PRELIMINARY PHYTOCHEMICAL INVESTIGATION ON LEAVES OF *BUCHANANIA LANZAN (CHIRONJI)*

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ABSTRACT

The leaves of *Buchanania Lanzan* (Anacardiaceae) are reported to have great medicinal value. Phytochemical screening including qualitative chemical examinations and quantitative analysis was carried out using HPTLC techniques. Identification, separation and quantification of chemical constituents was carried out on the leaves of *buchanaia lanzan*, an evergreen member of the family anacardiaceae, using, chemical testing, TLC and HPTLC techniques. Two major class of secondary metabolites were detected Glycosides, Phenolic compounds. These findings are useful in establishing a relationship between chemical composition of the leaf extract and previously reported activities of *B. lanzan* and also may assign a new potential role of *B. lanzan* extract in human health care.

Keywords: *Buchanania Lanzan*, phytochemical, soxhlet extraction, phytoconstituents

INTRODUCTION

An herb known as priyal is a drug of the ayurveda and the Unani system of medicine. It is known to have tonic, cardiotonic and astringent properties and is also used in the treatment of skin diseases. It is commonly known as Chironji[1-4]. It is a commercially useful tropical plant. Chironji tree is a medium evergreen deciduous tree, growing 50 ft tall. It bears fruits each containing a single seed, which is a popular edible nut, known as chironji. It is common in India mostly in eroded lands. It has tickly leathery leaves which are broadly oblong, with blunt tip and rounded base[5,6]. Leaves have 10-20 pairs of straight parallel veins and are pubescent. All parts of the plant are used for the treatment of various disorders. The oil from the seeds is used to reduce granular swelling of the neck[7,8]. Ointment is made from the kernel which is used to relieve itch and prickly heat. The gum from the bark used for treating diarrhea and intercostals pains and leaves are used for promoting wound healing[9,10].

MATERIALS AND METHODS

The leaves of *Buchanania lanzan* for the present investigation were obtained from yucca enterprise, Navi mumbai. The solvents used for extraction, testing, chromatography were all of LR grade and were used after distillation. Distilled under normal atmospheric pressure were employed for extraction of plant material and for phytochemical screening. Removal of solvents, wherever required was carried out by distillation or vacuum desiccators. The solutions and reagents were prepared using distilled water. The thin layer chromatography (TLC) was performed on glass plate coated with silica gel G, preactivated at 110^0C for 30 min. Compounds were detected under UV light at 254 nm .

In the extraction methodology the leaves were dried and powdered. 500gms of the drug was extracted with petroleum ether, Chloroform, ethyl acetate, methanol, ethanol and water in a soxhlet extraction apparatus. The extraction was continued till a few drops of the last portion of the percolate did not leave any residue on drying. It took about 22 hrs for complete exhaustion. The extract was green in colour with semisolid consistency.

Testing of the extracts for alkaloids, Carbohydrates and glycosides, Sterols, proteins and was carried out and the following results were obtained. The results of the foregoing experiment are summarized in Table 1. The TLC profile was developed using Toulene: Ethyl acetate (5:1.5) for the methanolic fraction. Quantification of the extract was carried out using HPTLC techniques. HPTLC profile of the Methanolic extract was developed in toluene: ethyl acetate (5:1.5) solvent system and the profile was obtained at different wavelengths using different concentrations. The TLC pattern of the following extract is given in Fig. 1-3.

RESULTS AND DISCUSSION

Preliminary phytochemical testing which is carried using chemicals for the identification of various phtytoconstituents suggest the presence of Glycosides, phenolic compound and flavonoids in the different leaf extracts of *Buchanania lanzan*. TLC profile of the methanolic extracted developed using Toluene:Ethyl acetate solvent system in the ratio of (5:1.5)at different concentration 5 µl Under UV 254 nm and 10 µl Under UV 366 nm and After derivatization with VSR and 5 min heating and after derivatization with VSR and 10 min heating also shows the presence of three salient spots. The HPTLC chromatogram (Fig.4-6) developed using toluene: ethyl acetate solvent system shows the presence of three peaks with maximum area under the curve indicating the possible quantity of these three phytoconstituents in the methanolic leaf extract.

