

Research Note :

CHROMATOGRAPHIC ANALYSIS OF VOLATILE FRAGRANT COMPOUNDS FROM FLOWERS OF *Strychnos potatorum* L.

Manika Barar*

Department of Chemistry, C.C.S University Meerut (U.P) India

*E-mail: dr.manikabr@gmail.com

ABSTRACT : *Strychnos potatorum* flowers on GC and TLC analysis were found to contain α - Pinene (2.80%), Methyl chavicol (2.25%), d- Cadinene (4.20%), α - Phallendrene (5.30%), Mycrene (3.60%), d-Limonene (4.0%), α - Thujene (8.20%), α -Terpenol (4.60%), Nerol (6.50%), β -Pinene (3.80%), β - Caryophyllene (3.10%), Linelyl A cetate (7.20%), Cineol (6.20 %), Borneol (3.60%), Citranellal (15.20 %) and unidentified (1.50%).

Keywords : *Strychnos potatorum*, flower, chromatography, volatile oil.

Strychnos potatorum (L.), belongs to family Loganiaceae, commonly referred to as clearing nut tree or *Nirmali*, is a medium sized glabrous tree having height of 6-18 meters. It has been reported in *Ayurveda*, *Siddha* and *Unani* systems of medicine (Chopra *et al.*, 7). Some of the chief constituents found in the plant are strychnine, diaboline, isomotiol and stigmaterol (Ruby *et al.*, 10). The seeds of tree are commonly used in traditional medicine as well as purifying water in India (Peter, 11). Flowers are white, small, borne on compound inflorescences in the axils of the upper leaves.

The flowers of *Strychnos potatorum* (L.) on steam distillation in Clevenger's apparatus yielded 0.60% essential oil (Gringauz, 8). The essential oil was separated from water and dried over anhydrous sodium sulphate and it was subjected to analysis by GC and TLC along with super imposable spectral studies.

TLC analysis : Slurry of silica gel G (MERCK) in distilled water was spread uniformly and homogenized over a glass plate then activated by keeping in electric oven at 60°C (Cassidy, 9). The essential oil (8 kg) was applied at about 2 cm over the lower edge of plates. The glass plates were then developed in various solvent system as per West (5) viz. 1. Chloroform: menthol, and 2. Glacial acetic acid: menthol: water (Table 1).

Ultraviolet/Iodin vapours/Anisaldehyde - sulphuric acid was used as the visualizing reagents for separated components which are subsequently developed by heating the developed silica gel- G plates at 80°C for 30 minutes in electric oven (Brand and Eglinton,2; Harold,6).The component were confirmed by co-chromatography with authentic samples.

Table 1: LC profile of *Strychnos potatorum* L.

Extractive	Adsorbent	Solvent system	Viewing medium
Alkaloids	Silica gel	chloroform: menthol(15:1)	Ultraviolet (254nm)
Phenols	Silica gel	chloroform: menthol(27:0.3)	Folin-ciocalteu's reagent
Sterols	Silica gel	Glacial acetic acid:menthol:w ater (64:34:12.8)	Anisaldehyde-s ulphuric acid reagent
Saponins	Silica gel	Glacial acetic acid:menthol:w ater (64:34:12.8)	Iodine vapours

GC Analysis : GC was done on Perkin Elmer -881 analyzer with the packing materials consisting of OV-17 and SE- 25 (Bauman, 1; John, 3; and Gorden and Ford, 4). The various experimental parameters are described as below-

- (1) Linear temperature programming- 70- 180°C increasing by 5°C / min.
- (2) Column- The glass column of 160 cm (long) and 0.40 mm in diameter packed with 25% OV-17.
- (3) Carrier gas- Nitrogen.
- (4) Detector temperature- 200°C
- (5) Injection temperature- 120°C.
- (6) Pressure in carrier gas- 1.20 ml.
- (7) Detector- Flame ionization detector
- (8) Chart speed- 10'/hour
- (9) Sample size- 0.20-0.45/l of oil in chloroform.

The various component of the essential oil were identified (Table 2) by comparing their retention times with those of pure components and also by co-injection of various authentic samples.

Table 2: Gas chromatographic analysis of essential oil from the flowers of *Strychnos potatorum* L.

Component	Relative %	Retention
α Pinene	2.80	1.25
Methyl chavicol	3.25	5.66
Myrcene	3.60	6.10
d-cadinene	4.20	5.66
Citranellal	15.20	6.80
α Phallendrene	5.30	6.10
α Borneol	3.60	8.5
α Terpineol	4.60	10.30
α Thujene	8.20	8.50
Undentified	10.48	6.10
d-Limonene	4.00	6.5
Bornyl Acetate	6.80	7.50
Nerol	6.50	12.60
α Caryophyllene	3.10	14.0
Linelyl Acetate	7.20	16.50
Terpinyl Acetate	2.40	15.45
1,8 Cineol	4.60	6.20

Phytochemical Parameters :

Foreign matter- Not more than 2%

Total ash- Not more than 4%

Water soluble extractive- Not more than 75%

Acid insoluble ash- Not more than 0.5%

The TLC and GC examination coupled with superimposable spectral studies concluded that the flowers of *Strychnos potatorum* L. consisted of the following components including 1 unidentified component α -Pinene (2.80%), Methyl chavicol (3.25%), Myrcene (3.60%), Bornyl acetate (6.80%), Terpinyl acetate (2.40%), 1,8 Cineol (4.60%), α -Borneol (3.60%), Nerol (6.50%), β -Caryophyllene (3.10%),

Linelyl acetate (7.20%), d-Cadinene (4.20%) and d-Limonene (4.00%).

Thus it is evidence that there exist very much possibility of exploring this essential oil as perfume. .

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