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RESEARCH ARTICLE

PHYSICOCHEMICAL ANALYSIS & STANDARDIZATION OF SHIRISH TWAK KWATH CHURNA

Shah Neha[1] and Jhunjhunwala Amita[2]

1. MD Scholar at UAU in Agadtantra, Rishikul Campus, Haridwar, Uttrakhand, India.
2. Associate Professor at UAU in Agadtantra, Gurukul Campus, Haridwar, Uttrakhand, India.

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Abstract

As per Ayurvedic classics "no herb in the earth is devoid of medicinal properties".In many Ayurvedic texts it is mentioned to use Shirish for various therapeutic purposes like Kustha (skin diseases), Premeha (diabetes), Swasrogas (bronchial asthma), Vranaropaka (wound healer), Sothahara (anti-inflammatory) and many more. Acharya Charak has mentioned Shirish as Sresthavishagnadravya (anti-toxic).

Aim- Pharmaceutical preparation and standardization of Shirish twakkwathchurna.

Material & Method-Shirish twakkwathchurna was prepared and its physicochemical testing & standardization was done by following the standard protocols.

Results-Shirish twakKwathchurna was evaluated for different standardization parameters which showedLoss on drying (5.30%), Total ash (12.68%), Acid insoluble ash (1.24%), Water soluble extractive (4.69%) and Alcohol soluble Extractive (5.56%).

Conclusion-Each plant is the gift of nature which can used for the well-being of mankind but this can only be done when we are well aware of its physicochemical properties. This paper highlights the physicochemical picture of widely used plant Shirish and the data developed from the study can be espoused for allocating the standards for Shirish twakkwathchurna.

Introduction:-

In today's era Ayurveda is emerging as life saver as it the "science of life". The reason behind increasing attraction towards Ayurveda day by day is due to less side effects. Due to increasing demand of herbal medicines by the population it is necessary to develop the pharmacopeial standards. Ayurveda is full of treasures in terms of medicinal plants, Shirish is one of them. Shirish is full of medicinal properties it is used various treatment modalities.

The word 'analysis' means detailed examination of something in order to gain better understanding of it. Analysis reveals even the minor aspects of the drug. Each drug has its unique properties which helps to differentiate between the different drugs and among drugs of similar species.Quality, efficacy and safety has always been a major concern regarding public health.The drug before administering to human subject or experiment should be well understood interpreted in the light of modern chemistry to know its proper scientific background. Analytical study is essential to

Corresponding Author:- Shah Neha
Address:- MD Scholar at UAU in Agadtantra.

check drug quality and to standardize it. To explore the physical chemical characteristics and active principles it is necessary to do analytical research. The results are then compared to standard parameters. The analytical study helps us to reach the casual inferences about hypothesized relationship between risk factors and outcomes. The purpose of the study is to find facts/ information regarding the drug to know its safety and efficacy. Chemical constituents, standard of drug as well as provides scope for further advancements.

Material & Method

Collection of drug-

Fresh bark of Shirish was collected in the month December from UAU Rishikul Campus, Haridwar and was shade dried. The sample of raw drug was authenticated by Dravyaguna department of UAU Rishikul Campus, Haridwar.

Preparation of Kwathchurna-

3kg of Shirish bark was crushed into coarse powder with the help of pulverizer and kept in separate air-tight container for further use.

Standardization-

Standardization of Shirish twakkwathchurna was done after the preparation. Parameters were taken according to **"Protocol for testing of Ayurvedic Siddha and Unani Medicines"**, written by Dr. D.R. Lohar, printed by Government of India, Department of Ayush, Ministry of Health and family Welfare, and Pharmacopoeial Laboratory for Indian Medicines, Ghaziabad. The sample was evaluated for organoleptic characters and for standardization parameters like loss on drying, total ash, acid insoluble ash, water soluble extractive and alcohol soluble extractive.

Loss on drying at 105^0 C[i]–

2 g of drug was placed in oven at 105º C for 5 hours.Weight of sample was calculated every 30 minutes, until the weight of the sample was constant.This sample was allowed to cool at room temperature in desiccators for 1 hour before weighing.

Calculation: Loss on drying in % $= \frac{(B-C)x\ 100}{X}$

Were,

Weight of the empty Petri dish = A g

Weight of the drug sample = X g

Weight of the Petri dish with drug before drying (B) = (A + X) g

Weight of Petri dish after drying = C g

Total ash[ii]-

Incinerate about 2 to 3 g accurately weighed, of the ground drug in a tared platinum or silica dish at a temperature not exceeding 450^0 until free from carbon, cool and weigh.If a carbon free ash cannot be obtained in this way, exhaust the charred mass with hot water, collect the residue on an ashless filter paper, incinerate the residue and filter paper, add the filtrate, evaporate to dryness, and ignite at a temperature not exceeding 450^0.Calculate the percentage of ash with reference to the air-dried drug.

