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Biochemical and Anti microbial study of the drug Pirali Ennai

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Abstract

A Poly herbal siddha formulation ,piraliennai was prepared as per the siddha literature for the treatment of aamakalichal. The present study was designed to evaluate the biochemical and antimicrobial activity of the drug pirali ennai. The drug was tested against selected Gram positive and Gram negative species .The drug limited the growth of Gram positive and Gram negative groups tested. This study shows that the drug pirali ennai contains a biochemical ingredients can be used as a potential source of antimicrobial activity.

Keywords: Pirali ennai, biochemical and antimicrobial activity

Introduction

Siddha system of medicine is a gift to mankind. Hence it is unique when compared to any other Indian Medical system. Aamakazhichal is one of the kazhichalnoigal occurring in infants and children. It is a disease of the alimentary canal caused by microorganisms. The etiological factors, Pathogenesis, clinical features of this disease explained in siddha literature are merely related to bacillary dysentery described in modern

system of medicine. Bacterial infection are by far the most common causes of dysentery. These infections include Shigella, *E coli*, Camphylobacter, and salmonella species of bacteria. Bacillary dysentery is a bacterial dysentery caused by Shigella infection. Aama kazhichal is one of the most common problems seen by physicians more prevalent in children of low socioeconomic countries due to poor nourishment, poverty, recurrent infections, low birth weight babies. It is a major threat of

morbidity and mortality due to local and systemic complications. The medicine Pirali ennai easily clears the infection of the children and balances the mukkutram and maintains the nutritive status of the child. This review article will help to provide details of phytochemical analysis and anti microbial activity of Pirali ennai and how the drug is effective to the childrens. It has been found to possess anti diarrheal, antimotility antimicrobial activity.

Materials and Methods

Research Methods

This Study Proceeded in GSMC &Hospital Palayamkottai
Research Drug: Pirali ennai

1. Drug selection:

The drug selection of “*PIRALI ENNAI*” in treating “*Aamakalichal*” is to be safe, economic and efficient in reducing the symptoms of

4.Preparation:

| S.No | Name | Botanical name | Quantity |
|------|----------------|-----------------------------|-----------|
| 1 | Aamanakkuennai | <i>Ricinus communis</i> | 1.3Liters |
| 2 | Avuriverthol | <i>Indigofera tinctoria</i> | 10.2gm |
| 3 | Manjal | <i>Curcuma longa</i> | 10.2gm |
| 4 | Kadugu | <i>Brassica nigra</i> | 10.2gm |
| 5 | Venthayam | <i>Trigonella foenum</i> | 10.2gm |
| 6 | Vellulli | <i>Allium sativum</i> | 10.2gm |
| 7 | Seeragam | <i>Cuminum cyminum</i> | 10.2gm |
| 8 | Karunjeeragam | <i>Nigella sativa</i> | 10.2 gm |
| 9 | Omam | <i>Tachyspermum ammi</i> | 10.2gm |
| 10 | Milagu | <i>Piper nigrum</i> | 10.2gm |
| 11 | Kadukkai | <i>Terminalia chebula</i> | 10.2gm |
| 12 | Katukarohini | <i>Picorrhiza kurrooa</i> | 10.2gm |
| 13 | Vasambu | <i>Acorus calamus</i> | 10.2gm |
| 14 | Perungayam | <i>Ferula asafoetida</i> | 10.2gm |

1.3 Liters of Aamanakkuennai is taken in an earthen pot and the following 13 raw drugs are

Aamakalichal and bring quick recovery. The drug is selected from the classical siddha literature Agathiyarvaithiyakaaviyam 1500, pg: 631.

General protocol for preparation of the herbal drug formulation in siddha involves the following steps:

1. Authentication of raw material
2. Purification
3. Preparation
4. Authentication of final drug

2. Authentication of raw material

This will be performed by geologists in case of Metal/ Mineral ingredients and by a taxonomists in case of herbal ingredients.

3. Purification

Purification process will be performed as per the classical siddha texts.

added to this earthen pot and these are kept under the flame till it attains the oil consistency.

6. Administration of the drug

Form of the medicine : Ennai
 Route of administration : Internal
 Dose : 4 ml thrice a day
 Adjuvant : Seeragam, Athimathuram, Chithirapaaladai all these three powder mixed in equal ratio
 Indication : Aamakazhichal (Bacillary dysentery)

Authentication of the final drug

The final product of preparation will be authenticated by the trained experts from Gunapadam department for its completion.

Quality assurance of prepared drug

Quality assurance will be performed as per the PLIM (Pharmacopoeial laboratory of Indian medicine) guidelines and the analytical parameters done as follows.

Physicochemical Evaluation

| | |
|---------------------|----------------|
| State | Liquid |
| Nature | Viscous |
| Odor | Characteristic |
| Touch / Consistency | Greasy |
| Flow Property | Free flowing |
| Appearance | Yellowish |

Phytochemical analysis of Pirali Ennai

Preparation of the extract:

5 gram of the drug was weighed accurately and placed in a 250ml clean beaker . Then 50ml of

distilled water is added and dissolved well. Then it is boiled well for about 10 minutes. It is cooled and filtered in a 100ml volumetric flask and then it makes up to 100ml with distilled water. This fluid is taken for analysis.

