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Preliminary Phytochemical, Physicochemical and Biochemical analysis of herbal formulation Sathakuppai Chooranam (*Anethum graveolens*).

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Abstract

The sathakuppai chooranam (Anethum graveolens, apiaceae family) is a monoherbal drug used in the management of kumba vatham (periarthritis).The drug is well known for its various pharmacological properties like anti-inflammatory, analgesic, anti oxidant, anti hyperglycaemic activity

Aim:

The aim of the study is to perform Qualitative phytochemical, Physico chemical analysis and Biochemical analysis of Sathakuppai chooranam.

Materials and Methods:

The Raw drugs is collected in and around Palayamkottai Tirunelveli and purified and drug is prepared as per the Siddha literature Siddha Vaidhya Pathartha Guna Vilakkam.

Result:

The phytochemical evaluation showed the presence of various secondary metabolites such as Tannin, terpenoids, phenols, glycosides, alkaloids, flavanoids . The physico chemical analysis of the Sathakuppai Chooranam Reveals that LOD at 105 C-13.32% total Ash-11.51%,Acid soluble Ash-0.27% water soluble Ash- 5.58%,sulphated Ash-11.43%,pH(4% water Extract)- 5.8%, volatile oil 2.0% Alcohol soluble extractives-11.62% water soluble extractives-21.38% The biochemical analysis showed the presence of calcium, sulphate, chloride and amino Acids.

Keywords: monoherbal drug, sathakuppai chooranam, secondary metabolites

Introduction

Siddha system is an ancient and traditional medicine practiced by siddhars which originated in south India. ln this system they not only cure the disease but also treat the mind and soul.

Kumba vatham (periarthritis) is one of the musculoskeletal complications in patient that can be particularly debilitating. Shoulder joint is the widest range of motion of the body. In siddha classical literature, Yugi vaidhya chinthamani-800, the vatha disease are divided into 80 types. Kumbavatham is one among them. The signs are ,

pain in the shoulder joints and upper limbs, burning and tingling sensation in the cheeks and eyes, twitching over the scalp, pain in the hypogastrium, glossitis. These condition clinically correlated with periarthritis. The inspiration of the present study is to collect presence of bio active constituents in physico chemical, phytochemical and biochemical studies of Sathakuppai chooranam (*Anethum graveolens)* to give the beneficial information for the further more clinical studies.

Materials and Methods

The raw drug was collected in and around Palayamkottai, Tirunelveli. The drug was identified and authenticated by the medicinal botany experts at Govt Siddha Medical Collage and Hospital, Palayamkottai. The adulterants in the drug were removed and dried. The drug was powdered and sieved by using a fine cloth and then bottled up.

Table 1 :Ingredients of Sathakuppai Chooranam.

S.no	Tamil name	Scientific name	Parts used	Quantity
1	Sathakuppai Chooranam	*Anetham graveolens*	Fruits	Q.S

Results and Discussion

Preliminary qualitative phyto-chemical analysis:

The drug was extracted by using alcohol. The extract were concentrated under reduced pressure at room temperature. The extract is subjected to following tests. The results are discussed below.

Table 2 Phyto chemical analysis of Satahkuppai chooranam.

Tests	Result
Saponins	-
Tannins	+
Terpenoids	+
Phenols	+
Steroids	-
Quinones	-
Antraquinones	-
Glycosides	+
Carbohydrates	-
Alkaloids	+
Lignans	-
Flavanoids	+
Proteins	-

+ Present, - Absent

Alkaloids

Alkaloids shows strong biological effects on animal and human organism even in very small doses.

They show several Pharmacological activities on human health such as Anti-cancer, Anti-inflammatory, Antimalarial, Antimicrobial, Anti-hypertensive, and Anti-oxidant.

Flavonoids:

Flavonoids possess a number of medicinal benefits including Anticancer, antioxidant, Anti-inflammatory and antiviral properties. They also have neuroprotective and cardio protective effects. The Biological Activities depend upon the type of flavonoids.

