

HPTLC analysis for *Psidium guajava* L. Ethanol extract:

- Under Short UV 254 nm showed 4 bands at Values of 0.04 Rf , 0.14 Rf , 0.25 Rf , 0.35 Rf in Green color intensity.
- Under Long UV 366 nm showed 11 bands at values of 0.12 Rf, 0.35 Rf, 0.46 Rf, 0.53 Rf, 0.63 Rf, 0.69 Rf of Red. 0.26 Rf of Aqua. 0.30 Rf, 0.57 Rf of Green. 0.40 Rf 0.49 Rf of Blue is observed
- Under White light after Derivatisation showed 7 bands at Values of 0.07 Rf 0.16 Rf, 0.45 Rf, 0.50 Rf, 0.54 Rf, 0.98 Rf with Purple and one band at value of 0.48 Rf with Yellow is observed.
- Densitometric Scan at 254nm showed 11 peaks at values of 0.01 Rf (8.14%), 0.03 Rf (1.04%), 0.20 Rf (6.58%), 0.29 Rf (1.47 %), 0.32 Rf (2.82 %), 0.38 Rf (3.74 %), 0.42 Rf (22.88 %), 0.48 Rf (27.38 %), 0.63 Rf (10.91 %), 0.82 Rf (9.20 %), 0.92 Rf (5.84 %) at 520 nm showed 9 peaks Values of 0.00 Rf (11.29 %), 0.05 Rf (6.92 %), 0.13 Rf (2.15 %), 0.24 Rf (4.88 %), 0.32 Rf (5.04 %), 0.37 Rf (36.57 %), 0.50 Rf (28.94 %), 0.68 Rf (2.68 %), **0.98 Rf (1.54%).**

Fig 2. TLC photo documentation of *Terminalia* arjuna Roxb.

TLC Photo Documentation of Ethanol extract

Under Short UV (254 nm)		Under Long UV (366 nm)		Under White light after Derivatisation	
R f	**Color**	**R f**	**color**	**R f**	**color**
0.49	Green	0.44	Sky blue	0.05	Blue
0.60	Green	0.48	Red	0.10	Purple
0.71	Green	0.52	Blue	0.25	Blue
0.92	Green	0.58	Green	0.31	Blue
		0.79	Green	0.35	Purple
		0.83	Blue	0.44	Blue
		0.86	Red	0.72	Purple
		0.93	Red	0.79	Purple
				0.82	Purple
				0.98	Purple

Graph 3 HPTLC finger print profile of scanning 254 nm:

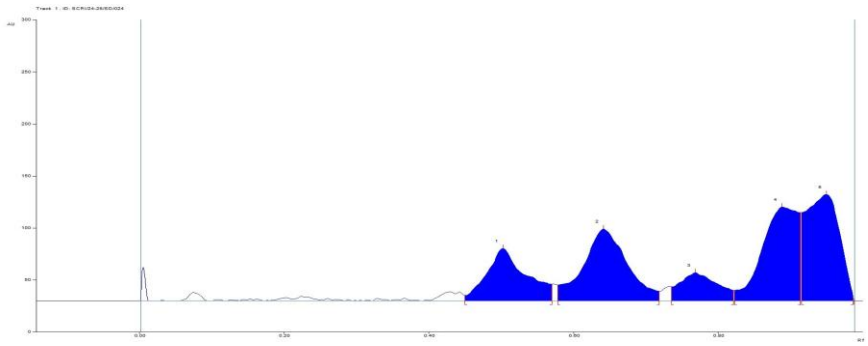


Table 4 @ Peak 254 nm

Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.45 Rf	5.1 AU	0.50 Rf	50.3 AU	14.85 %	0.57 Rf	16.0 AU	2205.7 AU	15.49 %
2	0.58 Rf	15.2 AU	0.64 Rf	68.9 AU	20.35 %	0.72 Rf	9.2 AU	3390.4 AU	23.81%
3	0.74 Rf	13.4 AU	0.77 Rf	27.1 AU	7.99 %	0.82 Rf	10.1 AU	1142.7 AU	8.02 %
4	0.82 Rf	10.1 AU	0.89 Rf	90.1 AU	26.62 %	0.91 Rf	84.7 AU	3631.6 AU	25.50 %
5	0.92 Rf	84.9 AU	0.95 Rf	102.2 AU	30.19 %	0.99 Rf	3.6 AU	3869.6 AU	27.17 %