Qualitative analysis

| S.No | Experiment | Observation | Inference |
|------|--|----------------------------------|------------------------------------|
| 1 | Test for calcium: 2ml of the above prepared extract is taken in a clean test tube. To this add 2ml of 4% Ammonium oxalate solution | A white precipitate is formed | Indicates the presence of calcium |
| 2 | Test for sulphate: 2ml of the extract is added to 5% Barium chloride solution. | A white precipitate is formed | Indicates the presence of sulphate |
| 3 | Test for chloride: The extract is treated with silver nitrate solution | No white precipitate is formed | Absence of chloride |
| 4 | Test for carbonate: The substance is treated with concentrated HCL | No brisk effervescence is formed | Absence of carbonate |
| 5 | Test for starch: The extract is added with weak iodine solution. | Blue colour is formed | Indicates the presence of starch |

| | | | |
|----|---|----------------------------------|--|
| 6 | Test for ferric iron: The extract is acidified with laccial acetic and pottasium ferrocyanide. | No blue colour is formed | Absence of ferric iron |
| 7 | Test for ferrous iron: The extract is treated with concentrated nitric acid and ammonium thiocyanate solution. | No Blood red colour is formed | Absence of ferrous iron |
| 8 | Test for phosphate: The extract is treated with Ammonium molybdate and concentrated nitric acid. | No yellow precipitate is formed | Absence of phosphate |
| 9 | Test for albumin: The extract is treated with esbach reagent. | No yellow precipitate is formed | Absence of phosphate |
| 10 | Test for tannic acid: The extract is treated with ferric chloride. | Blue black precipitate is formed | Indicates the presence of tannic acid |
| 11 | Test for unsaturation: Bayer's test-potassium permanganate solution is added to the extract. | It gets decolourised | Indicates the presence of unsaturated compound |
| 12 | Test for the redusing sugar: 5 ml of the benedict's qualitative solution is taken in a test tube and allowed to boil for 2 minutes and add 8-10 drops of the extract and again boil it for 2 minutes. | Colour change occurs | Indicates the presence of reducing sugar |
| 13 | Test for amino acid: one or two drops of the extract is placed on filter paper and dried well. After drying, 1% ninhydrin is sprayed over the paper and gain dried. | Violet colour is formed | Indicates the presence of amino acid |
| 14 | Test for zinc: The extract is treated with pottasium ferrocyanide. | No white precipitate is formed | Absence of zinc |

Inference:

The extract prepared from the given sample PIRALI ENNAI contains **Ferrous Calcium, Sulphate, Starch, Tannic acid, Unsaturated compounds, Reducing sugar, Amino acid.** Biochemical analysis report was given by Mrs. Nagaprema, M.Sc., M.Phil., Head of the department, Biochemical department, Government Siddha Medical College, Palayamkottai.

Preclinical experiments on pirali ennai

Anti – Microbial Activity
Anti – Diarrheal Activity

Anti – Microbial Activity:

Aim:

To study the Anti – Microbial Activity of Pirali ennai against *Staphylococcus aureus* and *E.coli*.

Materials and Methods:

The Method Known as Kriby – Bauer (Disk diffusion) was used. Muller – Hinton Agar was used in this method.

Components of this Agar:

Beef extract - 300 g/l
 Agar - 17 g/l
 Starch - 1.5 g/l
 Casein hydrolyxalate - 17.5 g/l
 Distilled water - 1000 ml
 pH - 7.6

Procedure:

After preparing the agar plates, the organism was streaked on the medium and the trial drug was loaded using disk method with the concentration of 1 ml/ml Pirali ennai and amikacin was used as the control drug. The plates were observed after incubation at 37 degree C for overnight and presence of inhibition zone was measured.

Results and Discussion

Phytochemical constituents

The extract prepared from the given sample piraliennai contains calcium, sulphate, starch, tannic acid, unsaturated compound reducing sugar tannic acid.

The body digests above the phyto chemicals by metabolizing it in to glucose which passes in to the blood stream and circulates the body.

Antimicrobial activity

The drug Pirali ennai shows moderate resistant to *Escherichia coli*, *Staphylococcus aureus* and *Streptococcus pneumoniae*

| S.No | Organism | Sensitivity | Zone of size of Drug Pirali ennai | Zone size of control (Amikacin) |
|------|---------------------------------|--------------------|-----------------------------------|---------------------------------|
| 1. | <i>Escherichia coli</i> | Moderate Resistant | 10mm | 17 mm |
| 2. | <i>Staphylococcus aureus</i> | Moderate Resistant | 8mm | 16 mm |
| 3. | <i>Streptococcus pneumoniae</i> | Moderate Resistant | 8mm | 17 mm |

Conclusion

The biological activities of the drug pirali ennai are very effective in the treatment of Aamakazhichal and various infectious fever. The medicinal drugs contains the medicinal values in the research studies. The research studies shown that it contains the antimicrobial, anti diarrheal activity and high nutritional values. Phytochemical studies on active constituents of the drug is expected to serve aslead in the development of bioactive antimicrobial compounds.

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