

Study Of Ayurvedic Formulation Eladi Quatha Used For Urolithiasis

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Abstract

Natural prescriptions are yet serving for the treatment of a significant number of the wellbeing needs of huge populace of the world. Nevertheless, the quality control and quality confirmation stay a test in light of the fact that polyherbal plan has high fluctuation of synthetic parts included. No single part is answerable for the adequacy of the home grown detailing either in single structure or in blend with other natural medications. This makes a test in laying out inside quality control norms and normalization of completed natural medications. Systematically, the interest of Ayurvedic details are expanded however, because of absence of value control boundaries there might be issues in acknowledgment as like allopathic medications. Additionally occasionally, there are opportunities for connection between the recommended medications and spices. In this way, normalization of homegrown drugs is exceptionally fundamental to guarantee dependability particularly concerning quality, immaculateness, adequacy and wellbeing of the detailing. Numerous arrangements are been referred in Ayurvedic books for the treatment of urolithiasis. **Eladi kwath** is one such known plan, which is exceptionally compelling. In this review, Eladi kwath is exposed to organoleptic examination, pharmacognostical examination, phytochemical investigation, and subjective examination, natural investigation to recognize the presence of different parts its quality as per WHO Rules. The examination uncovered the presence of essential and auxiliary metabolites.

Aim – To study the benefits of herbal preparation Eladi quatha for kidney disease Urothiasis.

Method - This study was undertaken to explore the effects of Eladi quatha in animals to treat kidney stone diseases. However, no safety profile for this formulation has been reported to date; thus, in this study, freshly prepared Eladi quatha was evaluated for acute toxicity. Acute toxicity test was evaluated as per OECD 425 guidelines with 5000 mg/kg as a limit test in Wistar strain Albino rats. Test formulations were administered to overnight fasted animals and parameters like body weight, behavioral changes, and mortality were assessed for 14 days. Hematological and biochemical parameters were assessed on the 14th day after administration.

Result - No significant changes were noted in terms of behavioral changes, mortality, and body weight. The samples did not affect any of the hematological parameters. However, an increase in blood urea level was observed.

Conclusion- This study concludes that freshly prepared Eladi quatha is relatively safe up to the dose of 5000 mg/kg. However, further chronic toxicity evaluation is necessary to establish its safety profile on chronic administration.

Key words - Eladi quatha, Urothiasis, ayurvedic, toxicity evaluation, Albino rats.

INTRODUCTION

Since the dawn of civilization man has always returned to the nature, seek remedies for ailments. Plant remedies are used from generation to generation for all kinds of diseases conditions. Customary Arrangement of Medication particularly Ayurveda envelops a long history of serving individuals all around the world as lesser secondary effects in contrast with the allopathic arrangement of meds. The interest of Ayurvedic prescriptions is expanding all around the world. Business creation of homegrown meds and their exchange are the quickest developing area of industry, in light of expanding request of restorative plants; the accessibility line is unfavorably bringing about debasement and replacement for authentic medications^{[1][2]}.

On the other hand, queries are being raised regarding their quality and standard. Analytical study of a product provides

some standards to gauge its quality. It is a part of drug research methods coping with the various objective parameters to understand the precise status of medicines in polyherbal formulation by comparing the assorted samples during drug preparation.^[3]The active constituents of a drugs are giving information for identification purpose, when the drug is mixed together in compound drug formulation. It also provides a basic idea regarding its probable pharmacological and physiological activity. Different physico-chemical and pharmacological parameters provided fundamental information regarding nature of sample, its probable self-life, how to preserve the sample etc. It is very important for formulating a single raw drug or into a dosage form.

Kwath is one of the formulations mentioned in the name of Kashaya in the Ayurvedic literatures.^[4] The effectiveness of kwath is considered to be changed with time and temperature. Keeping this in core and looking to marketing of these Kashaya's, there are different forms available in market. In the present study, the kashaya (Eladi kwath) as mentioned in Bhaishajya Ratnavali and Chakradutta, Ashmari chikitsa prakaranam are considered for the formulation preparation and validation. The analytical data will provide the evidence of quality of Eladi kwath.

MATERIALS AND METHODS

1. Procurement and preparation of plant material

1.1 Collection of ingredients and authentication

The crude drugs mentioned in Chakradutta and Bhaishajya Ratnavali for the preparation of Eladi Quatha were purchased from the Department of Ayurveda, Parul University (Gujarat, India), and authentication was done by the Department of Botany, Parul Institute of Applied Sciences, Parul University (Gujarat, India).

The foreign impurities were removed and then crude drugs were washed with water, sorted, and sun-dried under shade below 45°C. Dried drugs were stored in tightly closed containers.