- Maximum peak shown at a value of 0.92 Rf followed by 0.82 Rf

Graph 4 HPTLC finger print profile of scanning 520 nm:(Post Derivatized)

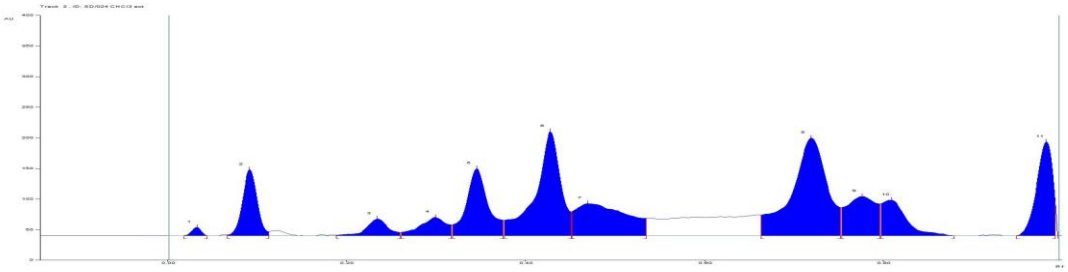


Table 5 @ Peak 520 nm:(Post Derivatized) vanillin-sulphuric acid

Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.02 Rf	0.0 AU	0.03 Rf	13.6 AU	1.44 %	0.04 Rf	0.1 AU	115.5 AU	0.54 %
2	0.07 Rf	1.5 AU	0.09 Rf	107.4 AU	11.36 %	0.11 Rf	6.6 AU	1412.6 AU	6.58 %
3	0.19 Rf	0.8 AU	0.23 Rf	27.4 AU	2.89 %	0.26 Rf	5.6 AU	531.8 AU	2.48 %
4	0.26 Rf	5.6 AU	0.30 Rf	29.9 AU	3.16 %	0.32 Rf	17.9 AU	718.4 AU	3.35 %
5	0.32 Rf	18.1 AU	0.35 Rf	109.6 AU	11.59 %	0.38 Rf	25.4 AU	2164.4 AU	10.08 %
6	0.38 Rf	25.4 AU	0.43 Rf	170.3 AU	18.01 %	0.45 Rf	39.1 AU	3836.7 AU	17.87 %
7	0.45 Rf	39.4 AU	0.47 Rf	52.3 AU	5.53 %	0.54 Rf	28.3 AU	2442.8 AU	11.38 %
8	0.66 Rf	34.1 AU	0.72 Rf	159.5 AU	16.87 %	0.75 Rf	46.1 AU	5076.2 AU	23.64 %
9	0.75 Rf	46.2 AU	0.78 Rf	64.1AU	6.78 %	0.80 Rf	51.8 AU	1741.7AU	8.11 %
10	0.80 Rf	52.3 AU	0.81 Rf	58.2 AU	6.15 %	0.88 Rf	0.2 AU	1271.0 AU	5.92 %
11	0.95 Rf	0.2 AU	0.98 Rf	153.4 AU	16.22 %	0.99 Rf	55.9 AU	2160.8 AU	10.06 %

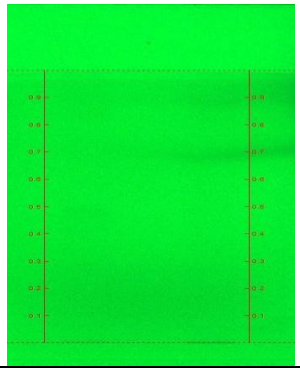
- Maximum peak shown at a value of 0.38 Rf followed by 0.95 Rf

INTERPRETATION OF DATA

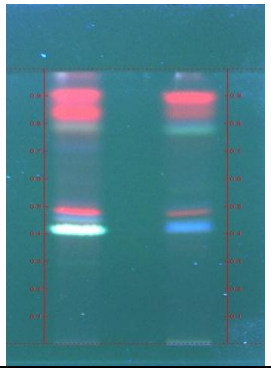
TLC analysis for *Terminalia arjuna* Roxb. Ethanol extract:

- Under Short UV 254 nm showed 4 bands at Values of 0.49 Rf, 0.60 Rf 0.71Rf, 0.92 Rf in Green color intensity is observed
- Under Long UV 366 nm showed 8 bands at values of 0.48 Rf 0.86 Rf 0.93 Rf in Red. 0.52 Rf, 0.83 Rf in Blue. 0.58 Rf, 0.79 Rf in Green and 0.44 Rf in Sky blue is observed
- Under White light after Derivatisation showed 10 bands at Values of 0.10 Rf, 0.35 Rf , 0.72 Rf , 0.79 Rf , 0.82 Rf , **0.98 Rf** with Purple and 4 bands at values of 0.05 Rf , 0.25 Rf , 0.31 Rf , 0.44 Rf with Blue is observed
- Densitometric Scan at 254nm showed 5 peaks at values of 0.45 Rf (15.49%), 0.58 Rf (23.81%) , 0.74 Rf (8.02%), 0.82 Rf (25.50%), 0.92 Rf (27.17%) and at 520 nm showed 11 peaks Values of 0.02 Rf (0.54%), 0.07 Rf (6.58%), 0.19 Rf (2.48%), 0.26 Rf (3.35%), 0.32 Rf (10.08%), 0.38 Rf (17.87%), 0.45 Rf (11.38%), 0.66 Rf (23.64%), 0.75 Rf (8.11%), 0.80 Rf (5.92%), 0.95 Rf (10.06%) is observed.

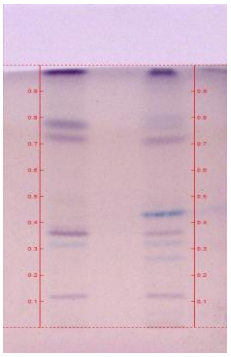
Fig. 3 **TLC Photo Documentation of chloroform extract of *Psidium guajava* L. and *Terminalia arjuna* Roxb.**



Under Short UV (254 nm)



Under Long UV (366 nm)

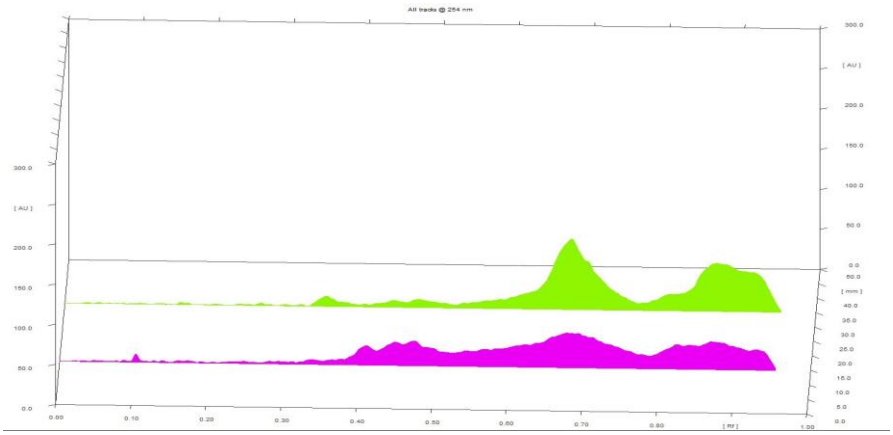


Under White light after Derivatisation

Track 1: *Psidium guajava* L.;Track 2: *Terminalia arjuna* Roxb.

Track 1		Track 2		Track 1		Track 2		Track 1		Track 2	
Rf	**Color**	**Rf**	**Color**	**Rf**	**Color**	**Rf**	**Color**	**Rf**	**Color**	**Rf**	**Color**
0.41	Green	0.69	Green	0.30	Aqua	0.42	Blue	0.12	Purple	0.12	Purple
0.48	Green	0.88	Green	0.42	Blue	0.48	Red	0.31	Blue	0.26	Blue
0.92	Green			0.46	Red	0.51	Blue	0.36	Purple	0.32	Blue
				0.49	Blue	0.56	Green	0.38	Purple	0.36	Purple
				0.51	Blue	0.78	Green	0.73	Purple	0.43	Blue
				0.72	Blue	0.80	Blue	0.78	Purple	0.71	Purple
				0.80	Wheat	0.84	Red	0.98	Purple	0.77	Purple
				0.85	Red	0.90	Red			0.80	Purple
				0.92	Red	0.98	Blue			0.98	Purple
				0.98	Blue						

