



**International Journal of Biology, Pharmacy
and Allied Sciences (IJBPAS)**

'A Bridge Between Laboratory and Reader'

www.ijbpas.com

**EVALUATION OF QUALITY STANDARDS OF *SHANKAPUSHPI*
(*CONVOLVULUS PLURICAULIS CHOISY*) CHURNA**

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Received 20th March 2024; Revised 24th April 2024; Accepted 16th Aug. 2024; Available online 1st July 2025

<https://doi.org/10.31032/IJBPAS/2025/14.7.9186>

ABSTRACT

Introduction:

API, *Ayurvedic Pharmacopeia of India* has set quality standards for herbs, minerals and their different dosage forms, which helps in assessing the purity and strength of selected drugs. Quality standards for *Shankhapushpi* (*Convolvulus pluricaulis choisy*) explained in API are for the whole plant. *Shankhapushpi churna* is a powder dosage form, for which no any quality standards are available till date. So, there is a need to assess quality parameters for *Shankhapushpi churna*, as it is used regularly for the management of various cognitive and behavioural disorders.

Objective:

To evaluate the quality control parameters of *Shankhapushpi churna*.

Materials and Methods:

Raw drug was procured from GMP certified pharmacy & then prepared *churna* was subjected for analysis at ASU drug testing laboratory.

Result and Discussion:

In this study basic quantification of *Shankapushpi churna* was done and results for Physicochemical, Preliminary Phytochemical Screening, Chromatography and Specific Microbial Limit are given.

Keyword: *Shankapushpi churna*, *Convolvulus pluricaulis choisy*, Analytical parameters, Phytochemical analysis

INTRODUCTION:

Pharmacopeia of herbal and herbomineral drugs are extensively mentioned in *Ayurveda Nighantu's*, where in drugs are categorised based on their properties and therapeutic actions. One such potent herb is *Shankapushpi Convolvulus pluricaulis choisy*, belongs to a convolvulus family, is a diffuse hairy perennial herb with a woody, profusely branched roots, indigenous to India & is extensively grown in regions like Bihar, Bengal, Assam & upper Gangetic plains [1, 2]. *Shankapushpi* is having *kashaya, katu, tikta rasa, snigdha, guru, picchila, sara guna, sheeta veerya, madhura vipaka* and *tridosha hara* property [1, 2]. With all these properties *Shankapushpi* acts as *Medhya rasayana*, mainly used to treat issues related to cognition and behaviour [3]. It is proved for its pharmacological actions such as antioxidant activity, anticonvulsant activity, antidepressant activity, anxiolytic activity, neuro-protective activity, nootropic activity, etc. [3]. As per *Ayurveda* literature for therapeutic purpose *shankapushpi* is indicated in the form of *churna*, so

appropriate evaluation of its quality control parameters & validation in accordance with established norms is essential as the quality of the drug varies according to source. Till date neither any single study is done nor documented at one place for the assessment of all the quality control parameters of *Shankapushpi churna*. In this study quality analysis and validation of *Shankapushpi churna* was done in the AYUSH approved Central Research Facility of KAHER's Shri BMK Ayurveda Mahavidyalaya, Shahapur, Belagavi, Karnataka, India and documented for further reference.

MATERIALS & METHODS:

The whole plant was collected from Dabur Pharmacy, Ghaziabad, Uttara Pradesh, India. The plant was identified & authenticated in Central Research Facility of KAHER's Shri BMK *Ayurveda Mahavidyalaya*, Shahapur, Belagavi, Karnataka, India (CRF No: BMK/CRF/85/2023-24). The collected plant was dried & reduced to powder in a mechanical grinder, sieved through 80

number mesh & sealed in air tight packets at KLE Ayurveda Pharmacy, Khasbhag, Belagavi, Karnataka, India. Thus, obtained churna was analysed for various analytical parameters such as organoleptic, physicochemical, phytochemical & microbial limits in AYUSH approved ASU drug testing Laboratory, Central Research Facility of KAHER's Shri BMK Ayurveda Mahavidyalaya, Shahapur, Belagavi, Karnataka, India.

RESULTS:

The *Shankapushpi churna* was evaluated for macroscopic parameters such as its colour, taste & odour. The results are given in **Table 1**.

Table 1: Macroscopic Description

Tests	Results
Part	Churna
Colour	Greenish
Taste	Bitter
Odour	Odourless

Table 2: Physicochemical Standards

Tests	Result
Loss on drying	0.470 %
Ash value	16.600 %
Acid insoluble ash	9.471 %
Water insoluble ash	3.855 %
Water soluble extractive	7.352 %
Alcohol soluble extractive	6.301 %
pH value (5 %)	6.30 %

Table 3: Preliminary Phytochemical Screening:

Tests	Water	Alcohol
Test for Carbohydrates	+	+
Test for Reducing Sugar	+	+
Test for Monosaccharides	+	-
Test for Pentose Sugar	-	+
Test for Non-Reducing sugar	+	-
Test for Hexose Sugar	-	-
Test for Proteins	+	-
Test for Amino Acids	+	-
Test for Steroids	-	+
Test for Flavoids	+	+
Test for Alkaloids	-	-
Test for Tannis	+	-
Test for Glycosides:		
Cardiac Glycosides	-	-

The *churna* was then subjected for physicochemical parameters such as loss on drying, ash value, acid insoluble ash, water insoluble ash, water soluble extractive, alcohol soluble extractive and pH. The results are tabulated in **Table 2**.

Sample was screened for preliminary phytochemicals and results are given in **Table 3**.