Terpenoids:

Terpenoids are the largest group of plant secondary metabolites. Terpenoid possess antitumor, anti-inflammatory, anti bacterial, anti viral, anti-malarial effects, promote transdermal absorption, Prevent and treat cardio vascular disease, and have hypoglycaemic activity.

Terpenoids have many potential application such as immuno regulation, anti- oxidation, anti-aging and Neuroprotection.

Phenols:

Enhance the plasma antioxidant capacity thus reduce the risk of development of various degenerative diseases associated with oxidative stress. Epidemiological evidence to date indicates that polyphenols perform critical functions such as inhibiting pathogens and decay microorganisms, preventing triglyceride deposition, lowering the incidence of non-communicable diseases such as cardiovascular disease, diabetes, cancer, and stroke, and exerting anti- inflammatory and anti-allergic effects via processes involving reactive oxygen species

Physico chemical analysis:

Sl. No.	Tests	Result %
1	LOD at 105^0C	13.32
2	Total Ash	11.51
3	Acid insoluble ash	0.27
4	Water soluble ash	5.58
5	Sulphated ash	11.43
6	pH (4% water extract)	5.8
7	Volatile oil	2.0
8	Alcohol soluble extractives	11.62
9	Water soluble extractives	21.38

LOD at 105c:

Moisture refers to all matter within a sample which can be vaporized thus inclucles not just water but fat , volatile solvents and alcohols. The LOD of the sample drug is 13.32%

Total ash:

The Acid insoluble Ash, Water insoluble Ash and Sulphated ASH values of the sample drug is 0.27%,5.58%,11.43% respectively

pH:

A Solution with a pH less than 7 is Considered acidic; a solution with a pH greater than 7 is considered as basic or alkaline. The pH of the sample drug is 5.8

It means the sample drug is slightly Acidic in nature.

Extractive Values:

Alcohol soluble extractive and water soluble extractive of the sample drug is 11.62% and 21.38% respectively.

Biochemical analysis:

5 gms of drug was weighed accurately and placed in a 250ml clean beaker the 50 ml of distilled water is added and dissolved well. Then it is boiled well for about 10 minutes. It is cooled and filtered in a 100 ml volumetric flask and then it is made to 100ml with distilled water .This fluid is taken for analysis.

S.No	Bio-chemical analysis	Results
1	Test for calcium	+
2	Test for Sulphate	+
3	Test for Chloride	+
4	Test for Carbonate	-
5	Test for Starch	-
6	Test for Ferric iron	-
7	Test for Ferrous iron	-
8	Test for Phosphate	-
9	Test for Albumin	-
10	Test for Tannic acid	-
11	Test for Unsaturation	-
12	Test for The Reducing sugar	-
13	Test for Amino acid	+
14	Test for zinc	-

Calcium

Calcium fructoborate is a boron based nutritional supplements, It is superoxide ion scavenges and anti-inflammatory agent

Sulphate:

Activity of Chondroitin Sulphate that is able to reduce cell and tissue damage due to free radical attack, tissue damage due to free radical attack, mainly by sequestering transition model. It seems also to possess a radical scavenger activity.

Chloride:

Chloride suppress the production of inflammatory mediators, NO and PGE2 and pro inflammatory cytokines.

Amino Acid:

Amino acid is an organic compound that contains both amino and carboxylic acid functional group hence the name amino acid . They are the basic building blocks of proteins. The amino acids produced no gastric ulceration on overt acute tox i cit y in doses which effectively suppress the inflammation.

Conclusion

From the above qualitative phytochemical analysis, biochemical analysis, and physicochemical analysis, we came to know that Sathakuppai chooranam is contain phytochemicals tannin, terpenoids, phenols, glycosides, alkaloids, flavonoids and biochemical analysis showed the presence of calcium, sulphate, chloride, Amino acids. From above studies we came to know that, the therapeutic efficacy of the Sathakuppai chooranam is due to the presence of these constituents especially treating inflammatory disease so the results of the study gives valuable information for further clinical research.

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