Graph 5 3D Chromatogram @ 254 nm:



Graph 6 **HPTLC finger print profile of Parevata scanning 254 nm:**

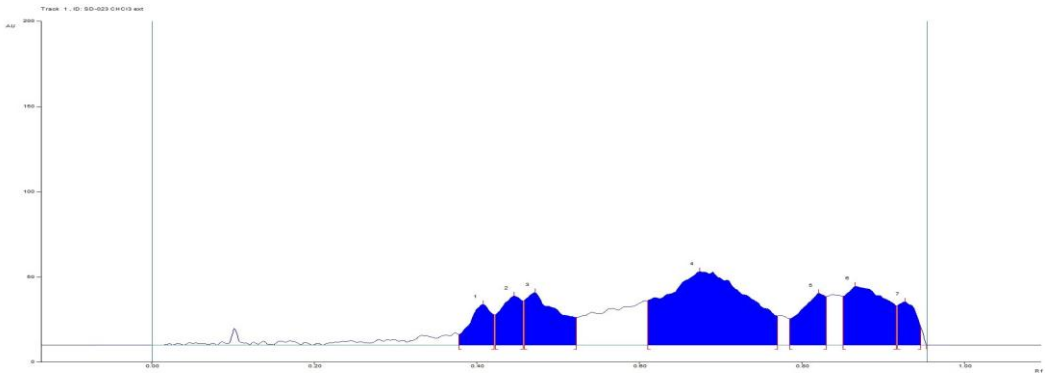


Table 6 @ Peak 254 nm

Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.38 Rf	6.3 AU	0.41 Rf	23.9 AU	11.03 %	0.42 Rf	17.8 AU	545.1 AU	6.18 %
2	0.42 Rf	17.9 AU	0.45 Rf	28.7 AU	13.27 %	0.46 Rf	25.9 AU	644.5 AU	7.30 %
3	0.46 Rf	26.2 AU	0.47 Rf	30.7 AU	14.19 %	0.52 Rf	16.2 AU	1089.1 AU	12.34 %
4	0.61 Rf	26.1 AU	0.68 Rf	43.0 AU	19.85 %	0.77Rf	17.1 AU	3792.6 AU	42.97 %
5	0.79 Rf	15.4 AU	0.82 Rf	30.3 AU	14.01 %	0.83 Rf	28.5 AU	806.2 AU	9.14 %
6	0.85 Rf	28.5 AU	0.87 Rf	34.4 AU	15.92 %	0.92 Rf	23.1 AU	1472.2 AU	16.68 %
7	0.92 Rf	23.2 AU	0.93 Rf	25.4 AU	11.72 %	0.95 Rf	10.7 AU	475.8 AU	5.39 %

- Maximum peak shown at a value of 0.61 Rf followed by 0.85 Rf

Graph 7 HPTLC finger print profile of Arjuna scanning 254 nm:

