

PHYTOCHEMICAL ANALYSIS OF SOME INDIGENOUS WOUND HEALING PLANTS

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Received: 06/02/2014; Revised: 27/02/2014; Accepted: 03/03/2014

ABSTRACT

Present investigation has been evaluated to find out active constituents of some indigenous plants such as *Calotropis procera*, *Ricinus communis* and *Mentha piperita* potent against ectoparasite. The results revealed that the % yield of *Calotropis procera*, *Ricinus communis* and *Mentha piperita* was 10.23, 22.79, 14.46 respectively and physical characteristic was sticky solid, dark greenish, agreeable in *Calotropis procera*, semi-solid, dark greenish, agreeable in *Ricinus communis* however, sticky semi solid, dark greenish, characteristic organic in *Mentha piperita*. The plants having alkaloids, saponins, flavonoids, glycosides, carbohydrates, fixed oils and fats, tannins and phenolic compounds as main active constituents in all the three plants which is very useful for preparing drug development against wound healing.

KEY WORDS: alkaloids, glycosides, % yields, saponins, flavonoids, *Calotropis procera*, *Ricinus communis*, *Mentha piperita*

Cite this article:

Jagan Mohan Reddy P, Ismail Shareef M, Gopinath S M, Dayananda K S, Ajay Mandal, Purushotham K M (2014), PHYTOCHEMICAL ANALYSIS OF SOME INDIGENOUS WOUND HEALING PLANTS, *Global J Res. Med. Plants & Indigen. Med.*, Volume 3(3): 101–104

INTRODUCTION

Since time immemorial plants have been used for the treatment of various ailments. Even today several important drug used in the modern system of medicine are obtained from plants. The use of medicinal plants has figured in several ancient manuscripts like the *Rigveda*, the Bible, the Iliad, the Odyssey and the history of Herodotus. As far back as 4000 B.C. the ancient Chinese were using drug plants. The earliest reference to the use of medicinal plants as a cure for disease is found in the manuscript of Eber Papyrus written in 1600 B.C. (Abu Hanifah Y., 1990) with the advancement of our knowledge; such superstitions were gradually lost. In India, earliest reference to medicinal plants appears in the *Rigveda*, written between 3500 and 1600 B.C. in *Artharvanaveda* too, detailed descriptions of several medicinal plants were given. Most of the drug plants are wild and only a few of them have been cultivated (Aldridge K. E., 1994). Studies of medicinal plants based on ancient literature and its investigation in modern light is under process. The medicinal importance of a plant is due to the presence of some substances like alkaloids, glycosides, resins, volatile oils, gums, tannins etc. these active principles usually remain concentrated in the storage organs of the plants, viz., roots, seeds, bark, leaves etc. Considering all these facts, the present investigation is designed to find out phytochemical analysis of some indigenous plants which are potent against wound healing.

MATERIALS AND METHODS

Selection of plants

Three local plants *Ricinus communis*, *Calotropis procera* and *Mentha piperita* were selected on the basis of their medicinal properties against ticks and lice as reported in various literatures. These plants were identified and verified with taxonomical studies as reported by (Aldridge K. E., 1994).

Collection of plant material

The plants were collected from different regions of Bangalore, Karnataka, India.

Preparation of plant extract

Plant material was kept for drying for about 2 weeks, away from direct Sun light below 45° C (shade dried). The dried material was crushed in an electric grinder to coarse powder consistency. About 500 gm of the powder material was uniformly packed into a thimble of a soxhlet extractor. It was exhaustively extracted with methanol for a period of about 48 hrs or 22 cycles or till the solvent in the siphon tube of an extractor becomes colourless. The completion of the extraction was confirmed by taking the solvent from the thimble and evaporated to check the absence of residue. The extract was taken out, filtered and distilled to concentrate to get the syrupy consistency in rotary evaporator. The residue was dried over anhydrous sodium sulphate to remove traces of alcohol. The extracts were preserved in airtight container to avoid loss of volatile principles (Annoni, F *et al.*, 1989).