1.2 Preparation of Eladi Quatha

The formulation of Eladi quatha is mentioned in Bhaishajya Ratnavali and it contains the following drugs: Different parts of plants contain active constituents that have been tested for urolithiasis activity.

Table 1: Composition of Eladi quatha

Sr No.	Name of the drug (Part used)	(Part used)	Botanical Name	Family
1.	Ela	Fruit	Amomum subulatum Linn.	Zingiberaceae
2.	Pippali	Fruit	Piper longum Linn.	Piperaceae
3.	Madhuca	Seed	Madhuca longifolia Var.	Sapotaceae
4.	Pashanabheda	Leaves	Berginia ligulata Wall.	Saxifragaceae
5.	Nirgundi beeja	Seed	Vitex negundo Linn.	Lamiaceae
6.	Gokshura	Fruit	Tribulus terrestris Linn.	Zygophyllaceae
7.	Vasa	Leaves	Justicia adhatoda Linn.	Acanthaceae
8.	Eranda	Seed	Ricinus communis Linn.	Euphorbeaceae

1.3 Method of Preparation:

- i. The Eladi quatha was prepared as per the standard process described in the quatha vidhi of Sarngadhara Samhita
- ii. Three batches of the quatha were prepared.
- iii. The dried crude drugs were taken as per mentioned in the formula. The herbs were ground and converted into a coarse powder.
- iv. The additional four parts of water was added and gently stirred with inconsistent blending without covering its mouth.
- v. This process completed until the amount was concentrated to 1/4th of its original volume and was filtered through double-folded clean cloth in to a chrome steel vessel and the residue discarded. The same procedure was repeated for all the groups.
- vi. Average data were taken during preparation of Kwath .

Table No. 2 – Proportion of Preparation Kwath

Batch	Quantity of		Proportion	Kwath obtained	Temp. Range	Duration Drug (min.)
	Drug	Water				
1000g	4 l	1:4	¼	1020.16	95-1000 °C	350
1000g	8 l	1:8	¼	2085.23	95-1000 °C	590
1000g	16 l	1:16	1/4	4095.00	95-1000 °C	960

Eladi kwath is subjected to numerous analytical parameters consistent with **WHO Guidelines** as follows:

The depth and width of herbal drug standardization is massively very high. The guidelines set by WHO which can be often summarized as follows:-

1. Relevance to the organoleptic characteristics: The evaluation of the final formulation were done by their organoleptic characteristics like color, odor, taste and appearance.
2. Relevance to the identity of the drug: Analytical study.

The prepared herbal formulation was analyzed for the parameters like Total solid content^[5], pH (1% aqueous)^[6], Specific Gravity^[7], Viscosity (mill poise)^[8], Refractive Index^[9], total ash^[10], acid insoluble ash, alcohol soluble extractive, water-soluble extractive^[11], qualitative inorganic and organic analysis.

3. Relevance to the physicochemical properties of the drug: Physical and chemical characteristics, chromatographic methods and fingerprinting, volatile oil and alkaloidal assays, quantitative and qualitative tests etc.^{[12][13]}
4. Relevance to the pharmacological action of constituent, Biological effects, records, bitterness content, swelling factor, foaming index etc.
5. Relevance Toxicity details such as pesticide residues^[14], heavy metals^[15], and microbial contamination^[16].
6. Thin layer chromatography^[17]

Sample preparation

The crude drugs are soaked for 18 hours in 4% alcohol, alcoholic extracts were prepared, and extract were filtered through Whatman filter paper #1 using high-pressure pump.

Stationary Phase- Silica Gel (G) embedded in aluminum foil

Mobile Phase- Ethyl acetate: Methanol: water (100:13.5:10)

Spraying reagent- Vanillin- Sulphuric acid

Spotting- Three spots were placed in the TLC plate.

R_f value of all three spots were measured.

The samples were scanned over a range of 200-800nm using Shimadzu UV-visible spectrophotometer. Alcohol was used as Blank.

RESULTS

Table No. 3 – Organoleptic Characterization

Table 3 show the organoleptic study of the 3 batches. In which **color, odor, appearance** and **taste** of the formulation is noted.

Sr No.	Organoleptic characters	Batch		
		1:4	1:8	1:16
1	Color	Slightly Brown	Slightly Brown	Slightly Brown
2	Odor	None	None	None
3	Appearance	Dark	Dark	Dark
4	Taste	Bitter	Bitter	Bitter

All the three batches were brown in color, had characteristic odor, they were dark in appearance and bitter to taste

Table No. 4 - Analytical data of Kwath

Table 4 is the analytical study of the three batches in which different parameters were studied.