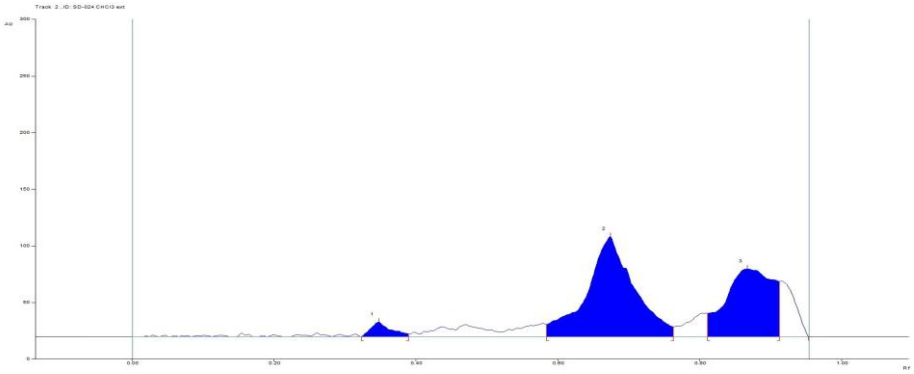
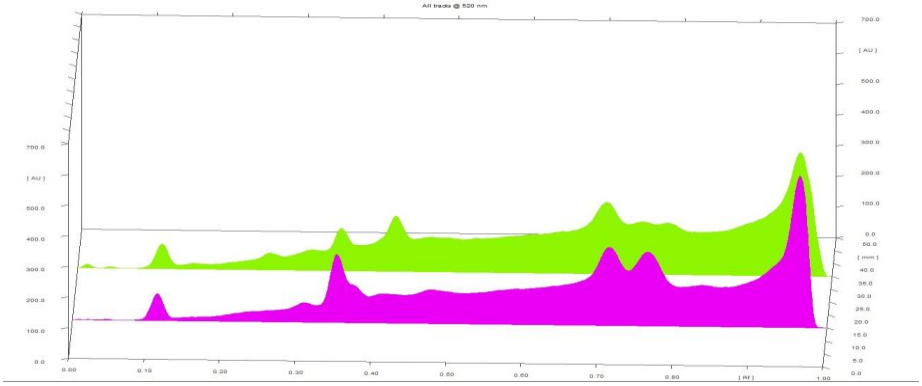


Table 7 @ Peak 254 nm:

Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.32 Rf	0.0 AU	0.35 Rf	12.8 AU	7.98 %	0.39 Rf	2.4 AU	311.7 AU	3.62 %
2	0.58 Rf	10.9 AU	0.68 Rf	88.1 AU	54.83 %	0.76 Rf	8.5 AU	4928.2 AU	57.23 %
3	0.81 Rf	20.6 AU	0.87 Rf	59.7 AU	37.19 %	0.91 Rf	48.7 AU	3371.8 AU	39.15 %

- Maximum peak shown at a value of 0.58 Rf followed by 0.81 Rf

Graph 8 3D Chromatogram @ 520 nm (Post Derivatized):



Graph 8 HPTLC finger print profile of Parevata scanning 520 nm (Post Derivatized)

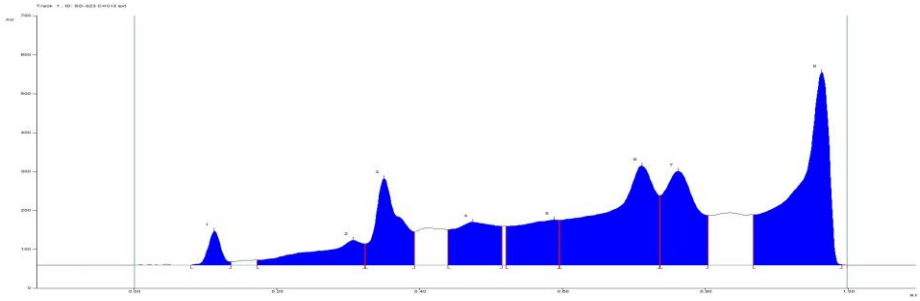


Table 8 @ Peak 520 nm (Post Derivatized) vanillin-sulphuric acid

Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.08 Rf	0.1 AU	0.11 Rf	87.4 AU	5.49 %	0.14 Rf	8.9 AU	1294.5 AU	1.90 %
2	0.17 Rf	12.9 AU	0.31 Rf	63.7 AU	4.00 %	0.32 Rf	54.8 AU	3882.4 AU	5.69 %
3	0.32 Rf	55.0 AU	0.35 Rf	222.2 AU	13.96 %	0.39 Rf	85.4 AU	6489.3 AU	9.51 %
4	0.44 Rf	90.7 AU	0.48 Rf	110.4 AU	6.94 %	0.52 Rf	99.6 AU	5815.3 AU	8.52 %
5	0.52 Rf	99.6 AU	0.59 Rf	116.2 AU	7.30 %	0.60 Rf	15.3 AU	5937.6 AU	8.70 %
6	0.60 Rf	115.3 AU	0.71 Rf	255.3 AU	16.04 %	0.74 Rf	78.6 AU	16426.1 AU	24.08 %
7	0.74 Rf	178.6 AU	0.76 Rf	241.2 AU	15.16 %	0.81 Rf	27.6 AU	9426.7 AU	13.82 %
8	0.87 Rf	129.4 AU	0.96 Rf	495.0 AU	31.11 %	0.99 Rf	1.6 AU	1854.4 AU	27.78 %

