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GC-MS ANALYSIS OF TYLOPHORA INDICA.

Suhas Gurav^{1*},

Devprakash¹, Senthilkumar G.P.¹, Rohan Tembare¹, Tamiz Mani¹

¹Department of Pharmaceutical chemistry, Bharathi College of Pharmacy. Bharathi Nagara, Mandya (District), Karnataka, India – 571 422.

ABSTRACT

The investigation was carried out to determine the possible chemical components from *Tylophora indica* by GC-MS. GC-MS analysis of ethanol extract led to identification of ten compounds. This analysis revealed that contains *Tylophora indica* mainly Phytol, Ethyl tridecanoate, Oleic Acid.

Keywords *Tylophora indica*, GC-MS analysis, Phytol.

Correspondence to Author

Suhas Gurav

Department of Pharmaceutical chemistry, Bharathi College of Pharmacy. Bharathi Nagara, Mandya (District), Karnataka, India – 571 422.

Email: devprakashdahiya@gmail.com

INTRODUCTION

Tylophora indica (Burm f.) Merrill. (Family: Asclepidaceae) commonly known as Antmul is a twining perennial plant distributed throughout southern and eastern part of India^[1]. The plant is found extensively in Uttar Pradesh, Bengal, Assam, Orissa, Himalayas and sub Himalayas in India^[2]. It is a branching climber or shrub that grows up to 1.5 meters, leaves are obvate-oblong to elliptic-oblong, 3-10cm long and 1.5-7cm wide^[3]. Roots Long fleshy with longitudinally fissured light brown, corky bark. Flowers minute, 1-1.5cm across, in 2-3 flowered fascicles in axillary umbellate cymes. Calyx divided nearly to the base, densely hairy outside; segment lanceolate, acute. Corolla greenish yellow or greenish purple; lobes oblong, acute. Fruit a follicle, up to 7 × 1cm, ovoid lanceolate, tapering at apex forming fine mucro, finally striate, glabrous,

Seeds 0.6-0.8 × 0.3-0.4cm long^[4]. The plant has been reported to contain 0.2- 0.46% alkaloid like tylophorine, tylophorinine, tylophorinidine, (+)septicine, isotylocrebrine, tylophorinicine, sterols, flavanoids, wax, resins, and tannins^[5]. The plant has been traditionally used for the treatment of bronchial asthma, jaundice and inflammation^[6]. Its antitumor, immunomodulatory, antioxidant, antiasthmatic, smooth muscle relaxant, antihistaminic, hypotensive, antireumatic activities are scientifically established. In Ayurveda, the plant has been used in treatment of asthma, dermatitis and rheumatism. Although the leaf and root of this plant are widely used for treating jaundice in North Karnataka, there is a paucity of scientific evidence regarding its usage in liver disorder. The other reported activities include

cytotoxic effect^[7], immunomodulatory activity^[8], anticancer activity^[9] and antiamoebic activity^[10].

Plant material

The plant *Tylophora indica* was purchased from Bharath Herb, Nagpur, Maharashtra, India during May-2011 and authenticated by Dr. K. Madhava Chetty, Asst. Prof. Department of Botany, Sri Venkateshwara University, Tirupati, Andhra Pradesh, India. A voucher herbarium specimen no. 1158 has been deposited in the Department of Botany, Sri Venkateshwara University, Tirupati, Andhra Pradesh, India.

Preparation of extracts

500gms of dried and powdered plant was extracted with ethanol in Soxhlet apparatus for 24 hours (3 cycles/ hour). 3gm dark brownish green colored residue was obtained after distillation under reduced pressure.

GC-MS ANALYSIS

GC-MS analysis was carried out on a GC clarus 500 Perkin Elmer system comprising a AOC-20i autosampler and gas chromatograph interfaced to a mass spectrometer (GC-MS) instrument employing the following conditions: column Elite-1 fused silica capillary column (30 x 0.25 mm ID x 1 μ M df, composed of 100% Dimethyl poly diloxane), operating in electron impact mode at 70eV; helium (99.999%) was used as carrier gas at a constant flow of 1 ml /min and an injection volume

of 0.5 μ l was employed (split ratio of 10:1) injector temperature 250 °C; ion-source temperature 280 °C. The oven temperature was programmed from 110 °C (isothermal for 2 min), with an increase of 10 °C/min, to 200°C, then 5°C/min to 280°C, ending with a 9min isothermal at 280°C. Mass spectra were taken at 70eV; a scan interval of 0.5 seconds and fragments from 40 to 450 Da. Total GC running time is 30min.

Identification of Components

Interpretation on mass spectrum GC-MS was conducted using the database of National Institute Standard and Technology (NIST) having more than 62,000 patterns. The spectrum of the unknown component was compared with the spectrum of the known components stored in the NIST library. The name, molecular weight and structure of the components of the test materials are ascertained.

RESULTS AND DISCUSSION:-

Ten compounds were identified in *Tylophora indica* by GC-MS analysis. The active principles with their retention time (RT), molecular formula and molecular weight (MW) are presented in Table 1 and Fig 1. The names of compounds are *n*-Hexadecanoic acid; Nonadecanoic acid; Ethyl tridecanoate; Phytol; Oleic Acid; 9,12-Octadecadien-1-ol; Ethyl tridecanoate; 2,9-Dimethyldecane; 6,11-Dimethyl-2,6,10-dodecatrien-1-ol; Pentacosane.