Calculation: Total ash $= \frac{\text{Weight of ash} \times 100}{\text{Weight of sample}}$

Acid-insoluble ash[iii]-

To the crucible containing total ash, add 25 ml of dilute hydrochloric acid.Collect the insoluble matter on an ashless filter paper (Whatman 41) and wash with hot water until the filtrate is neutral.Transfer the filter paper containing the insoluble matter to the original crucible, dry on a hot-plate and ignite to constant weight.Allow the residue to cool in a suitable desiccator for 30 minutes and weigh without delay.Calculate the content of acid-insoluble ash with reference to the air-dried drug.

Calculation: $Acid\ insluble\ ash = \frac{Weight\ of\ acid\ insoluble\ \ ash \times 100}{weight\ of\ sample}$

Water soluble extractive[iv]-

Macerate 5 g of the air-dried drug, coarsely powdered, with 100 ml of chloroform water the specified strength in a closed flask for twenty-four hours.Shaking frequently during six hours and allowing to stand for eighteen hours.Filter rapidly, taking precautions against loss of solvent, evaporate 25 ml of the filtrate to dryness in a tared flat bottomed shallow dish, and dry at 105^0, to constant weight and weigh.Calculate the percentage of water-soluble extractive with reference to the air-dried drug.

$$Water\ soluble\ extractive = \frac{Weight\ of\ residue\ \times 100}{Weight\ of\ sample}$$

Alcohol soluble extractive[v]-

Macerate 5 g of the air-dried drug, coarsely powdered, with 100 ml of alcohol the specified strength in a closed flask for twenty-four hours.Shaking frequently during six hours and allowing to stand for eighteen hours. Filter rapidly, taking precautions against loss of solvent, evaporate 25 ml of the filtrate to dryness in a tared flat bottomed shallow dish, and dry at 105^0, to constant weight and weigh.Calculate the percentage of alcohol-soluble extractive with reference to the air-dried drug.

$$Alcohol\ soluble\ extactive = \frac{Weight\ of\ residue\ \times 100}{Weight\ of\ sample}$$

Results:-

Organoleptic characters showed that formulation is dark brown coloured powder, slightly rough, bitter in taste and it possess characteristic odour (Table 1). Physicochemical analysis was done and results were summarised in (Table 2).

Table no. 1:- Results of Organoleptic characters of Shirish twakkwathchurna.

S.no	Parameters	Shirish twakkwathchurna
1.	Appearance	Coarse powder
2.	Colour	Dark brown colour powder
3.	Odour	Characteristic
4.	Taste	Bitter
5.	Touch	Soft

Table no. 2:- Results of Physicochemical characters of Shirish twakkwathchurna.

S.no	Parameters	Results	Method reference
1.	Loss on drying at 105^0	5.30	API
2.	Total Ash	12.68	API
3.	Acid-insoluble ash	1.24	API
4.	Water soluble extractive	4.69	API
5.	Alcohol soluble extractive	5.56	API

Discussion:-

The physicochemical analysis of Shirish twakkwathchurnawas done through the standard protocol of Kwathchurnamentioned in API.Organoleptic evaluation means study of a drug using sense organs[vi]. The appearance of Shirish twakkwathchurna was coarse powder, dark brown in colour with bitter taste and characteristic odour. To determine the moisture content of Shirish twakkwathchurnaloss on drying test was performed where kwathchurna was heated at 105^0 C for 5 hours. The percentage moisture content after loss on drying was 5.30 %. Ash value is the common method to know the adulteration of the inorganic materials, and it has greater importance in the quality control and standardization. Higher the inorganic material higher will be the ash value. Total ash value of Shirish twakkwathchurna is 12.68 % which means there are lesser amount of inorganic material present in the kwathchurna that may be due to constituents of plant and presence of physical impurities. Acid insoluble ash represents presence of silica and silicate impurities[vii]. Shirish twakkwathchurna contains 1.24 % of siliceous content in plant. Water soluble extractive value plays an important role in evaluation of crude drugs. Less extractive value indicates addition of exhausted material, adulteration or incorrect processing during drying on storage or formulating. Water soluble extractive value of 4.69 %.Less alcohol extractive value indicates addition of exhausted material, adulteration or incorrect processing during drying, or storage or formulating. Alcohol soluble extractive value 5.56 %.

Conclusion:-

The present study gives very imaginative information related to its physicochemical analysis which will be helpful for standardization of Shirish twakkwathchuna.It opens doors to the researchers to do more and more research in the field of Ayurveda to explore new things, to find out cost effective cure for various diseases.

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[vi]https://en.m.wikipedia.org> wiki
[vii]https://www.resarchgate.net>post.