- Maximum peak shown at a value of 0.87 Rf followed by 0.60 Rf

Graph 9 HPTLC finger print profile of Arjuna scanning 520 nm (Post Derivatized)

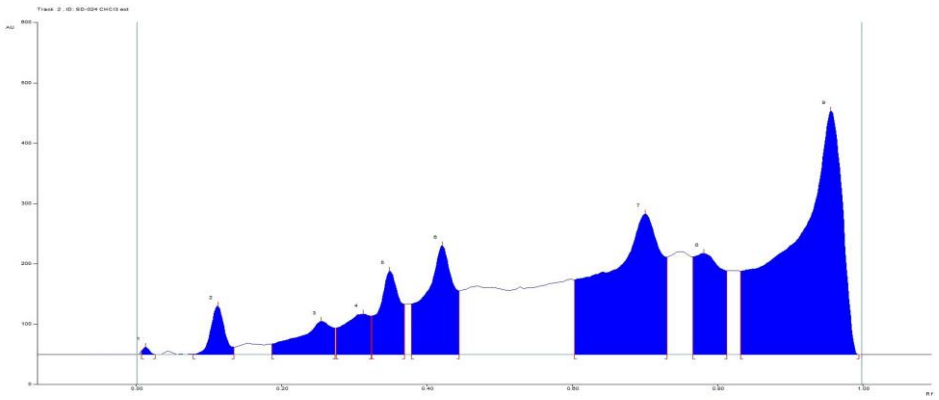


Table 9 @ Peak 520 nm (Post Derivatized)

Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.01 Rf	5.8 AU	0.01 Rf	11.9 AU	0.89 %	0.03 Rf	0.0 AU	95.9 AU	0.16 %
2	0.08 Rf	0.4 AU	0.11 Rf	80.6 AU	6.03 %	0.13 Rf	12.3 AU	1279.6 AU	2.16 %
3	0.19 Rf	17.6 AU	0.25 Rf	55.0 AU	4.11 %	0.27 Rf	43.9 AU	2255.3 AU	3.81 %
4	0.28 Rf	44.1 AU	0.31 Rf	67.0 AU	5.01 %	0.32 Rf	64.0 AU	2087.6 AU	3.53 %
5	0.32 Rf	64.1 AU	0.35 Rf	138.2 AU	10.34 %	0.37 Rf	83.4 AU	3326.7 AU	5.62 %
6	0.38 Rf	84.2 AU	0.42 Rf	180.4 AU	13.49 %	0.45 Rf	05.4 AU	5970.1 AU	10.09 %
7	0.60 Rf	124.1 AU	0.70 Rf	233.0 AU	17.43 %	0.73 Rf	61.5 AU	15152.1 AU	25.60 %
8	0.77 Rf	162.1 AU	0.78 Rf	167.8 AU	12.55 %	0.81 Rf	39.1 AU	5479.4 AU	9.26 %
9	0.83 Rf	138.5 AU	0.96 Rf	403.1 AU	30.15 %	1.00 Rf	0.1 AU	23530.7 AU	39.76 %