Table l: Chemical investigation of Buchanania *Lanzan* extract

Test	Pet ether	Chloroform	Ethyl acetate	Methanol	Ethanol	Water
Alkaloids						
Mayers reagent Wagners reagent Hagers reagent Dragendroffs reagent	-ve	-ve	-ve	-ve	-ve	-ve
Glycosides and carbohydrates						
Molischs test	+ve violet ring	+ve violet ring	+ve violet ring	+ve violet ring	+ve violet ring	+ve violet ring
Fehlings test	+ve, Brick red ppt	+ve Brick red ppt	+ve Brick red ppt	+ve Brick red ppt	+ve Brick red ppt	+ve Light brown ppt
Tollens test					+ve	
Barfoeds test					+ve	
For sterols						
Hesses reaction	-ve	-ve	-ve	-ve	-ve	-ve
Liebermanreaction	+ve	+ve	-ve	-ve	-ve	-ve
Moleschotts reac tion	+ve	+ve	+ve	-ve	+ve	_ve
Leiberman burchard reaction	Light pink	Light pink	Light brown	-ve	Light brown	-ve
Flavonoids						
Shinoda test	+ve	+ve	+ve	+ve	+ve	+ve
Proteins						
Millions test	-ve	-ve	-ve	-ve	-ve	-ve

+ve indicates positive response; - ve indicates negative response.

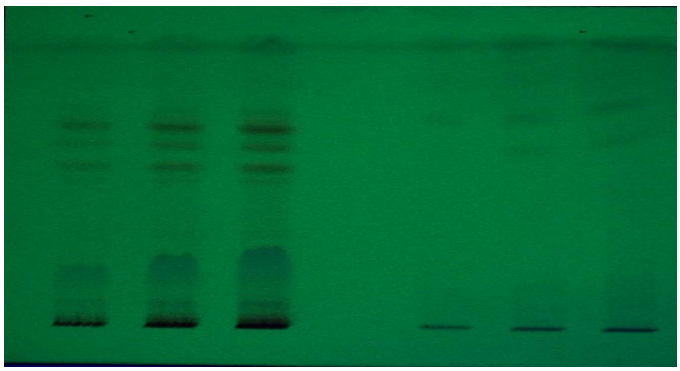


Figure 1: TLC of Methanolic extract of *Buchanania lanzan* leaf 5 µl Under UV 254 nm

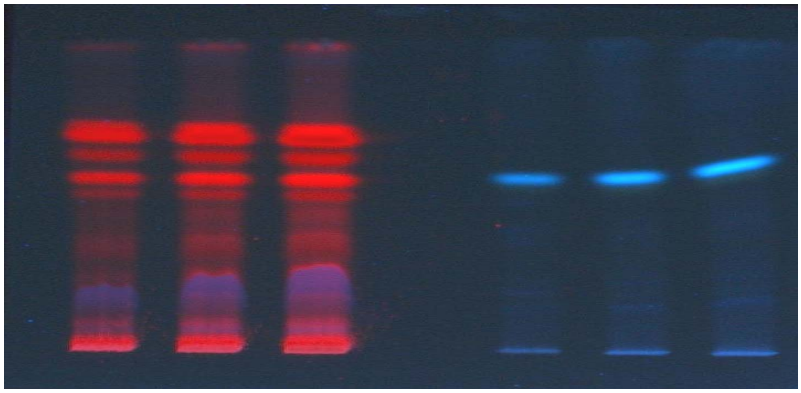


Figure 2: TLC of Methanolic extract of *Buchanania lanzan leaf* 10 µl Under UV 366 nm

Figure 3: TLC of Methanolic extract of *Buchanania lanzan* leaf 15 µl (a) After derivatization with VSR and 5 min heating (b) After derivatization with VSR and 10 min heating.

