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ORIGINAL ARTICLE

A Clinico-analytical Study on Seed of *Wrightia antidysenterica* Linn. as a Therapeutic Emetic Agent (Vamaka Yoga) in the Management of Psoriasis

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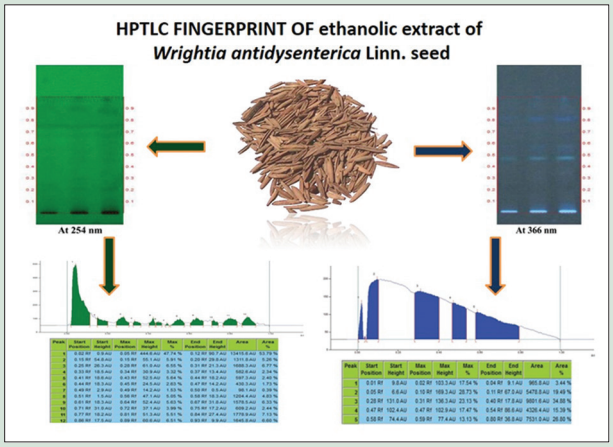
ABSTRACT

Objectives: *Wrightia antidysenterica* Linn. (WA) is male variety Kutaja stated to be potent therapeutic emetic agent in skin disorders. Expulsion of doshas through oral route is termed as Vamana Karma (VK) (therapeutic emesis). However, so far, its utility for Vamana is not explored in detail, therefore there is a need to revalidate the utility of WA for Vamana. Hence, the above study was conducted to ascertain the efficacy as a therapeutic emetic agent (vamaka yoga) in the management of psoriasis along with quality control and standardization of this herb. **Materials and Methods:** The drug was standardized as per analytical procedures in Pharmacopeias. Thirty patients of psoriasis fulfilling inclusion criteria were taken for the study and Vamana with WA was conducted. Criteria were prepared to assess the signs and Symptoms of psoriasis. VK was assessed using the classical Lakshanas (features) such as Anthiki shudhi (Ending symptoms of emesis), Vaigiki shudhi (features of vomiting bouts), Maniki shudhi (Quantitative and qualitative purification), complications. **Result:** VK with WA showed significant relief in parameters of psoriasis such as scaling, itching, candle grease sign ($P < 0.001$), and psoriasis area and severity index score ($P = 0.001$). In VK with WA, mean number of Vegas (vomiting bouts) was 6.91. 66% patients showing quantitative purification between 301 and 600 ml. 73.33% showed all Symptoms of purification. 73.33% patients showed Kaphanta vamana (Moderate expulsion of desire humor). In the level of biopurification, 66.66% patients showed moderated purification. No complication was noted with moderate drug palatability. **Conclusion:** Pharmacopeial analytical study showed its standardized values for testing the drug used for the study. It is proved as potent therapeutic emetic agent with no complication showed its clinical benefits over skin disorder like psoriasis.

Key words: Kutaja beej, pharmacopeial analysis, psoriasis, therapeutic emesis, vamana

SUMMARY

- Seeds of *Wrightia antidysenterica* (WA) Linn. free from any foreign matter were selected for the study. Loss on drying revealed 6.535% moisture content; total ash indicating of total inorganic content was found to be 5.12%; acid insoluble ash is the acid insoluble part of total ash, mainly silica, WA showed 0.393% acid insoluble ash; ethanol and water soluble extractive is indicative of percentage active constituents were found to be 25.66 and 20.854%, respectively. High-performance thin layer chromatography fingerprinting profiles of WA under 254 nm showed the presence of 7 spots (all in green) at R_f values ranging from 0.21 to 0.88. Under 366 nm there were 4 prominent spots (all in fluorescent) at R_f 0.49 to 0.82 and, when scanned under white light 620 nm following derivatization with vanillin sulfuric acid 6 spots (in different colors) were evident at R_f 0.28 to 0.58. Among these spot with R_f of 0.58 was common when visualized under all the three methods. R_f values by densitometric scan of WA showed 12 peaks at 254 nm and 5 peaks at 366 nm. However, in clinical trial, it was found to be a potent emetic agent without any complication.