- Maximum peak shown at a value of 0.83 Rf followed by 0.60 Rf

INTERPRETATION OF DATA

I. TLC analysis for *Psidium guajava* L. Chloroform extract:

- Under Short UV 254 nm showed 3 bands at Values of 0.41 Rf, 0.48 Rf, 0.92 Rf in Green color intensity.
- Under Long UV 366 nm showed 10 bands at values of 0.42 Rf, 0.49 Rf, 0.51 Rf, 0.72 Rf, 0.98 Rf in Blue. 0.46 Rf, 0.85 Rf, 0.92 Rf in Red. 0.30 Rf in Aqua, 0.80 Rf in Wheat is observed
- Under White light after Derivatisation showed 7 bands at Values of 0.12 Rf, 0.36 Rf, 0.38 Rf, 0.73 Rf, 0.78 Rf, 0.98 Rf in Purple and one band at value of 0.31 Rf in Blue is observed. Densitometric Scan at 254nm showed 7 peaks at values of 0.38 Rf (6.18 %), 0.42 Rf (7.30 %), 0.46 Rf (12.34 %), 0.61 Rf (42.97 %), 0.79 Rf (9.14 %), 0.85 Rf (16.68 %), 0.92 Rf (5.39 %). At 520 nm showed 8 peaks Values of 0.08 Rf (1.90 %), 0.17 Rf (5.69 %), 0.32 Rf (9.51 %), 0.44 Rf (8.52 %), 0.52 Rf (8.70 %), 0.60 Rf (24.08 %), 0.74 Rf (13.82 %), 0.87 Rf (27.78 %).

II. INTERPRETATION OF DATA TLC analysis *for Terminalia arjuna* Roxb. Chloroform extract:

- Under Short UV 254 nm showed 2 bands at Values of 0.69 Rf, 0.88 Rf in Green color intensity.
- Under Long UV 366 nm showed 9 bands at values of 0.42 Rf, 0.51 Rf, 0.80 Rf, 0.98 Rf in Blue. 0.48 Rf, 0.84 Rf, 0.90 Rf in Red. 0.56 Rf, 0.78 Rf in Green is observed.
- Under White light after Derivatisation showed 9 bands at Values of 0.12 Rf, 0.36 Rf, 0.71 Rf, 0.77 Rf, 0.80 Rf, 0.98 Rf with Purple and 3 bands at value of 0.26 Rf, 0.32 Rf, 0.43 Rf in Blue is observed.

Densitometric Scan at 254nm showed 3 peaks at values of 0.32 Rf (3.62 %), 0.58 Rf (57.23 %), 0.81 Rf (39.15 %). At 520 nm showed 9 peaks Values of 0.01 Rf (0.16 %), 0.08 Rf (2.16 %), 0.19 Rf (3.81 %), 0.28 Rf (3.53 %), 0.32 Rf (5.62 %), 0.38 Rf (10.09 %), 0.60 Rf (25.60 %), 0.77 Rf (9.26 %), 0.83 Rf (39.76 %).

DISCUSSION:

The current study an attempt is made to establish a comparative phytochemical profile of Psidium guajava L[7]. and *Terminalia arjuna* Roxb[8]. These two drugs were having distinct morphological characters, belonging to the Myrtaceae and Combretceae family respectively. The phytochemical analysis of both plants revealed the presence of phenols, tannins, flavonoids, proteins, glycosides, reducing sugars, quinones, saponins, and coumarins in *Psidium guajava* L. and *Terminalia arjuna* Roxb. However, alkaloids and acids were detected exclusively in *Terminalia arjuna* Roxb. and absent in *Psidium guajava* L. commonly flavonoids, glycosides and tanins are found in *Psidium guajava* L[9]. and *Terminalia arjuna* Roxb[10]. No much similarities are observed between the *Psidium guajava* L. and *Terminalia arjuna* Roxb., with respect to the TLC and Rf values except at at 0.98 Rf value under White light after Derivatization in chloroform and ethanol extract which is indicating that both the drugs are having different set of chemical substances. The similar pharmcological actions may be because of the different chemical contents in both the drugs, but the anti-hypertensive action is comparable to each other. So, an extensive research on individuals chemicals on Anti-Hypertensive property has to be studied further to prove their clinical efficacy and similarity. The present work will be helpful as the standardization of the two drugs i.e., *Psidium guajava* L. and *Terminalia arjuna* Roxb.

CONCLUSION:

From the above study, it can be inferred that the phytochemicals of both *Terminalia arjuna* Roxb. and *Psidium guajava* L. are similar with respect to Phenols, Tannins, Flavonoids, Proteins, Glycosides, Reducing sugar, Quinones, Saponins, Coumarin Whereas in TLC there no much similarities except only one compound with Rf value 0.98 has been found similar in both the drugs. This chemical has to be isolated and studied separately to identify it and for its antihypertensive property to get more precise results regarding the phytochemicals.

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