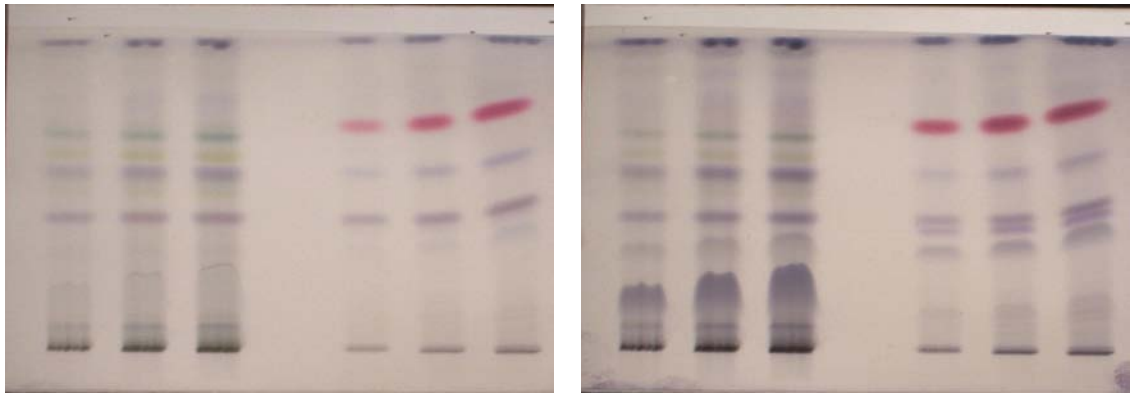
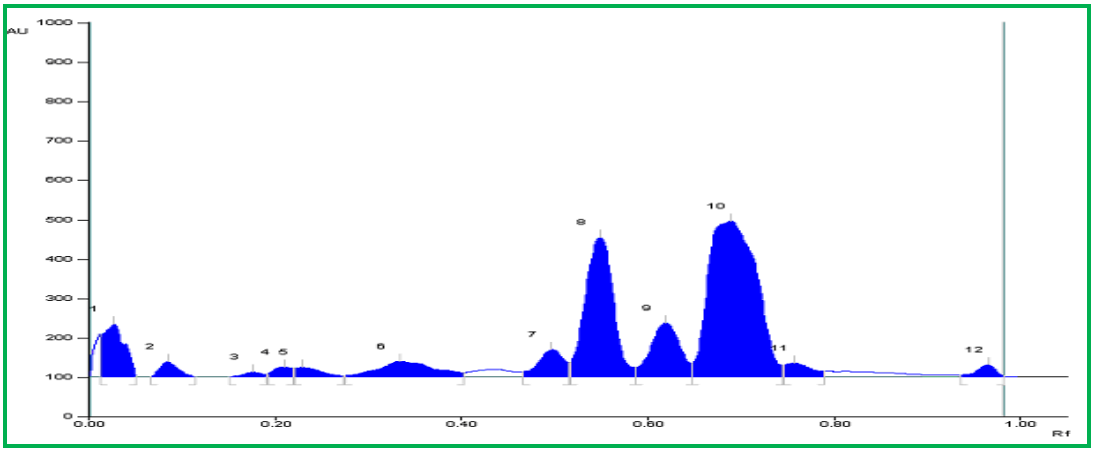
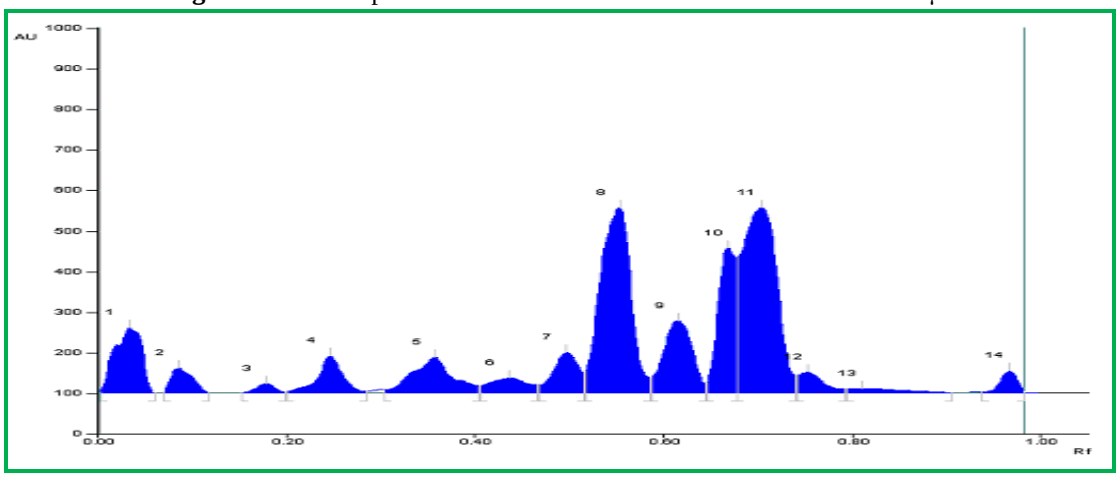