Abbreviations Used: WA: *Wrightia antidysenterica*; Linn.; VK: Vamana karma; BT: Before treatment; FP: Freidman's *P* value; CHS: Chi-square value; NR: Negative ranks; PR: Positive ranks; N: Sample number, AS: Austipz sign; CG: Candle grease test; SSL: Samyak Snigdha Lakshana

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INTRODUCTION

Kutaja is one among the biopurificatory drugs[1] explained in Ayurveda literature. In classics, two varieties of Kutaja are explained male (*Wrightia antidysenterica* Linn. [WA]) and female (*Holarrhena antidysenterica* Linn.).[2] Many herbal formulations prepared out of male variety of Kutaja Churna used as an emetic agent,[3] However, female variety is used in various preparation having actions such as Kutaja Arista[4] is beneficial in rakta pravahika, Grahani, Atisara, and Agnimandya, Kutajagana Vati[5] in acute diarrhea, Kutaja Parpati good on Grahani whereas Kutaja Churna and Kutaja Avaleha[6] have actions such as Arshoghna-relieves piles, Atisarahara-relieves

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diarrhea, Deepana – appetizer, Grahi – holding, Jwarghna-anti-pyretic, Lekhana-removes unwanted waste, Krumighna-destroys parasites, Kustaghna-skin – in small doses, Pachana-digests ama, Raktarshas hara-bleeding piles, Rakta-shodhaka-purifies blood, Rakta-stambhaka-stops bleeding, Shula-prashamana-pacifies abdominal pain, Stambhana-prevents expulsion of malas, and Vranaropana-wound healing.

WA Linn. (Kutaja) is a common herb used in treating diarrhea, irritable bowel syndrome.[7,8] However, it is also observed that it is used as one among the therapeutic emetic agent (vamaka yoga) in the management of various disorders treated by the Panchakarma (Bio purification) mentioned in the classics. Vamana Karma (VK ~ therapeutic emesis) is the first measure among Panchakarma has been considered the best line of treatment for the skin disorders.[9] Psoriasis affects the two percent of Indian population and world also.[10] Psoriasis is a long-term (chronic) skin problem that causes skin cells to grow too quickly resulting in thick, white, silvery or red patches of skin. Normally, skin cells grow gradually and flake off about every 4 weeks. New skin cells grow to replace the outer layers of the skin as they shed.[11] However, in psoriasis, new skin cells move rapidly to the surface of the skin in days rather than weeks. Ayurveda has a positive approach to give on all the stages, i.e., from the formation of skin, its structure, functions and the causative factors, symptomatology and the manifold unique treatment approach. VK is one of the prime modalities among Panchakarma in the management of psoriasis.[12] Hence, this study is planned to analyze the WA and explore its role as therapeutic emetic agent in the management psoriasis.

MATERIALS AND METHODS

Patients diagnosed psoriatic as per diagnostic and inclusion criteria, irrespective of age, sex, and religion were taken for the study, from the Panchakarma outpatient department and in-patient department of SDM Ayurveda Hospital. Permission was obtained from Institutional Ethics Committee vide SDMCAH/IEC/90/13–14, and the trail was registered under the registry vide RGUHS/03/A011/41911. Kutaja Seed powder (WA) was collected from raw drug store of institutional pharmacy.

