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Research Article

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Preliminary Qualitative Phytochemical, physico-chemical Properties and Biochemical Analysis of Siddha Formulation Perungaya Chooranam by using standard methods

R.Mownika[*1], A.Manoharan[2], T.Komalavalli[2]
[*1]PG scholar, Department of Pothu Maruthuvam, Government Siddha Medical College, Palayamkottai, Tirunelveli-627002, Tamilnadu,India.
[2]Professor and HOD, Professor, Department of Pothu Maruthuvam, Government Siddha Medical College, Palayamkottai, Tirunelveli-627002, Tamilnadu, India.
[*]Corresponding author e-mail:drmownikasree@gmail.com

Abstract

Perungaya chooranam is a herbal formulation and it was used for peptic ulcer (gunmam).The aim of the study was to evaluate the therapeutic efficacy of perungaya chooranam. The ingredients were procured, ands botanically authenticated as per the classical literature.Materials and method: The prepared drug was subjected to Phytochemical , Physico-chemical and biochemical analysis. Standardization of the herbal drug is more important to assess its purity, quality, safety and efficacy of the drug.**Results:** The phytochemical investigation revealed the presence of various secondary metabolites such as saponins, terpenoids, phenols, glycosides and alkaloids were present drug. The biochemical analysis shows the presence of calcium, sulphate, chloride, starch, ferrous iron, unsaturated compounds and amino acids in the sample drug. The physiochemical study revealed that LOD at 105^{o}C is 12.79%,Total Ash is 41.96%,Acid insoluble ash is 0.52%,Water soluble ash is 4.27% , Sulphated ash is 10.80%,pH (4 % water extract) is 5.4%,Alcohol soluble extractives is 9.84% and Water soluble extractives is 27.58% which ensures the therapeutic effect of the drug. **Conclusion:** The phyto-physicochemical and biochemical characterizations of PC is a proved anti-inflammatory, anti-oxidant,anti-ulcer and anti-spasmodic actions.

Keywords: Perungaya chooranam , Phytochemical, Physico-chemical, Siddha medicine, Gunmam

Introduction

Siddha is the indigenous system of Indian medicine practised in south India especially in Tamil Nadu .As there is an overall shift towards herbal medicine from modern medicine, the standardization part of herbal medicine become mandatory for the acceptance of the drug of modern scientific community. Herbal drugs have found wide spread use in many countries not only because they are easily available and are cheaper but an important reason has been the notion that they are safer than synthetic drugs which may not always be true.

As per of world health organization (WHO), more than 80% of global population uses plant or their products as the primary source of herbs. The WHO has appreciated the importance of medicinal plants for public health care in developing national policies on traditional medicines and to study their potential usefulness including evaluation, safety and efficacy. The formulation was evaluated for its physico-chemical study such as ash values and extractive values

Materials and Methods

The raw drug was purchased from ASN herbal shop, Melapalayam, Tirunelveli District.The drug was identified and authenticated by the Medicinal Botanist at Government Siddha Medical College and Hospital, Palayamkottai.The ingredients of the trial drug was purified according to the proper procedure methods described in Siddha classical literature . (Table no .1)

Table 1. Ingredients of Perungaya chooranam

S.No	Tamil name (herb)	Botanical name	Family	Parts used
1.	Perungayam	*Ferula asafoetida*	*Apiaceae*	Resin
2.	Tulsi	*Ocimum sanctum*	*Lamiaceae*	Leaves

Ferula Asafoetida (Resin), The leaves of *Ocimum sanctum* (tulsi).Both drugs were dried well in shadow and made into fine powder separately. Then both the powder were mixed together. Finally, they were put in a bottle and mixed thoroughly.

