

Screening of phytochemicals from Panjadeepakani and Karpurathi Chooranam

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Abstract: From the ancient period the herbal drugs were used for treating various diseases in the human history and it has been used increasingly to fight or to prevent various diseases. People use herbal medicines to maintain or improve their health conditions. In this connection two frequently prescribed siddha medicines namely panjadeepakani and karpurathi chooranam of herbal origin were selected and tested for its bioactive phytocomponents by subjecting it to the preliminary phytochemical screening. Adopting the standard literatures, panjadeepakani and karpurathi chooranam were screened for the presence of phytochemicals like alkaloids, saponins, cardiac glycosides, tannins, steroids, etc.,. The presence of the different phytochemicals in both the chooranams has a very promising role in the treatment of various diseases and it is indulged with the antitumour, antioxidant, anti-inflammatory, anti-cancer, anti-viral and analgesic properties. For the past few years, the interest towards the herbal medicine has been increased enormously which motivated many scientists to focus on the research in the plants having the medicinal properties. This type of research work makes the society to believe that treatment is also possible without any significant side effects.

Keywords: Chooranam, panjadeepakani, karpurathi, phytochemicals.

Introduction

Nature has been a source of medicinal agents for thousands of years and an impressive number of modern drugs have been isolated from natural sources and most of which is involved in traditional medicine. The plant based traditional medicine systems continue to play an essential role in health care and have been a valuable source of medication and gradually becoming popular throughout the world. This study scientifically validates the use of plants in traditional medicine and the phytochemical data will be helpful for the standardization of drugs. Medicinal plants are of great importance to the health of individuals and communities. The medicinal value of these plants lies in some chemical substances which produce a definite physiological action on the human body¹. Usually herbal medicines are widely perceived by the public for the reason that it is natural, safe and free from side effects. Plants contain hundreds of constituents and some of them may elicit toxic side effects².

Medicinal plants have been identified and used throughout human history for treatment of various diseases. Plants have the ability to synthesize a wide variety of chemical compounds that are used to perform important biological functions, and to defend against attack from predators such as insects, fungi and herbivorous mammals. For the primary health care about 80% of populations in developing countries are dependent on traditional a medicine which is estimated by World Health Organization. Phytochemicals are naturally occurring compounds in medicinal plants and possess defense mechanism which protects from various diseases. Phytochemicals are primary and secondary compounds. Chlorophyll, proteins and common sugars are included in primary constituents and secondary compounds have terpenoids, alkaloids and phenolic compounds³. Plant synthesizes a wide variety of chemical compounds, which can be sorted by their chemical

class, bio synthetic origin and functional groups into primary & secondary metabolites⁴. India has an ancient heritage of traditional herbal medicine and due to this emerging interest in the world, the traditional medicinal system is being studied and their potentials are being exploited based on different healthcare areas. Traditional medicine has always played and will continue to play a very important role in health care system. Many phytochemicals have antioxidant activity and reduce the risk of many diseases. Plants have played a significant role in maintaining human health and improving the quality of human life for thousands of years, and have served humans well as valuable components of beverages, cosmetics, dyes, and medicines⁵. Many indigenous medicinal plants are used as spices for cooking⁶. Some Asian countries like China and Japan have popularized the use of herbs or traditional medicines in their health care system. In some African countries like Egypt, South Africa, Zimbabwe, indigenous plants have also been used for the production of new drugs. Most of these plants are eaten or used for their rich phytochemical constituents, which provide both preventive and curative properties to consumers against diseases.

The newest thing in nutrition is phytochemicals i.e., substances that produce many beneficial effects associated with a diet that includes lots of fruits, vegetables, beans, and grains. These chemical compounds also known as phytochemicals, which play an important role against various diseases and other environmental factors. In many developing nations health officials and other persons have realized the potencies and efficacies of some of the indigenous plants for the use in herbal medicine. Various disorders like arthritis, nausea, insomnia etc., can be treated with the help of herbs. Different herbs on different systems in the body are scientifically studied and found to be safe and effective. For example garlic, has antibiotic and antiviral properties fights against cold and similarly ginger is used to treat nausea and morning sickness. The various food items in which the active phytochemicals which are present in higher amount are broccoli, berries, carrots, spinach, olives tomatoes, garlic, apricots, onions, soybeans, green tea, apples, cabbage and many more.

