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PHYTOCHEMICAL INVESTIGATION OF FOUR LATEX CONTAINING PLANTS OF BHIWAPUR REGION OF NAGPUR DISTRICT

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ABSTRACT:
Latex is a milky sap present in the plants. Nearly 6% of all vascular plant species are recognized as constructing laticifers. The role latex is not known with certainty. The latex is widely used in cosmetics, pharmaceuticals and food industry as in paper, textile and petroleum industry. The present paper deals with phytochemical analysis of latex obtained from Ficus racemosa L., Ficus hispida L.f., Ipomoea cornea Jacq. and Manilkara zapota (L.) P. Van Royen. Phytochemical analysis carried out for the presence of secondary metabolites, namely alkaloids, flavonoids, terpenoids, cynogenic glycosides, phenolics and saponins.

Keywords: - Laticiferous plants, latex, secondary metabolites, phytochemical analysis.

INTRODUCTION :

India has an ancient heritage of traditional medicine. Indian traditional medicine is based on various system including Ayurveda, Siddha, Unani. The evaluation of drugs is based on phytochemical and pharmacological approaches which lead to the discovery of drug is reffered to as “natural product screening” (Foye et al., 2008). Laticifers are found in 12,500 species belonging to 900 genera from about 40 families, most of which are dicots are known to exudes latex (Esau, 1965; Lewinsohn, 1991; Kekwick, 2001; Evert, 2006). Varying amount of latex are found in species of many plant families including Apocynaceae, Asclepiadaceae, Euphorbiaceae, Moraceae, Papaveraceae, Sapotaceae, Convolvulaceae.

Plant latex is a good source of various secondary metabolites which shows growth inhibitory effects in bacteria, fungi, viruses, tumors and cancer cell line. It also shows cytotoxic and anticancer activity and is widely used as laxative, anti-arthritic and as conditioning agents for cosmetic purpose. India has a large tribal population, which is regularly using plant latex for the treatment of various diseases. Before its clinical, medicinal and industrial uses its phyochemical analysis is highly needful (Upadhyay, 2011). Present study is regarding the phytochemical analysis of four laticiferous plants.

OBJECTIVES:

1. Collection and identification of laticiferous plants.
2. To carry out phytochemical analysis of latex.

MATERIAL AND METHODS:

Collection of plant material:

All laticiferous plants were collected from Bhiwapur region.

Collection of Latex:

Latex samples were early in the morning. Latex sample were collected by nipping the leaves near the stem or by incision of the trunk and branches of the plant and collect the latex in a clean glass tube separately and kept in refrigerator till the experiment start.

Extraction method:

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Latex was homogenized in a homogenizer under chilled condition and filter through four folds of muslein cloth. Filtrate latex sample were used for phytochemical analysis.

Phytochemical analysis:

All latex samples were analyzed qualitatively by using standard protocols of Kokate(1994), Harbone (1973), Marinova et al (2005).

Test for phenolic compounds:

A portion of latex was mixed with few drops of diluted Folin Ciocalteu reagent and aqueous sodium carbonate solution. The mixture was allowed to stand for 10 min and formation of gray color indicates the presence of phenolic groups.

Test for alkaloids:

A portion of latex was treated with few drops of aqueous solution of hydrochloric acid and 0.5ml Mayer's reagent. Formation of white precipitate indicate the presence of alkaloid.

Test for cynogenic glycosides:

250µl of the latex was added with equal volume of cold concentrated sulphuric acid. Formation of intense colour indicates the presence of glycosides.

Test for flavonoids:

A portion of latex was dissolved in 10% HCL and adds Zinc powder. Appearance of effervescence with pink colour indicates the presence of flavonoid.

Test for terpenoids:

When a chloroform soluble portion of latex was treated with an equal volume of concentrated H_2SO_4, red colour formation indicates presence of terpenoids.

Test for saponins:

0.5 ml of latex was dissolved in 5 ml of distilled water in a test tube. The solution was shaken vigorously and observed for a stable persistent froth with honeycomb structure indicates the presence of saponins.

RESULTS:

Qualitative Phytochemical Analysis

Sr. No.	Botanical Name of plant	Vernacular Name	Alk-aloids	Cyan-ogenic Glyco-sides	Pheno-lics	Flavo-noids	Terpe-noids	Saponins
1	*Carissa carandus* L. (Apocynaceae)	Karvand	-	+	+	+	+	+
2	*Ficus hispida* L. (Moraceae)	Bhui-Umber	+	+	+	-	-	-
3	*Ipomoea Cornea* Jacq. (Convolvulaceae)	Beshram	-	-	-	+	-	-
4	*Manilkara zapota* (L).P. Van Royen (Sapotaceae)	Chiku	-	+	+	-	+	-
5	*Euphorbia milli* L Deshmoul. (Euphorbiaceae)	Christ Plant	-	-	+	-	-	-
6	*Tabernaemontana divaricata* (L)R.Br. (Apocyanaceae)	Swastik	-	-	+	+	-	-
7	*Pedilanthus tithymaloides*(L.) Poit (Euphorbiaceae)	Vilayti sher	+	+	+	-	-	+
8	*Ficus racemosa* L (Moraceae)	Umbar	-	-	+	-	-	-

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DISCUSSION AND CONCLUSION:

Table 1 shows the details of identified laticiferous plants with botanical name, vernacular name, family, presence and absence of chemical constituents.

The fruit latex of *Carissa carandus* L. showed the presence of glycosides, phenolics, terpenoids, saponins, flavonoids. *Ipomoea cornea* Jacq. showed the presence of only flavonoids. *Ficus hispida* L. showed the presence of alkaloids, glycosides and phenolics. *Manilkara zapota* (L.) P. Van Royen showed the presence of glycosides, phenolics and terpenoids. Saponin was present only in *Carisa carandus*. Alkaloid was present only in *Ficus hispida*. The presence of secondary metabolites varies from species to species. The present work would useful to researchers and pharmaceutical industries in the discovery of new drug.

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