Current World Environment Vol. **8**(1), 151-152 (2013)

Phytochemical Analysis of Hot Petroleum Ether Extracts of *Piper nigrum*

ADITI GUPTA*, MONIKA GUPTA and SUDHAKAR GUPTA

Department of Chemistry, Lovely Professional University, Phagwara, Punjab - 144 806, India.

DOI : http://dx.doi.org/10.12944/CWE.8.1.18

(Received: March 07, 2013; Accepted: March 20, 2013)

ABSTRACT

The genus Piper belongs to family piperaceae which has over 700 species distributed in both hemispheres. The piperaceae family is a source of many biologically active photochemical with tremendous potential for medicinal uses. A wide range of secondary metabolites mainly alkaloids, amides and terpenes are reported from the various species of piper which are of great economical and medicinal importance. This paper reports the isolation of various sesqueterpenes such as δ–elemene, δ–cadinene, α–copane, caryophyllene, α–caryophyllene, β–bisabolene, and methyl benzene from the oil of the hot petroleum ether extract of *Piper nigrum* seeds. These phytochemicals are analysed by GC-MS spectral analysis.

Key words: *Piper nigrum,* dried fruits, volatile oil, GC-MS.

INTRODUCTION

Piper nigrum, belong to family piperaceae is a monoecious, perennial climbing herb, native of Southern India and Srilanka, cultivated in tropical regions[1]. It is found in vast altitudinal diversity and shows great adaptability to a wide range of climatic and soil conditions which leads to interspecies diversity[2]. Various pharmacological activitiessuch as antimicrobial[3], analgesic, antipyretic, anti-inflammatory, anticonvulsant, CNS depressant[4], antimutagenic[5], antioxidant and radical scavanging[6-7], antiinsecticidal[8], synergist[9], allelopathic[10] and antirheumatism[1] have been reported. It is found to be helpful in reducing pain, chills, flu, colds, feverand muscular aches[1]. The dried fruits act as a source of medicine for aphrodisiac, carminative, antiseptic, diuretic, galactagogic and emmenagogic[12]. The aromatic fruits are used as spices and unripe fruit is a source of black pepper[11]. It has many physiological activities and therefore is of high commercial, economic and medicinal importance[13]. During our research for novel bioactive natural products, the seeds of the plant are soxhalated with various organic solvents. All the extracts were showing the potential for further treatment. The petroleum ether extract after keeping untouched for twenty days, separated into thick lower solid portion and upper oily fraction. The oily fraction obtained from the petroleum ether extract on GC-MS analysis showed the presence of seven different components.

MATERIALS AND METHODS

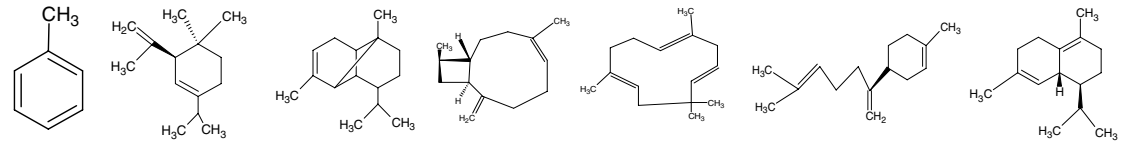
Seeds of *Piper nigrum* were purchased from the specific seed shop at Jammu district and identified by Dr. Gurdev Singh of Botany department at Lovely Professional University. Dried and crushed seeds (1 Kg) of *Piper nigrum*were soxhalated in ethanol for around 72 hours. The ethanol extract was than distilled with light petroleum ether, toluene, chloroform and ethyl acetate according to their polarity gradients. The oily fraction of petroleum ether extract was subjected to GC-MS for identification of different components present in it.

Analysis of oily fraction

The GC-MS spectra of oily fraction of hot petroleum ether extracts of *Piper nigrum* recorded from Varian 4000 GC-MS/MS unveiled the presence of following components :

Table 1: Different components from hot petroleum ether extract of *Piper nigrum*

Compound number	RT (min)	Peak name	Area	Amount/Rf
1	5.949	Methyl benzene	833309	84.671
2	34.467	δ – elemene	2804	0.285
3	36.378	α – copane	18083	1.837
4	38.378	Caryophyllene	91584	9.306
5	39.904	α-caryophyllene	9096	0.924
6	41.829	β–bisabolene	19815	2.013
7	42.356	δ –cadinene	9482	0.963



1 2 3 4 5 6 7

Fig. 1: Various components from hot Petroleum ether extracts of *Piper nigrum*

Among these chemical constituents methyl benzene is present as major component and ä – elemene as minor component, structures are given below

ACKNOWLEDGEMENTS

The author is thankful to IIIM Jammu for GC-MS and Lovely Professional University for its lab facilities.

REFERENCES

1. Reshmi S.K., SathyaE. and DeviP.S., *J. of Medicinal Plants Research.*,**4**(15): 1535-1546 (2010).
2. Parthasarathy U., Asish G.R., Zachariah T.J., SajiK.V., George J.K., Jayarajan K.,Mathew P.A. and Parthasarathy V.A., Current Science., **94**(12): 1632-1635 (2008).
3. Dorman H.J.D. and Deans S.G., *J.of Applied Microbiology*, **88**(2): 308-316 (2000).
4. MadhaviB.B.,NathA.R.,BanjiD., MadhuM.N., RamalingamR. and Swetha D., *Int. J. of Pharmacy and Pharmaceutical Sciences.,* **1**(2): 156-161 (2009).
5. El H.R., Idaomar M., Alonso-Morago A., Munoz S.A., *Food Chem.Toxicol.*, **41**(1): 41-47 (2003).
6. Gulcin I., *Int . J . Food Sci. Nutr.,* **56**(7): 491-499 (2005).
7. L.R. Giri, S.V. Kolhe and D.T. Tayade., *Orient J. Chem.*, **28**(1): 603-606 (2012).
8. CFSu. Helen. and Horvat R., *J. Agric. Food Chem.*, **29**(1): 115-118 (1981).
9. Scott I.M., Jensen H.R., Philogene B.J.R. andArnason J.T., *Phytochemistry Reviews* **7**(1): 65-75 (2008).
10. Siddiqui Z.S., *Acta Physiologiae Plantarum.,* **29**(4): 303-308, 2007.
11. Francois T., Michael J.D.P., Lambert S.M., Ndefor F., Vyry W.N.A., Henri A.Z.P. and Chantal M., African J. of Biotechnology., 8(3), 424-431, 2009.
12. Gadir W.S.A., Mohamed F. and Bakhiet A.O., *Research J. of Microbiology.,* **2**(1): 824-830, (2007).
13. Siddiqui B.S., Gulzar T., Begum S., Afshan F. and Sattar F.A., *Natural Product Research.,* **19**(2): 143-150 (2005).