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**Annals of Biological Research, 2011, 2 (3) :469-473**
***(http://scholarsresearchlibrary.com/archive.html)***

**ISSN 0976-1233**
**CODEN (USA): ABRNBW**

# Isolation & Phytochemical Investigation on leaves of *Buchanania Lanzan (Chironji)*

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## ABSTRACT

*The leaves of Buchanania Lanzan (Anacardiaceae) are reported to be of great medicinal importance. Isolation of chemical constituents was carried out from the leaves of Buchanaia lanzan, an evergreen member of the family anacardiaceae, using column chromatography. Identification of chemical constituents was done by MP, IR, NMR & LC-MS techniques. Three compounds ie pinitol, vomicine and celidoniol were isolated from the methanolic extract. 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.*

**Key words**: *Buchanania Lanzan*, column chromatography, phytoconstituents, TLC

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## 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. The 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 [5, 6]. 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[7-8].Chemical constituents like Myricetin-3' rhamnoside-3-galactoside Aand a number of glycolipids have been isolated from this plant and the other compounds reported are cardanol,cardol,anacardic acid and fatty acids[9-11].

## MATERIALS AND METHODS

**Plant material:** The plant material was collected from Yukka enterprises ,Navi Mumbai. The material was shade dried, pulverized and preserved in air tight containers.

**Preparation of the extracts**
The methanolic extract of dried powder (5 kg) of the leaves was prepared by using Soxhlet apparatus. The extract was then concentrated and dried to give dark brown mass. The yield of the extract was10%. The extract was then subjected to preliminary phytochemical analysis using standard methods.

**Chemicals:** The chemicals for isolation were obtained from Merck, and SD fine chemicals .

**Spectral analysis:** was done at IISc and Quest lab, Bangalore.

**Isolation:** The methanolic extract (30gm)was subjected to column chromatography on silica gel using solvents of varying polarities starting from petroleum ether, chloroform, ethyl acetate and methanol to yield several sub fractions (181 fractions).Fractions 32-36 (50%Chloroform in 50ml petroleum ether) were clubbed together due to similarities in color and TLC pattern. The solvent system toluene: ethyl acetate in the ratio 5:5 showed a major spot at Rf 5.2.This fraction was eluted using different ratios of petroleum ether and chloroform .Fractions of 10ml were collected and fraction 9 showed a single spot .This fraction was collected recrystalised and dried to get 0.43mg of compound which was coded as IS2- 2 .

The first and third compounds was isolated from fractions 89-112 (methanol 40% in 60% ethyl acetate) and subjected to TLC using the solvent system toluene: ethyl acetate in the ratio 7:3 which showed a two major spots at Rf value of 0.4 and 0.7.This fraction was subjected to second column using ethyl acetate and methanol in different ratios to get 36 sub fractions of 5 ml each.Compound 2 stared eluting at 3.5 ml methanol in ethyl acetate. The fractions (17-19) of the second column were mixed and recrystallise to get 0.40mg of the pure compound which was coded as IS2- 1 . Fractions 26 and 27 of the second column showed a single spot. These fractions were mixed and left over night to obtain 0.51mg of IS2- 3.

## RESULTS AND DISCUSSION

Review of literature has revealed that plant metabolites like alkaloids, glycosides, alcohols etc play an important role in many of the activities like wound healing, cardio tonic, diahorrea, analgesic, anti inflammatory, anti oxidant and anti microbial activity[12,13].The extract has shown significant anti inflammatory, anti oxidant and wound healing activity which could be attributed to the presence of the various phyto constituents present in the plant[14].we have earlier reported the phytochemical profile of the plant[15].

The chemical constituents isolated from the leaves of *Buchanaia lanzan*, were characterized based on chemical tests and spectral analysis such as IR, $^{1}$HNMR, MASS spectroscopy.

**IS2- 1**

IS-1 was obtained as white color flaky solid powder with a melting point of 67-68$^0$C. The mass spectra showed a base peak at 477m/z. The IR, NMR, melting point and the chemical test of the compound suggests that the isolated compound is celidoniol.

IR(KBr cm$^{-1}$): Ali C-H(str) 2937.68; OH(str) 3470.06; C-C(str) 1143.83; $^1$HNMR (δ ppm): 0.975($CH_3$,s,6H), 1.337($CH_2$,m,4H), 1.225($CH_2$,m,4H),2.96-3.48($CH_2$,m,22H), 1.86(CH,m,1H), 4.6(OH,m,1H); MASS : m/z 477

**IS2- 2**

IS-2 was obtained as white color amorphous solid powder.with a melting point of 283-284$^0$C. The IR, NMR, and melting point suggests that the isolated compound is the alkaloid vomicine.