Figure 4: HPTLC profile of *Buchanania lanzan methanolic extract 5 µl*



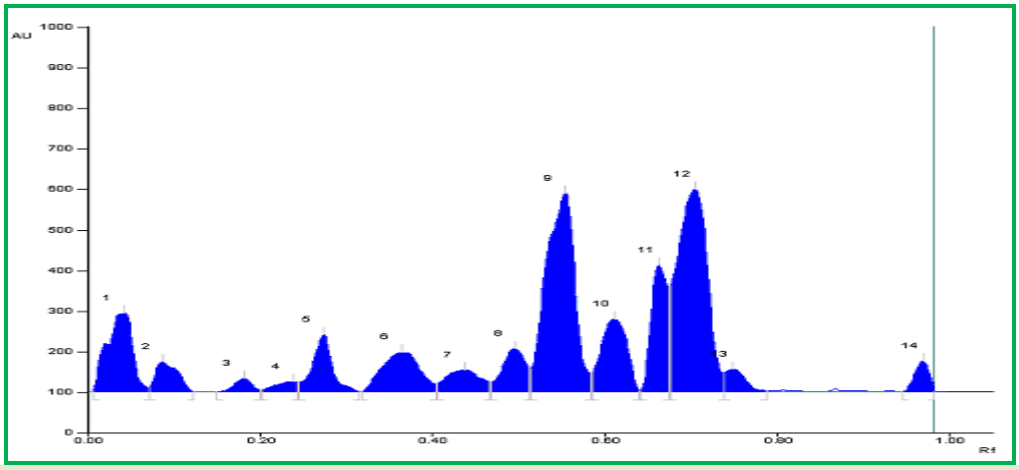
Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %	Assigned substance
1	0.01 Rf	107.6 AU	0.03 Rf	133.6 AU	10.35 %	0.05 Rf	2.5 AU	2713.1 AU	6.69 %	unknown *
2	0.07 Rf	0.3 AU	0.09 Rf	38.4 AU	2.98 %	0.11 Rf	0.4 AU	644.4 AU	1.59 %	unknown *
3	0.15 Rf	0.1 AU	0.18 Rf	11.6 AU	0.90 %	0.19 Rf	5.7 AU	200.9 AU	0.50 %	unknown *
4	0.19 Rf	6.1 AU	0.21 Rf	24.6 AU	1.91 %	0.22 Rf	21.6 AU	431.0 AU	1.06 %	unknown *
5	0.22 Rf	21.9 AU	0.23 Rf	23.7 AU	1.84 %	0.27 Rf	2.8 AU	575.7 AU	1.42 %	unknown *
6	0.28 Rf	2.8 AU	0.33 Rf	39.4 AU	3.06 %	0.40 Rf	10.7 AU	2059.1 AU	5.08 %	unknown *
7	0.47 Rf	13.1 AU	0.50 Rf	68.9 AU	5.34 %	0.52 Rf	36.1 AU	1636.5 AU	4.04 %	unknown *
8	0.52 Rf	37.1 AU	0.55 Rf	354.4 AU	27.47 %	0.59 Rf	23.8 AU	9304.1 AU	22.95 %	unknown *
9	0.59 Rf	24.2 AU	0.62 Rf	136.5 AU	10.58 %	0.65 Rf	32.8 AU	3698.6 AU	9.12 %	unknown *
10	0.65 Rf	33.6 AU	0.69 Rf	394.2 AU	30.56 %	0.74 Rf	29.4 AU	17877.2 AU	44.09 %	unknown *
11	0.75 Rf	29.6 AU	0.76 Rf	34.5 AU	2.68 %	0.79 Rf	13.3 AU	865.0 AU	2.13 %	unknown *
12	0.94 Rf	4.7 AU	0.97 Rf	30.1 AU	2.34 %	0.98 Rf	2.0 AU	537.8 AU	1.33 %	unknown *