Results and Discussion

Preliminary Qualitative phytochemical Analysis

The preliminary phytochemical screening was carried out to find out thr presence of various phytoconstituents using standard procedures[8,9]

Table 2. Preliminary phytochemical analysis of Perungaya chooranam

Test	Results
Saponins	+
Tannins	-
Terpenoids	+
Phenols	+
Steroids	-
Quinones	-
Antraquinones	-
Glycosides	+
Carbohydrates	-
Alkaloids	+
Lignans	-
Flavanoids	-
Proteins	-

+ Present, - Absent

Saponins

Several studies conducted over the years confirm the health benefits of saponins. These chemicals may help reduce cholesterol levels, kill disease-causing bacteria, scavenge oxidative stress and inhibit tumor growth. According to the latest research, they improve lipid metabolism and may help prevent and treat obesity. Saponins promote cardiovascular health due to their ability to lower cholesterol and body fat levels. Researchers believe that these chemicals inhibit cholesterol absorption by binding with bile salts[4]. Various saponins, plant glycosides with favorable anti- tumorigenic properties, have been used to inhibit tumor cell growth by cell cycle arrest and apoptosis with IC50 values ofup to 0.2 μM.

Terpenoids

Terpenoids possess anti-tumor, anti-inflammatory, anti- bacterial, anti-viral, anti-malarial effects, promote transdermal absorption, prevent and treat cardiovascular diseases, and have hypoglycemic activities. Terpenoids have many potential applications such as immunoregulation and anti-oxidant.

Phenols

Plant-based compounds containing phenols are known tobe an anti-oxidants. This means that they can stop the reaction of free radicals with other molecules in your body, preventing damage to your DNA as well as long-term health effects.

Glycoside

A broad range of glycosides extracted from medicinal plants have potential anti-inflammatory and analgesic effects towards different in vitro and in vivo models, respectively.The presence of these phytochemical exhibits the therapeutic effectiveness of the sample drug. So, the Perungaya chooranam have anti -inflammatory, analgesic, anti-ulcer anti oxidant, and blood purifier properties.

Alkaloids

Alkaloid compound possess the potent anti inflammatory and analgesic activities.

Physico-chemical Analysis

Table 3.Physico- chemical analysis of perungaya chooranam

Sl. No.	Tests	Result %
1	LOD at 105^0C	12.79
2	Total Ash	41.96
3	Acid insoluble ash	0.52
4	Water soluble ash	4.27
5	Sulphated ash	10.80
6	pH (4% water extract)	5.4
7	Volatile oil	1.0
8	Alcohol soluble extractives	9.84
9	Water soluble extractives	27.58

LOD at 105îC:

Moisture refers to all matter within a sample which can be vaporized, and thus includes not just water but fats, volatile solvents, and alcohols..The LOD of the sample drug is 12.79%

Total ash:

The Acid insoluble ash,0.52% Water soluble ash 4.27% , and Sulphated ash values 10.80% of the sample drug .

pH:

A solution with a pH less than 7 is considered acidic; a solution with a pH greater than 7 is considered basic, or alkaline. The pH of the sample drug is 5.4.It means the sample drug is slightly acidic nature.

Extractive values:

Alcohol soluble extractives and Water soluble extractives of the sample drug is 9.84% and 27.58% respectively.

III. Bio-chemical analysis

Preparation of the extract:

5gms 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 is made to 100ml with distilled water. This fluid is taken for analysis

Qualitative analysis.

Table 4.Bio-chemical analysis of "Perungaya chooranam"

S.No.	Experiment	Observation	Inference
1.	**Test for calcium**.	A white precipitate is formed.	Indicate the presence of calcium.
2.	**Test for sulphate**	A white precipitate is formed.	Indicates the presence of sulphate.
3.	**Test for chloride**	A white precipitate is formed.	Indicate the presence of chloride.
5.	**Test for starch**	Blue color is formed.	Indicate the presence of starch.
6.	**Test for ferrous iron**	Blood red color is formed.	Indicate the presence of ferrous iron.
7.	**Test for unsaturation**.	It gets decolorized.	Indicates the presence of unsaturated compounds.
8.	**Test for amino acid**	Violet color is formed.	Indicates the presence of amino acid.

Conclusion

The physico-chemical, phytochemical , and biochemical analysis showed presence of saponins, phenols, terpenoids, glycosides, and Alkaloids . Biochemical analysis showed the presence of calcium, sulphate, chloride, starch, ferrous iron and unsaturated compound were present in this study. Thus the result of the study gives an valuable information for further clinical studies.

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