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EXTRACTION, ISOLATION AND IDENTFICATION OF PHARMACEUTICALLY ACTIVE COMPOUND TETRAPENTACONTANE FROM N- HEXANE EXTRACT OF JASMINUM GRANDIFLORUM L. STEM THROUGH GC-MS

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Abstract

Jasminum grandiflorum L. commonly known as Chameli in hindi is an important medicinal plant of family Oleaceae. It is used as source of drug since ancient period and mentioned in Ayurveda and Unani system of medicines. Herbal medicines have gained importance in recent years because of their efficacy and cost effectiveness. A wide range of medicinal plant parts possessing varied medicinal properties are used for extraction of raw drugs and have been effectively proven for their utilization as source for antimicrobial compounds. The present study focus on effective phytochemicals isolated from n- Hexane extract of *Jasminum grandiflorum* stem through Gas chromatography Mass spectroscopy (GCMS) analysis and showed 44 peaks in which twenty six new compounds have been identified. Some of these identified compounds are reported to possess significant medicinal applications. The highest percentage of peak area occupied by Tetrapentacontane (10.85%) with 29.772 RT. Tetrapentacontane showed diverse pharmacological activities which includes dermatological disorders, healing wounds, ulcers, burns, scars, baldness or alopecia, formulations of hair growth agents and hair conditioners. The results obtained in the present study suggest that the n- Hexane extract of *Jasminum grandiflorum* L. revealed a significant scope to develop novel broad spectrum drugs of herbal formulation.

Key words: *Jasminum grandiflorum* L., GC-MS analysis, Pharmacological activities

Introduction

Traditional herbal medicines are employed as crude drugs throughout the world within their own designed medical systems for e.g. in Asia, China follows Traditional Chinese medicine (TCM), Korea follows Korean Chinese medicine, Japan follows Japanese Chinese medicine also known as Kampo, Indonesia follows Jamu and India follows Ayurveda. In Europe, this system is followed as Phytotherapy and Homeopathy. In America, these systems are named as alternative medicinal systems where they combine with different herbal therapies to cure some serious ailments. Integrative medicine (Western medicine) has come in existance due to combination of Traditional medicines with Modern medicine (Fetter and Schmidt, 2000; Piggott, and Karuso, 2004; Clardy and Walsh, 2004; Koehn and Carter, 2005; Lee et al., 2001). Western medicine is a very popular form of medicine in the present time, but simultaneously, this system has also created problems in the form of some side-effects like carcinogenicity caused by the synthetic drugs. So, Phytotherapy is considered as the best alternative tool to alleviate the side effects of synthetic drugs (Sanchez-Lamar et al., 2009). The plant based medicines which are used to combat various diseases are considered under

Nehru University, New Delhi, India. Gas-Chromatography Mass Specrometry was performed using Shimadzu GCMS-QP-2010 plus system. The column used for experiment purpose was RTx-5 MS column- (30 m X 0.25 mm id X 0.25 film thickness).

Analytical conditions

Plunger speed (suction) was high, viscosity comp. time was 0.2 sec. Plunger speed (injection) and syringe insertion speed was also high, injection mode was normal and pumping times as well as inj. port dwell time 5 & 0.0 sec respectively. GC-2010 column oven temperature was 80°C, injection temp. was 250°C, injection mode splitless, sampling time was 1 min and flow control mode was linear velocity.

Identification of components

Identification as well as the proportionate percentage of the component was done by comparing its average peak area to the total areas. The identification of compounds was performed by comparing their mass spectra with data from NIST08 (National Institute of Standards and Technology, US and WILEY 8) libraries.

Spectrum of unknown compound was compared with the spectrum of known compounds stored in data libraries and their molecular formula, molecular weight and the number of hits was used to identify the name of components from data library.

Results and Discussion

The more precise information in qualitative analysis can be obtained by gas-chromatography coupled with mass spectrometry (GC-MS). In present study, n-Hexane extract of Jasminum grandiflorum stem showed 44 peaks in which 26 components identified. The highest percentage of peak area occupied by Tetrapentacontane (40.85%) with 29.772 RT. Tetrapentaconate (C54H110) is a saturated hydrocarbon having 758 dalton molecular weight. It showed diverse pharmacological activities which includes dermatological disorders, treating wounds, ulcers, burns, scars, baldness or alopecia, formulations of hair growth agents and hair conditioners.

The present study, reveals the presence of Tetrapentaconate in the n-hexane extract of *Jasminum grandiflorum L.* which may be a very important medicinal compound need to be explored more for future purpose. The mass spectrum of Tetrapantaconate and GC-MS chromatogram is mentioned as follows showing identification and separation of the compound in circle.

Mass spectrum of components identified through GC-MS

Tetrapentacontane

GC-MS chromatogram of n-Hexane stem extract of *Jasminum grandiflorum L.*