Sr. No.	Parameters	Batch		
		1:4	1:8	1:16
1.	Viscosity (mill poise)	1.271	1.351	1.841
2.	Specific Gravity	1.002	1.001	1.003
3.	Total Solid Content (% w/v)	2.65	1.643	1.364
4.	Refractive Index	1.347	1.346	1.344
5.	pH (1% aqueous)	5.32	5.96	6.56
6.	Moisture (%)	7.09	5.3	5.5
7.	Total ash (%)	7.08	7.67	8.1
8.	Acid insoluble (%)ash	2.01	0.19	9.3
9.	Alcohol soluble extractive (%)	7.55	6.05	2.9
10.	Water-soluble extractive (%)	14.01	7.2	5.3

All the parameters studied in three batches were nearly similar.

Qualitative tests of Eladi Kwath

The qualitative test of Eladi Kwath it was noted that the test gave positive results for Alkaloid, Tannins, Saponin, Glycosides, Flavonoids, Protein & Ascorbic acid and negative results for Phenols, Sterols, Quinines, Starch.

Thus, the test indicates the presence of Alkaloid, Tannins, Saponins, Glycosides, Flavonoids, Protein & Ascorbic acid in the formulation.

Microbial contamination in Eladi Kwath

In the microbial study, it was noted that Total microbial count was 40 CFU per gm. The Total bacterial count was 30 CFU per gm and total fungal count was 10 CFU per gm. The pathogens, *Escherichia coli*, *Salmonella spp.*, *Pseudomona aeruginosa*, *S.aureus* were absent in the study of Microbial contamination study

Table No. 5 - Rf values of (All the samples of Eladi kwath):
Table 5 gives the Rf valves of all the samples of Eladi Kwatha.

Track	No of spots	Rf Value
Track 1(1:4)	5	0.2,0.15,0.36,0.4,0.7
Track 2(1:8)	7	0.21,0.18,0.42,0.36,0.32,0.56,0.63,0.39
Track3(1:16)	5	0.23,0.14,0.33,0.42,0.71

Rf value quantifies the amount of each components of a mixtures travels on the plate and identifies the presence of components.

Heavy Metal Analysis

In the study of heavy metals, Arsenic at 193.696 did not show the presence in the formulation. Similarly other metals like Lead (Pb) also was not detected at 220.35 wavelength. Mercury at 253.65 wavelength was also nor detected and Cadmium (cd) was absent at a wavelength of 228.80. Thus, the formulation of Eladi Kwath did not show presence of any heavy metal.

DISCUSSION-

Kwath (decoction) is one among most famous and compelling measurement structure. Truly, the word Kashaya implies what achieves ordinary to the body to equilibrate all influencing elements to work on the pathology. The development of the Ayurvedic drug industry is expanding at a fast rate now a days and in the business, Kwath is the fundamental material for the readiness of other formulations like vati, arista and so on a. Scientific review was done to know specific synthetic nature of the result and to bring up the physico-chemical changes during the interaction. By the physical organoleptic assessment, it was found that the Eladi kwath has earthy colored tone with trademark smell and harsh taste with dull appearance. [Table 3]

The physico-chemical boundaries of the relative multitude of tests had insignificant contrasts. The pH routinely addresses the sharpness and alkalinity; pH of the Eladi kwath demonstrated to be frailty acidic in nature. Dampness (moisture) content shows loss on drying; and it was 0.1% in the current details.

Ash Content is the after-effect of the presence of inorganic substances in the specific plan or medication. This boundary gives vital data of value control and normalization of the definitions. Assuming that the Ash-content is over 0.1% than it shows presence of the greater the inorganic substances in the formulation. [Table 4]

Analytical tests were performed to recognize the presence of useful constituents in the compound, which assume a vital part in showing the organic action. The current review uncovers the presence of tannins, adhesive, ascorbic corrosive, alkaloids, saponins, glycosides, flavonoids in the plan, while sterols/terpenoids, phenols, quinines and starch were viewed as missing.

The expanding factor, frothing record and like boundaries are not material so not confirmed in the current review.

The absolute microbial count, complete bacterial count and all out contagious counts were underneath as far as possible. The microorganisms like *Escherichia coli*, *Salmonella spp*, *Pseudomona aeruginosa*, *S.aureus* were absent, thus, the microbial contamination is not seen.

The Rf an incentive for every definition was determined, which shows the presence of every fixing in the detailing. [Table 5]

Heavy metals were not distinguished, consequently showing the virtue of the crude medications and furthermore the completed item. This outcome uncovers the quality control upkeep during planning of the Eladi kwath definitions.

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CONFLICT OF INTEREST:

The author declared that she has no competing interest.

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