Figure 1. Chromatogram of *Tylophora indica* by GC-MS.

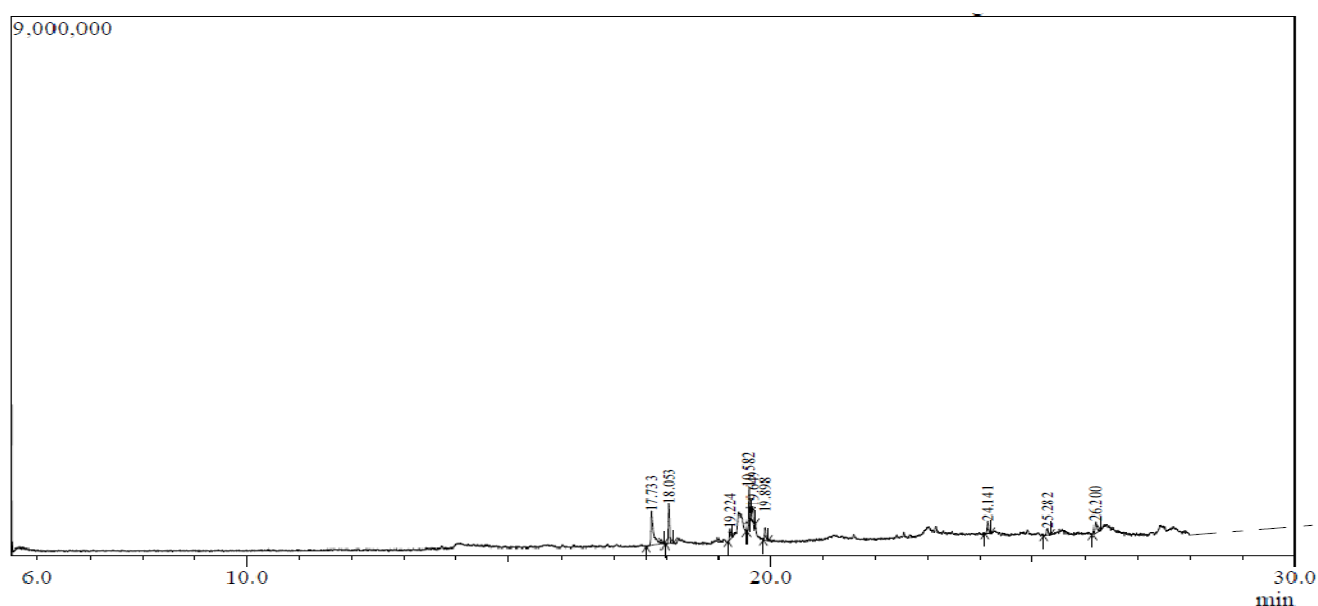


Table 1- Components identified in *Tylophora indica* plant extract.

| Sr. No. | Retention time | Name of compound | Molecular formula | Molecular weight |
|---------|----------------|---------------------------------------|--|------------------|
| 1. | 17.73 | n-Hexadecanoic acid | C ₁₆ H ₃₂ O ₂ | 256 |
| 2. | 18.05 | Nonadecanoic acid, ethyl ester | C ₂₁ H ₄₂ O ₂ | 326 |
| 3. | 18.05 | Ethyl tridecanoate | C ₁₅ H ₃₀ O ₂ | 242 |
| 4. | 19.22 | Phytol | C ₂₀ H ₄₀ O | 296 |
| 5. | 19.58 | 9,12-Octadecadien-1-ol | C ₁₈ H ₃₄ O | 266 |
| 6. | 19.65 | Oleic Acid | C ₁₈ H ₃₄ O ₂ | 282 |
| 7. | 19.90 | Ethyl tridecanoate | C ₁₅ H ₃₀ O ₂ | 242 |
| 8. | 24.14 | 2,9-Dimethyldecane | C ₁₂ H ₂₆ | 170 |
| 9. | 25.28 | 6,11-Dimethyl-2,6,10-dodecatrien-1-ol | C ₁₄ H ₂₄ O | 208 |
| 10. | 26.20 | Pentacosane | C ₂₅ H ₅₂ | 352 |

REFERENCES

- Anonymous, The wealth of India., NISCAIR, CSIR, New Delhi, 1978:397-398.
- Wealth of India, NISCOM, CSIR publications., Vol-(VI), 1969:397- 398.
- K.R. Kirtikar & B.D. Basu., Indian medicinal plants, 2nd Ed. Periodic expert book agency., 1991, 1-5.
- A.K. Gupta., Quality standards of Indian medicinal plants, 2003, 1:219-221.
- T.R. Govindhari, N. Vishwanathan, J. Radhakrishnan., J Ind.ChemSoc., 1975, C: 1-5.
- I.C. Chopra, R.N. Chopra, S.L. Nayar., Glossary of Indian medicinal plants, CSIR, New Delhi, 1986: 5-7.
- X Haung, S Gao, FanL, YuS, X Liang., Planta medica., 2004, 70: 440-441.
- T. Ganguly, L. Badheka, K.B. Sainis., Phytomedicine., 2001, 8(6): 429-431.
- T. Ganugly, K.B. Sainis., Phytomedicine., 2001, 8: 346-348.
- C. Gopalkrishan, D. Shankarnaryanan, S.K. Nazimudeen, L. Kameshwaran., Indian J med Res., 1980, 71: 937-940.