Physical characteristic of plant

The physical characters of the extract were noted and the percentage yield was calculated on such basis. The extracts were preserved in an airtight container to avoid loss of volatile principles for further studies.

Solubility of plant extract

All the extracts were dissolved in different solvents for checking the solubility of extracts.

Phyto-chemical analysis of plant extract

The extracts were tested for the presence of some active chemical compounds such as alkaloids, flavonoids, glycosides, fixed oils & fats, proteins, tannins and phenolic compounds, carbohydrate, saponins. The analysis was conducted as per universal methods.

RESULTS

The physical characteristics observed in the crude extracts of all the 3 plants are depicted in Table 1.

The percentage yield of various extracts of *Ricinus communis*, *Calotropis procera* and *Mentha piperita* was calculated as 10.23%, 22.79% and 14.46% respectively (Table 2).

The phyto-chemical analysis of methanolic crude extract of *Ricinus communis*, *Calotropis procera* and *Mentha piperita* was found positive for saponins, flavonoids, fixed oils and fats in common. None of the 3 plants reported the presence of Protein & amino acids. Carbohydrates was absent in *Calotropis procera* & Glycosides were absent in *Mentha piperita* whereas Alkaloids, Carbohydrates, tannins & phenolic compound were absent in *Ricinis communis* (Table 3).

Table: 1. Physical characteristics of different crude extract of plants

Plant extracts	Consistency	Colour	Colour
<i>Calotropis procera</i> (Leaves)	Sticky semi solid	Dark white	Agreeable
<i>Ricinus communis</i> (Leaves)	Semi solid	Dark greenish	Agreeable
<i>Mentha piperita</i> (Leaves)	Sticky semi solid	Dark greenish	Characteristics organic

Table: 2. Percentage yield of different plants extract

Plants	Weight of dry powder (gm)	Weight of dry extract (gm)	Yield (%)
<i>Calotropis procera</i> (Leaves)	242.20	24.80	10.23
<i>Ricinus communis</i> (Leaves)	217.60	49.60	22.79
<i>Mentha piperita</i> (Leaves)	300.00	43.40	14.46

Table: 3. Qualitative determinations of active ingredients in crude extract of different Plants

Phyto-chemicals	<i>Calotropis procera</i> (Leaves)	<i>Ricinus communis</i> (Leaves)	<i>Mentha piperita</i> (Leaves)
Alkaloids	+	–	+
Saponins	+	+	+
Flavonoids	+	+	+
Glycosides	+	+	–
Carbohydrate	–	–	+
Fixed oils and fats	+	+	+
Tannins & phenolic Compound	+	–	+
Proteins & amino Acids	–	–	–

DISCUSSION

The search for “natural remedies” for a common disorder such as wounds has drawn attention to herbals. From ancient times, herbals have been routinely used to treat wounds and in many cultures and their use in traditional medicine. Plants are more potent healers because they promote the repair mechanism in the natural way. This study exposed that traditional medicines are still used by tribal peoples & it is established the value of a great number of plants used in tribal medicine especially for wound healing. Seemingly much still unknown information about plants to treat various disease including wounds. So far, very few studies have been carried out on medicinal plants which present the wound healing activity. The aim of the review was to list out

the medicinal plants which is reported already. However, there is a need for scientific validation, standardization and safety evaluation of plants of the traditional medicine before these could be recommended for healing of the wounds.

CONCLUSION

The study demonstrates that the crude methanolic extracts of *Ricinus communis*, *Calotropis procera* and *Mentha piperita* exhibit phyto-chemical principles of therapeutic value and this has provided scientific basis for its folkloric use in the treatment of various infectious conditions and wound healing. The wound healing potential which was confirmed by the *in vivo* experiments further supports the ethno-medicinal uses of the plants.

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Source of Support: NIL

Conflict of Interest: None Declared

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