The *churna* was also subjected to the thin layer chromatography using ethyl acetate & the results are tabulated in **Table 4**.

The *churna* was also tested for micro-organisms & their limits. The results are given in the **Table 5 & Table 6**.

Anthraquinone Glycosides	-	+
Saponin Glycosides	-	-

(Note: '+' means present whereas '-' means not present)

Table 4: Chromatography

Tests	Results
Thin Layer Chromatography (Alcohol Extract)	Rf values
Mobile Phase- Toluene: Ethyl acetate	Short wave: 0.78,0.94
Ratio: 7:3	Long wave: 0.16, 0.69, 0.74, 0.79, 0.83, 0.87, 0.94

Table 5: Test for Specified Micro Organisms (Qualitative)

	Limits (As per IP)	Results
<i>E Coli</i>	Absent / 100 ml	Absent
<i>S aureus</i>	Absent / 100 ml	Absent
<i>P aeruginosa</i>	Absent / 100 ml	Absent
<i>S abony</i>	Absent / 100 ml	Absent

Table 6: Microbial Limit Test (Quantitative)

	Limits (As per IP)	Results
Total Bacterial Count	30 - 300 cfu / ml	No growth
Total Fungal Count	10 - 100 cfu / ml	5 cfu / ml

DISCUSSION:

Shankapushpi being widely used medicine in *Ayurveda*, mainly known for its *rasayana* property helps in the management of the several psycho-somatic conditions. So, analysis of the drug becomes a need of the hour to assess quality control measures in turn to prove its safety and potency for further therapeutic use. In API standards are available for whole plant, as there are no standard analytical parameters mentioned for the *Shankapushpi churna*, here an attempt was done to analyse & create the data of macroscopic, physicochemical, phytochemical, chromatography & microbial limit parameters for further references.

On macroscopic description, *Churna* was found to be Greenish in colour, Bitter in taste and Odourless. This supports the classical

reference of *Shankhapushpi* having *tikta-kashaya rasa*.

Loss on drying indicates the moisture content in the sample which was found to be 0.470%, indicates less moisture content which in turn means less chance of microbial contamination.

Ash value indicates presence of inorganic residues in the plant sample, which valuated to be 16.600% and is in accepted limits.

Acid insoluble ash also known as silica test was done to detect the amount of inorganic residue in the sample. The given sample has shown the presence of 9.471% acid insoluble ash.

Water insoluble ash help in knowing the quality of the sample and its value in the given sample was 3.855%.

Water soluble extractive and alcohol soluble extractive represents the loss of biomass

proportion as a result of extraction and also indicates the potency of the drug. The values for *Shankhapushpi churna* were 7.352% and 6.301% respectively.

As *churna* is not in a liquid form, the 5% solution was prepared by adding 5gms of *churna* in 100ml of distilled water, after shaking the mixture well, the solution was filtered through filter paper. Thus obtained filtrate was used for calculation of pH. The pH of the sample was 6.30 in 5% solution which is slightly towards acidic.

The sample was screened for phytochemicals in water & alcohol media. Carbohydrates, reducing sugar and flavonoids are present in both water & alcohol, whereas monosaccharides, non-reducing sugar, proteins, amino acids & tannins were present in water media. Penicillan sugar, steroids & glycosides were present in alcohol media.

Presence of functional carbohydrates helps in glucose homeostasis, oxidative metabolism, gastrointestinal function, prevention of diabetes, obesity, cardiovascular disease, metabolic syndrome, and also proved for anticancerous activity [4, 5].

Presence of proteins in the sample maintain cholesterol levels and exhibit antitumor activity, antithrombotic effects, antihypertensive effects, antimicrobial properties, antioxidant and neuro modulatory activities [6, 7].

The presence of tannins suggests anticancer, virucides, antioxidant, antimicrobial and anti-inflammatory, antidiabetic, wound healing, cardiovascular protection and antidiarrheals activity [8, 9].

The sample showed the presence of flavonoids which possess anticancer, antioxidant, anti-inflammatory, antiviral properties, neuro-protective and cardio-protective activity [10, 11].

The anthraquinone glycosides present in the *churna*, are proved for antitumor, antibacterial, antifungal, anti-inflammatory, antioxidant & neuro-protective effect on humans [12].

The sample was also subjected for chromatography in which TLC was performed through alcohol extract. The Rf value was calculated based on mobile phase. The Rf value in Toluene:Ethyl acetate at 7:3 ratio was found to be 0.78, 0.94 for short wave and 0.16, 0.69, 0.74, 0.79, 0.83, 0.87, 0.94 for long wave. TLC helps to determine the number of components, identification of compound and the purity of a compound.

The sample was tested for microbial growth & limit. It showed the absence for bacteria & 5 cfu / ml for fungal count which is in the acceptable range.

By above analysis, the data is comparable with API standards, but slight variation in acid insoluble ash & water soluble extracts might be due to change in dosage form and environmental factors.

CONCLUSION:

This study was conducted to analyse the *shankapushpi* for its *churna* dosage form as there is no standard data available in the API. The validation and quality control parameters of *shankapushpi churna* enlisted above are within accepted norms which indicate the strength & purity of this sample.

ACKNOWLEDGEMENT:

I acknowledge, Dr Sasi Bhushan, Dr Avi Fursule, Dr Sukruth G of Dabur Pharmacy and Dr Giridhar Vedantam, for providing the *Shankapushi* for the study.

CONFLICT OF INTEREST: Nil**REFERENCES:**

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