Analytical study of *Wrightia antidysenterica*

Quality control parameters such as total ash, acid insoluble ash and water soluble ash, loss on drying at 110°C, water-soluble extractive, and alcohol soluble extractive tests were done as per the Ayurvedic Pharmacopeia of India (API) and World Health Organization standards.[13,14] High-performance thin layer chromatography (HPTLC – CAMAG Applicator 5 and Scanner 4) studies of WA were done at SDM Centre for Research in Ayurveda and Allied Sciences, Kuthpady, Udupi as per standard procedures[15] as per standard methods. 1 g of powdered sample was extracted with 10 ml ethanol and kept for cold percolation for 24 h and filtered. 4, 8, and 12 µl of the above samples of were applied on a precoated silica gel F_{254} on aluminum plates to a band width of 7 mm using CAMAG Linomat 5 TLC applicator. The plate was developed in toluene: ethylacteate (9:1). The developed plates were visualized in ultraviolet (UV) 254, 366 nm and then derivatized with vanillin sulfuric acid reagent and scanned using CAMAG Scanner 4 under UV 254 and 366 nm. R_f, color of the spots and densitometric scan were recorded.

Clinical study design

An accessible population of psoriasis of either sex in and around district of study who were representative of target population was taken for interventional therapeutic open labeled single center clinical trial. Simple random sampling technique was adopted using a lottery method. Inpatient list was generated at the end of the day and using lottery method numbers were selected. Patient corresponding to the number was selected for the study after informed consent was taken.

Forty subjects were screened 8 subjects were excluded whereas 32 subjects have received the intervention; however, two subjects have lost follow-up given no reason was allocated. Hence, current study was analyzed with 30 subjects. The standard deviation (SD) of signs and symptoms of psoriasis in a previous study was 7.0, and a difference of 5 points is considered to be of clinical importance. It is anticipated that around one fifth of patients may drop out of treatment; SD = 7.0 points; size of difference of clinical importance = 5 points; significance level = 5%; power = 80%; type of test = two-sided; the formula for the sample size $n = (A + B)^2 \times 2 \times SD^2/DIFF^2$, where n = sample size; SD = standard deviation, of the primary outcome variable-here 7.0; $DIFF$ = size of difference of clinical importance-here 5.0; A depends on desired significance level-here 1.96; B depends on desired power-here 0.84; $n = (1.96 + 0.84)^2 \times 2 \times (7.0)^2/(5.0)^2 = 30$. The sample size of 30 was sufficient to detect a difference of 5 points on signs and symptoms of psoriasis.

Patients were diagnosed by signs and symptoms of psoriasis such as Auspitz Sign (AS), Candle Grease test (CG), Itching and Scaling. In the current study, subjects were included who were fulfilling diagnostic criteria, ranges between the age group of 20–60 years and fit for therapeutic emesis. Patients were suffering from any other systemic disorders such as Hypertension, Diabetes Mellitus who are not suitable for VK due to their systemic illness. Improvement in signs and symptoms of patient with due importance to proper features of Therapeutic emesis and parameters of Psoriasis such as AS candle grease (CG) test, psoriasis area and severity index (PASI), itching and scaling.

Intervention

Purvakarma (preoperative)

Deepana Pachana (Basal metabolic rate correction) with Panchakola churna 5 g thrice daily before food with luke warm water administered for 3 days followed by Snehapana in Arohana krama (internal oleation with increasing dose) with Moorchita Ghruta was given till proper oleation features once attained then patients were subjected to Sarvanga Abhyanga (Oil Massage) with Moorchita Taila and hot water bath for 1 day.

Pradhana Karma (operative)

After preoperative process, VK (Therapeutic emesis) with seed powder of WA (Kutaja beeja choorna) 12 g was induced.

Paschat Karma (postoperative)

Samsarjana Krama (post VK low carbohydrate diet) was advised depending on the Shuddhi Lakshanas (Purification signs) for 3–7 days.

Statistical analysis

Statistical Package for Social Science (SPSS) version 16 (IBM) was used for data analysis. Friedman's test with Bonferroni correction was used to analyze the significance of change in subjective parameters. Wilcoxon signed rank test is done for *post-hoc* with Bonferroni correction on parameters which show significance in Friedman's test, to interpret the time of significant change. The obtained results were interpreted as: Not significant $P > 0.05$; significant (S) ranges between 0.01 and 0.001; highly significant (HS) $P \leq 0.001$.

