



P-ISSN: 2349-8528
 E-ISSN: 2321-4902
 IJCS 2017; 5(2): 517-518
 © 2017 JEZS
 Received: 14-01-2017
 Accepted: 15-02-2017

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GC-MS study of methanolic extract of leaves of *Catharanthus roseus*

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Abstract

In this study the bioactive compounds of *Catharanthus roseus* leaves were used to evaluate Gas chromatography and mass spectrum (GC-MS) method. The crude extract were collected and dried at room temperature, 30 °C after which yield was weighed and then performed for GC-MS analysis. Major components are identified as Mono-inositol, Hexadecanoic acid, methyl ester, Hexadecanoic acid, 9-octadecanoic acid(Z)-methyl ester, Heptadecene-(8)-Carbonic acid-(1), Octanoic acid, Eicosanoic acid, methyl ester, Icosanoic acid, 1,2- Benzenedicarboxylic acid, Squalene, Desmethoxy-vindoline respectively.

Keywords: *Catharanthus roseus*, Bioactive compounds, GC-MS, Octadecanoic acid, Desmethoxy – vindoline

1. Introduction

Catharanthus roseus is an important medicinal plants of apocynaceae family which contain variety of alkaloids and chemotherapeutic agents to treat various diseases like breast cancer, melanomas & lung cancer [1]. According to World Health Organization (WHO) approximately 80% of the World 's population the herbal medicine. The herbal drugs are easy to intake, safe and reliable for human beings [2-3].

The present study showed the presence of biologically active constituents in *Catharanthus roseus*. The phytochemical activity of *Catharanthus roseus* was evaluated by various authors (Bauer, 1996). This GC-MS Study of methanolic extract showed the presence of active constituents of biological importance. This GC-MS study of methanolic extract showed the presence of active constituents of biological importance.

2. Material and Methods:

2.1 Plant material

Catharanthus roseus was collected from the nearby garden of residence, Indore. The plant was identified by Dr. Sudeep Ray Professor of Department of Botany, P.M.B Gujarati Science College, Indore.

2.2 Extraction of plant material

Plant materials (leaves) were thoroughly washed and shade at room temperature. The Dried material were allowed to ground into fine powder & packed with no.1 Whatmann filter paper. Extraction of plant material was done using soxhlet apparatus running with methanol as a solvent. The extraction was carried up to 48 hrs & solvent were removed by rotary evaporater. The crude extract was subjected for GC-MS analysis.

The technique Gas Chromatography and mass spectrum (GC-MS) have been applied to identify the various phytochemical constituents present in plant extracts [4-5].

2.3 Gas chromatography and mass spectrum analysis

Gas chromatography (GC) analysis was carried out at Advanced Instrumentation Research Facility (JNU) New Delhi. This technique is best for identification of various phytochemicals of plant. The equipment was GC-MS QP-2010 ultra. The carrier gas used in GC-MS programme was helium 1 ml/minute (split ratio= 10:0), The initial oven temperature program is 70 °C and final temperature is 280 °C, hold time 23 min, Ion Source temperature is 230 °C and interface temperature is 270 °C, solvent cut time 4.50 min, Detector Gain Mode: Relative.

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to the tuning result, Detector Gain +0.00 Kv, threshold 1000, start time 10 min, end time 45.0 min, Event time 0.20 sec, Scan speed 3333, start m/z 40.00 & end m/z 650.00.

3. Result

The GC-MS analysis of *Catharanthus roseus* showed the presence of various phytochemical compounds. The identification of phytochemical compounds was confirmed by peak area, retention time and peak area in percentage are presented in table 1. In leaves, major compounds are Hexadecanoic acid, Octadecanoic acid, 1, 2-Benzenedicarboxylic acid, tetracontane. Further studies are needed to search potential bioactive compounds present in *Catharanthus roseus*.

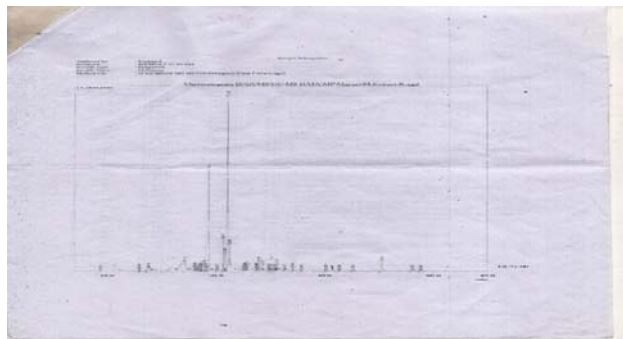


Fig 1: GC-MS Spectra of methanolic extract of *Catharanthus roseus* (leaves)

Table 1: Peak report of methanolic extract of *Catharanthus roseus* plant (leaves).

Peaks	Retention time	Area	Compound Name
1	17.166	15860757	Mono inositol
2	18.964	654001	Hexadecanoic acid, methyl ester
3	19.391	27403641	Hexadecanoic acid
4	20.687	5434327	9-Octadecanoic acid(z),methyl ester
5	21.145	78795594	Heptadecen(8)-carbonic acid
6	21.269	2138175	Octadecanoic acid
7	22.566	135508	Eicosanoic acid, methyl ester
8	22.839	312387	Icosanoic acid
9	24.295	532716	1,2- Benzenedicarboxylic acid
10	27.092	580265	Squalene
11	30.160	298612	Desmethoxyvindoline
12	31.391	348914	Tetracontane

4. Discussion

The leaves of *Catharanthus roseus* were analyzed by GC-MS Technique. The major identified compounds are Hexadecanoic acid, 9-octadecanoic acid, 1, 2-Benzenedicarboxylic acid, tetracontane were used for antimicrobial activity, antidiabetic, antioxidant and anticancer activity [6].

5. Conclusion

The methanolic extract of leaves of *Catharanthus roseus* possess various potent bioactive compounds. The plant extract was analyzed by GC-MS Technique and the obtained spectra were identified for phytochemicals by using standard mass spectral database of NIST library.

6. Acknowledgement

All the authors are greatly thankful to the Director and Professor of Advanced Instrumentation & Research Facility (JNU) New Delhi for GC-MS analysis of study plant and also heartily thanks to Dr. Dhananjay Dwivedi Professor Department of Chemistry P.M.B Gujarati Science College, Indore for valuable guidance and supervision of this work. We are equally thankful to Principal of Our College Professor. R.B Patel for kind Cooperation and support.

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