Figure 5: HPTLC profile of *Buchanania lanzan methanolic* extract 10 µl



Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %	Assigned substance
1	0.00 Rf	2.7 AU	0.03 Rf	160.2 AU	7.56 %	0.06 Rf	0.1 AU	4070.0 AU	7.34 %	unknown *
2	0.07 Rf	1.2 AU	0.09 Rf	60.5 AU	2.86 %	0.12 Rf	0.1 AU	1212.6 AU	2.19 %	unknown *
3	0.15 Rf	0.1 AU	0.18 Rf	22.4 AU	1.06 %	0.20 Rf	1.8 AU	387.8 AU	0.70 %	unknown *
4	0.20 Rf	1.9 AU	0.25 Rf	91.8 AU	4.33 %	0.28 Rf	3.5 AU	2040.9 AU	3.68 %	unknown *
5	0.30 Rf	8.0 AU	0.36 Rf	88.1 AU	4.16 %	0.40 Rf	17.9 AU	3210.0 AU	5.79 %	unknown *
6	0.41 Rf	18.0 AU	0.44 Rf	36.7 AU	1.73 %	0.47 Rf	19.3 AU	1318.7 AU	2.38 %	unknown *
7	0.47 Rf	19.4 AU	0.50 Rf	99.2 AU	4.68 %	0.52 Rf	51.0 AU	2328.4 AU	4.20 %	unknown *
8	0.52 Rf	52.6 AU	0.55 Rf	455.1 AU	21.48 %	0.59 Rf	37.5 AU	12946.3 AU	23.35 %	unknown *
9	0.59 Rf	37.7 AU	0.62 Rf	177.4 AU	8.37 %	0.64 Rf	23.3 AU	4767.6 AU	8.60 %	unknown *
10	0.65 Rf	25.3 AU	0.67 Rf	356.7 AU	16.83 %	0.68 Rf	32.5 AU	5890.1 AU	10.62 %	unknown *
11	0.68 Rf	333.1 AU	0.70 Rf	455.1 AU	21.48 %	0.74 Rf	42.7 AU	14700.5 AU	26.52 %	unknown *
12	0.74 Rf	43.1 AU	0.75 Rf	50.5 AU	2.38 %	0.79 Rf	10.0 AU	1186.4 AU	2.14 %	unknown *
13	0.79 Rf	10.0 AU	0.81 Rf	10.8 AU	0.51 %	0.91 Rf	0.1 AU	541.4 AU	0.98 %	unknown *
14	0.94 Rf	2.4 AU	0.97 Rf	54.1 AU	2.55 %	0.98 Rf	4.8 AU	837.4 AU	1.51 %	unknown *

Figure 6: HPTLC profile of *Buchanania lanzan methanolic* extract 15µl



Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %	Assigned substance
1	0.01 Rf	2.3 AU	0.04 Rf	193.2 AU	8.30 %	0.07 Rf	10.0 AU	5102.4 AU	8.43 %	unknown *
2	0.07 Rf	11.4 AU	0.09 Rf	73.7 AU	3.17 %	0.12 Rf	0.6 AU	1670.8 AU	2.76 %	unknown *
3	0.15 Rf	0.0 AU	0.18 Rf	32.3 AU	1.39 %	0.20 Rf	4.6 AU	577.2 AU	0.95 %	unknown *
4	0.20 Rf	4.9 AU	0.24 Rf	25.1 AU	1.08 %	0.24 Rf	23.8 AU	566.6 AU	0.94 %	unknown *
5	0.24 Rf	23.5 AU	0.27 Rf	140.1 AU	6.02 %	0.32 Rf	0.1 AU	2744.1 AU	4.53 %	unknown *
6	0.32 Rf	0.4 AU	0.36 Rf	96.7 AU	4.15 %	0.40 Rf	20.1 AU	3772.8 AU	6.23 %	unknown *
7	0.41 Rf	20.3 AU	0.44 Rf	53.5 AU	2.30 %	0.47 Rf	24.6 AU	1915.3 AU	3.16 %	unknown *
8	0.47 Rf	24.6 AU	0.50 Rf	106.6 AU	4.58 %	0.51 Rf	57.4 AU	2500.4 AU	4.13 %	unknown *
9	0.51 Rf	57.5 AU	0.55 Rf	488.5 AU	20.98 %	0.58 Rf	46.9 AU	14242.3 AU	23.52 %	unknown *
10	0.59 Rf	48.2 AU	0.61 Rf	178.5 AU	7.67 %	0.64 Rf	2.2 AU	4741.7 AU	7.83 %	unknown *
11	0.64 Rf	2.9 AU	0.66 Rf	311.9 AU	13.40 %	0.68 Rf	30.0 AU	5200.4 AU	8.59 %	unknown *
12	0.68 Rf	261.8 AU	0.71 Rf	498.2 AU	21.40 %	0.74 Rf	47.3 AU	15309.0 AU	25.28 %	unknown *
13	0.74 Rf	47.9 AU	0.75 Rf	55.2 AU	2.37 %	0.79 Rf	2.6 AU	1109.2 AU	1.83 %	unknown *
14	0.95 Rf	0.4 AU	0.97 Rf	74.6 AU	3.20 %	0.98 Rf	0.0 AU	1101.8 AU	1.82 %	unknown *

CONCLUSION

In conclusion it may stated that the approach given for standardization of any new herbal or medicinal plant includes chemical evaluation and comparison should be developed systematically for completion of database of newer plants. This shall help to obtain monograph of the future medicinally active plant. For developing analytical method pure active chemical constituent should be isolated in further study and identification on basis of reference standard shall be made. This also helps in setting in-house standards of the medicinal plants used extensively by herbal manufacturers.

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