

## RESEARCH ARTICLE

## Studies on qualitative phytochemical analysis of selected species of *Piper*

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Manuscript details:	ABSTRACT
<p>Date of publication 18.10.2014</p> <p>Available online on <a href="http://www.ijlsci.in">http://www.ijlsci.in</a></p> <p>ISSN: 2320-964X (Online) ISSN: 2320-7817 (Print)</p> <p><b>Editor: Dr. Arvind Chavhan</b></p> <p><b>Cite this article as:</b> Hutke Varsha and Suple Sonali (2014) Studies on qualitative phytochemical analysis of selected species of <i>Piper</i>, <i>Int. J. of Life Sciences</i>, Special Issue A2: 156-158.</p> <p><b>Copyright:</b> © Author(s), This is an open access article under the terms of the Creative Commons Attribution-Non-Commercial - No Derives License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.</p>	<p><i>Piper nigrum</i> L. (fruits), <i>P. longum</i> L. (fruits) and <i>P. betle</i> L. (leaves) were screened for secondary metabolites and reported different medicinal compounds as alkaloids, glycoside, phytosterols, saponins, phenolic compounds, tannins and proteins. Dry powder of plant samples were extracted with petroleum ether, acetone, ethanol and distilled water. The solvent free extract was then subjected to qualitative tests for the identification of various plant constituent. f The results revealed that among the four extracts, ethanol and water extracts exhibited high test for various chemical compounds whereas petroleum ether and acetone extracts had moderate test or in sometime it was negative.</p> <p><b>Keywords:</b> <i>Piper nigrum</i>, <i>P. longum</i> and <i>P. betle</i> medicinal plant, solvent extract.</p> <p><b>INTRODUCTION</b></p> <p>According to World Health Organization (WHO) variety of drugs are obtained from medicinal plants. In developed countries about 80% of individuals depends on compounds derived from medicinal plant. In this regards properties, safety and efficiency of them should be investigated (Dawoud and El-Morsy, 2012). Plants are the basic source of knowledge of modern medicine. The basic molecular and active structures for synthetic fields are provided by rich natural sources. This made worldwide interest in medicinal plants reflects recognition of the validity of many traditional claims regarding the value of natural product in health care. Most of the drugs derived from plants were developed because of their use in traditional medicine.</p> <p>As phytochemicals play an important role in the biological activities and hence the rationale of the present study was to carry out preliminary phytochemical screening of three species of <i>Piper</i> i.e. <i>Piper betle</i>, <i>Piper longum</i> and <i>Piper nigrum</i>. The genus <i>Piper</i> belonging to the family Piperaceae contain more than 700 species they grow in tropical and subtropical rain forest. Due to multidimensional effect on various system of body, it has been described as antipyretic, diuretic, aphrodisiac, immune-stimulant, antioxidant hepatoprotective, digestive, rubefacient counter irritant, antiseptic, antispasmodic.</p> <p><b>MATERIAL AND METHODS</b></p> <p><b>Extraction:</b> Plant material i.e. leaves of <i>Piper betel</i>, fruits of <i>Piper nigrum</i> and <i>Piper longum</i> was purchased from local market of Amravati. Leaves of <i>Piper</i></p>

*betel*, fruits of *P. nigrum* and *P. longum* were first dried under shed and then powdered. The shed dried powder materials were extracted in Soxhlets assembly with petroleum ether, acetone, ethanol and distilled water. The extracts obtained in each solvent were concentrated, distilling off the solvent and evaporate to dryness and weighed. Its percentage was calculated in terms of dry weight of plant material. The colour of the extracts was noted in each sample.

**Chemical Test:** The solvent free extract obtained as above was then subjected to qualitative test for the identification of various plant constituent from the sample by using standard procedures (Harborne, 1973; Trease and Evans, 1983;)

## RESULTS AND DISCUSSION

Preliminary phytochemical screening has done of three *Piper* species and results are incorporated in Table-I and Table-II. Result in table I showed the texture and color of extracts in different solvents. Results of the phytochemical screening were presented in Table II.