Siddha medicine i.e., Chooranam, a mixture of powdered herbs and minerals which helps in body regulation and maintains balance and harmony. They can be taken during meals, while cooking, or put on snacks and salads. It is also called as digestive powder which helps in digestion and also a remedy for stomach pain. Chooranam formulations are similar to powder formulations in allopathic system of medicine. In recent days chooranam is formulated into tablets in order to fix the dose easily. Chooranams enhances various parameters like health complexion, prevents hair loss, and it cures asthma too. In western countries chooranam are widely used in treating chronic conditions, such as depression, anxiety, pain, insomnia, skin or food allergies, and digestive irregularities.

Panjadeepakani chooranam named as "Ideal herbal appetizer". It is official in ayurvedic formulary of India is combination of six herbal compositions such as *Zingiber officinale*, *Piper longum*, *Cuminum cyminum*, etc as shown in table 1 and used for the indigestion, gaseous distension of the digestive system and loss of appetite etc.,. On the other hand karpurathi chooranam named as "Ideal Drug for Respiratory Ailments". It is an polyherb which contains nine herbal compositions such as *Ilicium verum*, *Myristica fragrans*, *Eugenia caryophyllata*, etc., as shown in table 2. The powder form of this siddha chooranam used for cough, cough with expectoration, Bronchial Asthma etc.

Polyherbal Formulation of the Chooranam

Table no 1: Panjadeepakani Chooranam

S.No	Siddha Name	Botanical Name
1.	Chukku	<i>Zingiber officinale</i>
2.	Milagu	<i>Piper nigrum</i>
3.	Thippili	<i>Piper longum</i>
4.	Elam	<i>Elettaria cardamomum</i>
5.	Seeragam	<i>Cuminum cyminum</i>
6.	Sugar	<i>Saccharum officinarum</i>

Table no 2: Karpurathi Chooranam

S.No	Siddha Name	Botanical Name
1.	Karpooram	<i>Cinnamomum camphora</i>
2.	Annacipoo	<i>Ilicium verum</i>
3.	Jathikkai	<i>Myristica fragrans</i>
4.	Jathipaththiri	<i>Myristica fragrans</i>
5.	Kirambu	<i>Eugenia caryophyllata</i>
6.	Milagu	<i>Piper nigrum</i>
7.	Thippili	<i>Piper longum</i>
8.	Chukku	<i>Zingiber officinale</i>
9.	Sugar	<i>Saccharum officinarum</i>

The present study was performed to evaluate the presence of phytochemicals in panjadeepakani chooranam and karpurathi chooranam.

Materials and Methods

Sample Collection

The samples panchadeepakani chooranam and karpurathi chooranam was collected from local siddha market in packed powder form.

Solvent Extract Preparation

10 grams of air dried chooranam powder was extracted with 100ml of organic solvent (methanol) and kept on rotary shaker at 190-220 rpm for 24 hours. The supernatant was collected and solvent was evaporated to make the final volume one - fourth of the original volume and stored at 4^o C in air tight bottles⁷.

Aqueous Extract Preparation

The aqueous extract is prepared by soaking 100grams of chooranam powder in 200 ml of distilled water for 12 hours. The extracts were filtered using Whatmann filter paper (125 mm)⁸.

Phytochemical Screening

The qualitative tests were carried out in both the extract of chooranam using standard procedure described by Harborne (1973) ,Sofowara (1993) and Trease and Evans (1989)^{9,10,11}.

Test for Alkaloids

To 2ml of the chooranam extract, 2 N of HCL was added and the aqueous layer formed was decanted. To that few drops of Mayer's reagent was added. Formation of cream precipitate revealed the presence of alkaloids.

Test for Tannins

About 0.5 grams of the air dried chooranam was boiled in 20 ml of water in a test tube and was then filtered. A few drops of 0.1% ferric chloride was added and observed for brownish green or blue-black colouration

Test for Saponins

2 g of chooranam powder was boiled in 20 ml of distilled water in a water bath and filtered. 10ml of the filtrate was mixed with 5 ml of distilled water and shaken vigorously for a stable persistent froth. The frothing was mixed with 3 drops of olive oil and was shaken vigorously and then observed for the formation of emulsion.

Test for Flavonoids

To 2 ml of extract few drops of alcohol and magnesium was added. Few drops of concentrated hydrochloric acid was added to the solution and boiled. A yellow coloration observed indicated positive result for flavonoids.

Test for Steroids

To 0.5 ml of methanolic extract of the chooranam, 2ml of acetic anhydride and 2 ml sulphuric acid was added. The colour change from violet to blue or green indicates the presence of Steroids.

Test for Cardiac Glycosides

Methanolic extract of the chooranam was reduced to dryness. 50 mg of this was dissolved in 2 ml chloroform and H₂SO₄ was added to form a layer and the colour at the interphase was recorded. Brown ring at interphase indicates the presence of Cardiac glycosides.