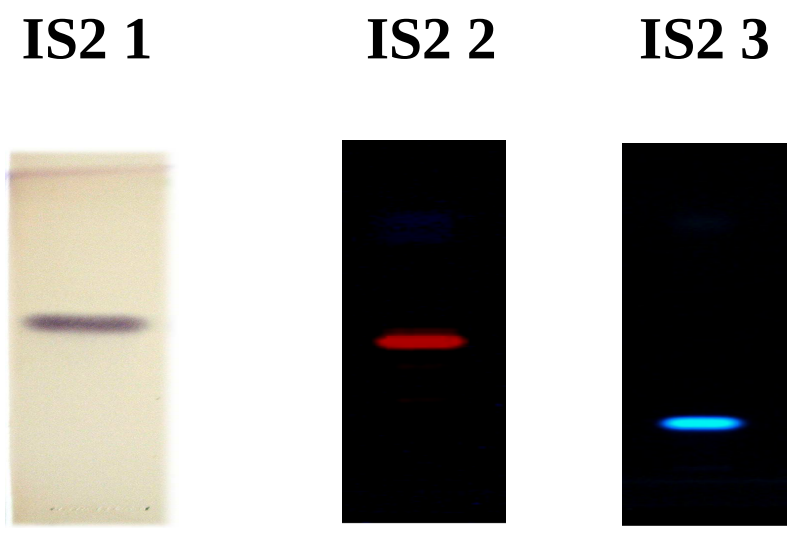
IR(KBr cm$^{-1}$): Ali C-H(str) 3005.20; OH(str) 3367.83; C=C(str)1539.25; C-O 1251.84; ArC-H(str) 3066.92; C=O 1705.13; C-N 1438.94; $^1$HNMR(δppm): 12.22(OH,s,1H), 9.18($NCH_3$,s,3H), 6.92(ArH,m,5H), 3.37($CH_2$,m,6H), 2.52(CH,m,3H); MASS : m/z 381

**IS2- 3**

IS-3 compound was obtained as white color amorphous solid powder and had a melting point of 180-182$^0$C.Analysis by IR, NMR and melting point suggests that the isolated compound is pinitol which is a cyclic polyol.

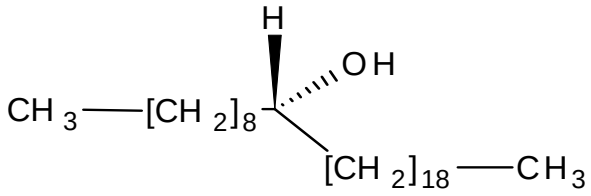
IR(KBr cm$^{-1}$) : Ali C-H(str) 2928.04; OH(str) 3421.88; C-C(str)1116.82; C-O 1244.13; $^1$HNMR (δ ppm): 3.6($OCH_3$,S,3H)3.83(1H ,M,1H),4.31(1H,M,4H),4.58(4H,M,H 2,3,5,6); MASS : m/z 195

**TLC profile of the isolated compounds**

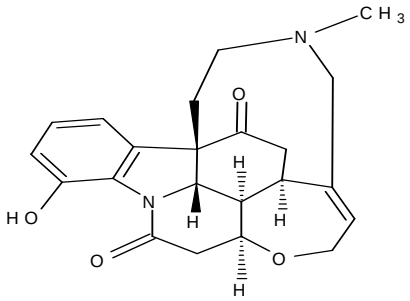


**Structures of the isolated compounds :**

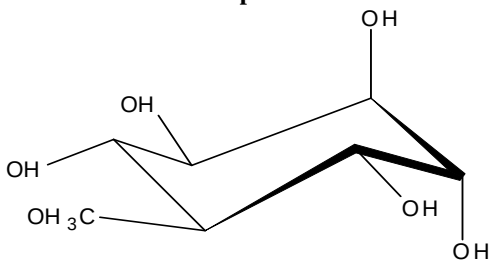
**IS2 1: celidoniol**




**IS2 2: vomicine**




**IS2 3: pinitol**




## CONCLUSION

The current study resulted in isolation of three compounds (IS2-1 3, IS2-2 and IS2- 3) ie i.e. pinitol,vomicine and celidoniol from the methanolic extract of *Buchanania Lanzan*. The presence of these constituents may be useful in establishing a relationship between chemical composition of the leaf extract and previously reported activities of *B. lanzan*.

## REFERENCES

[1] Chaudhary US; Rathod V; Vankhede GN. *J Env Biol*, **2001**, 22, 229.
[2] Sengupta A; Roychoudhury SK. *J Sci Food Agric*. **1977**, 28, 463.
[3] Kirtikar, K.R. and Basu, B.D. Indian Medicinal Plants: Lalit Mohan Basu, Allahabad, 1935.1964-1965.
[4] Dai Y; Ye WC; Wang ZT; Matsuda ; KuboM.; But PPH; *J. Ethnopharmacol*, **2002**, 81, 245.
[5]HorioT; Yoshida K; Kikuchi H; Kawabata J;Mizutani J. *Phytochemistry*, **1993**, 33 , 807.
[7] Gohar AA; Elmazar MMA. *Phyto. Res*, **1997**, 11, 564.

[8] Kala CP. *J Ethnobiol Ethnomed*. **2009**, 4, 20.
[9]Hemavathy J.,PrabakarJV. *J Food Comp Ana* ,**1988**,1,366.
[10]Arya R; Babu V; Ilyas M;Nasim KT. *Phytochemistry* , **1992**,31, 2569.
[11] Ayurvedic Herb - PRIYAL.www.ayurvedaconsultants.down loaded on 12th Dec **2010**
[12] Naira Nayeem; Karvekar MD. *Arch App Sci Res*, **2011**, 3,43.
[13] Naira Nayeem; Gladsy Denny; Shalini Kapoor Mehta. *Der Pharm Let*, **2011**, 3, 292.
[14] Shalini K M; Swarupananda M; Jaiprakash B. Inter *J Pharma Sci Rev Res*, 3, **2010**, 55.
[15]Shalini K M; Swarupananda M; Jaiprakash B, *Inter J Pharma Sci Rev and Res* , **2011**, 6,144.