Preliminary phytochemical screening of leaves of *Piper betel* revealed the presence of different types of secondary metabolites such as alkaloids, sugar, phytosterols, saponins, phenolic compounds and tannins, gum mucilage, flavonoids and proteins while glycosides, Fixed Oil & Fats were absent.

**Table 1: Nature and colour of extracts of *Piper* species**

Plants	Texture				Colour			
	P. Ether	Acetone	Ethanol	Water	P.E.	Acetone	Ethanol	Water
<i>Piper betel</i>	Sticky	Sticky	Sticky	Crystal	Brown	Dark Brown	Dark green	Brown
<i>Piper longum</i>	Sticky	Sticky	Sticky	Crystal	Brown	Dark Brown	Dark brown	Greenish
<i>Piper nigrum</i>	Sticky	Sticky	Sticky	Crystal	Brown	Dark Brown	Yellow brown	Brown

**Table 2: Phytochemical Test of *Piper* species**

Plant	<i>Piper betel</i>				<i>Piper longum</i>				<i>Piper nigrum</i>			
	P.E	AC	Et	D/W	P.E	Ace	Et.	D/W	P.E	Ace	Et	D/W
<b>Alkaloids</b>												
Mayer's	+	+	++	+	++	+	+	++	-	+	+	+
Wagner's	++	+++	++	++	+	+	++	++	+	+	++	+
Hager's	++	+++	++	++	+++	++	++	+	+	++	++	+
<b>Sugar</b>												
Fehling test	+	-	-	-	+	+	+	-	-	+	-	-
Benedict test	+	+	-	+	+	+	+	-	+	+	-	+
<b>Saponin</b>	++	++	+	+	++	+	++	+	++	++	++	+
<b>Proteins</b>												
Biuret test	+	+	+	+	-	-	-	-	+	+	+	+
<b>Glycosides</b>	-	-	-	-	-	-	-	-	+	+	++	+
<b>Phenolic Compounds &amp; Tannins</b>												
Ferric chloride	-	-	-	-	+	-	-	-	+	+	+	+
Gelatin test	++	-	-	-	+	+	-	-	+	+	+	+
Lead acetate	++	++	+	++	+	+	++	++	++	++	++	++
<b>Fixed Oil &amp; Fats</b>	-	-	-	-	-	-	-	-	-	-	-	-
<b>Gum &amp; Mucilage</b>	+	-	+	+	-	-	-	-	+	+	-	-
<b>Flavanoids</b>	-	-	+	+	-	-	-	-	+	+	-	-
<b>Phytosterols</b>												
Lieberman&Burchard's	+	+	+	+	-	-	-	-	+	++	++	+

ACE- Acetone; Et- Ethanol; D/W- Distilled water

In earlier study different medicinal compounds such as alkaloid, glycoside, steroid, reducing sugar and tannins were present and gums and flavonoids were absent (Gupta *et al.*, 2010; Periyanyagum *et al.*, 2012).

*Piper longum* L. exhibited the positive test for alkaloids, sugar, phytosterols, saponins, phenolic compounds and tannins where as it was negative for proteins, glycosides, Fixed Oil & Fats, flavonoids and phytosterols. Alkaloids was found in *P.longum* by Swapna *et al.*, (2012); Ujjaliya *et al.*, (2012) and Sharma *et al.*, (2012). The test for alkaloids, tannins, phenols, essential oil, proteins and terpenoids is positive (Trivedi *et al.*, 2011; Singh, 2012).

Phytochemical study showed that alkaloids, sugar, glycosides, phytosterols, saponins, phenolic compounds and tannins, gum mucilage, flavonoids and proteins were present and Fixed Oil & Fats were absent in extracts of *Piper nigrum*. Trivedi *et al.*, (2011); Shiney and Ganesh, (2012); Nahak and Sahu, (2011) reported the presence of alkaloids, glycosides, tannins, phenols, essential oil and proteins in *Piper nigrum*.

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