Test for Terpenoids

2ml of extract was treated with 1ml of 2, 4-dinitrophenyl hydrazine dissolved in 100ml of 2M Hcl. A yellow-orange colouration showed the presence of terpenoid.

Results and Discussion

Many important drugs used in medicine today are derivatives of plants either directly or indirectly. The most important of these bioactive constituents of plants are saponins, alkaloids, flavonoids, steroids, tannins etc.¹². The present study carried out on the panjadeepakani and karpurathi chooranam revealed the presence of these medicinally active constituents (Fig.1). This proves that the composition present in these polyherbs is very effective in the treatment of various diseases because of the presence of phytochemicals in an enormous amount¹³. The phytochemical characteristics of these two chooranam were investigated and summarized in Table 3. Alkaloids, tannins, saponins, steroids, cardiac glycosides were present in the both samples. Flavonoids absent in karpurathi chooranam and terpenoids were absent in panjadeepakani chooranam. Based on the studies conducted on different polyherbs it is widely accepted that the presence bioactive phytocomponents has an immense medicinal value¹⁴.

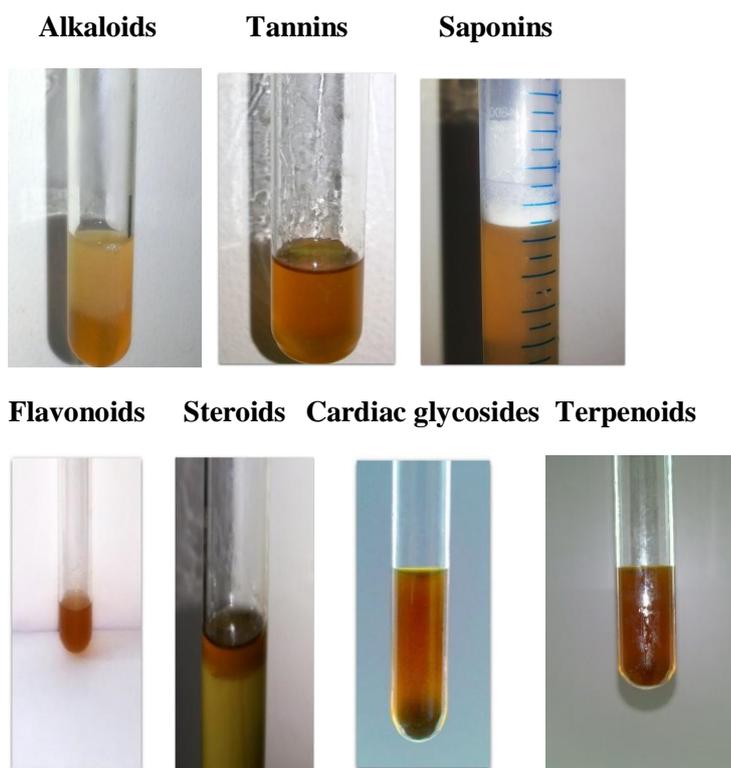


Fig.1. Results Showing Thepresence of Phytochemicals

Table no 3: RESULTS OF PHYTOCHEMICAL SCREENING

S.no	Phytochemicals	Result	
		PC	KC
1.	Alkaloids	+	+
2.	Tannins	+	+
3.	Saponins	+	+
4.	Flavonoids	+	-
5.	Steroids	+	+
6.	Terpenoids	-	+
7.	Cardiac glycosides	+	+

PC: Panjadeepakani chooranam, **KC:** Karpurathi chooranam

+ = Positive, - = Negative

The medicinal values possessed by various phytochemicals increases the efficacy the chooranam like alkaloids can be used for treating Cough and has anti-tumour, analgesic property, Steroids contains anti-inflammatory activity, Cardiac glycosides can be used in the treatment of cardiac diseases, Tannins possess antiviral¹⁵ and antibacterial activity¹⁶ whereas Flavonoids possess anti-oxidant activity, anti cancer activity¹⁷. Most of these phytochemical constituents are potent bioactive compounds found in medicinal plant parts which are precursors for the synthesis of useful drugs¹⁸.

Conclusion

Herbal medicine is an integral part of the developing and as well as underdeveloped countries. Indian traditional medicine serves as an important novel therapeutic agent. Our study proved that the polyherbs has many phytochemical ingredients like alkaloids, saponins, terpenoids, steroids, flavonoids etc., and hence it is medically important which successfully cures various diseases. This study proved that plants are considered as a natural source of inspiration for novel drugs and have made a major contribution towards human health.

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