RESULTS

Analytical study

Quality control measuring employing some pharmacopeial analytical procedures is one of the important criteria before any research activities on herbal drugs. WA was analyzed for quality control parameters such as loss on drying, total ash, acid insoluble ash, ethanol soluble extractive,

and water soluble extractive. Loss on drying indicating moisture and other volatile matter was determined to be 6.54%. The total ash indicating total inorganic content was found to be 5.12%. Acid insoluble part of total ash, which indicates silica, was found to be 0.33%. Ethanol and water-soluble secondary metabolites in was found to be 25.67 and 20.85% w/w respectively [Table 1]. These quality standards will infer the quality of WA used in the current study.

High-performance thin layer chromatography

HPTLC fingerprinting by studying R_f values and color of the spots is one of the simplest pharmacopeial tests to identify the qualitative compositional characteristics of any herbal extracts. HPTLC of ethanolic extract WA was developed in toluene: ethyl acetate (9:1). TLC photo-documentation revealed the presence of many phytoconstituents with different R_f values [Figure 1 and Table 2]. On densitometric scan of the plates, 12 and 5 bands were detected under 254 and 366 nm respectively [Figure 2]. Out of 12 peaks seen on densitometrc scan at 254 nm, compounds with R_f 0.02 (53.79%) was the major peaks [Figure 2a]; at 366, out of 5 peaks, peak with R_f 0.28 (34.88%) was the major peak detected [Figure 2b]. These fingerprints will serve the purpose of evaluation of identity of chemical composition qualitatively.

Clinical intervention

In the present clinical study, 83.33% subjects were males accounting for 25 subjects whereas 16.66% patients accounting for 5 subjects were females. In regards to the age group, 26.66% subjects were in the age group 31–35, 20% patients were in the age group 36–40, 16.66% patients were in age group 26–30, 13.33% patients or 4 patients were in the age group 20–25, 4 patients accounting for 13.33% belonged to the age group 46–50 whereas 10% or 3 patients was seen in the age group 41–45. With regards to religion, 23 patients accounting for 76.666% were Hindus and 7 patients or 23. 33% patients were Muslims. In case of occupation, it was observed that maximum of 10 patients accounting for 33.333% patients were agriculturists.

The number of days of internal oleation was 6 days and minimum of 3 days with mean of 4.60 days. With regards to dosage of Snehapana on day 1 minimum dosage was 30 ml and maximum dosage was 30 ml with mean being 30 ml. On the 2nd day, minimum dose was 30 ml and maximum dosage was 90 ml with mean being 60 ml. On the 3rd day, minimum dosage of Snehapana was 60 ml and maximum dosage was 150 ml with mean being 97.58 ml. On the 4th day, minimum Sneha dosage was 80 ml and maximum dosage was 180 ml with mean of 142.26 ml. On the 5th day, the minimum dose was 100 ml and maximum was 220 ml with mean of 152.67 ml and on the 6th day, minimum dose was 140 ml and maximum was 230 ml with mean of 193.75 ml. On assessing the Samyak Snigdha Lakshanas (SSL) (proper oleation signs), 12 patients or 40% patients attained SSL on day 4, 9 patients or 30% patients attained SSL on day 3, 7 patients or 23% patients attained SSL on day 5 whereas 2 patients accounting for 7% achieved SSL on day 6.

Participant flow:

Table 1: Physicochemical parameters of Kutaja choorna

Parameter	Results (*n*=3%w/w)
Loss on drying	6.54
Total ash	5.12
Acid insoluble ash	0.33
Ethanol soluble extractive	25.67
Water soluble extractive	20.85

Effect of *Wrightia antidysenterica* as an emetic agent

Time taken for induction of emesis by Wrightia antidysenterica

With regards to the commencement of VK, the minimum time for commencement of VK was 10 min and maximum of 30 min with mean value of 17.30 min. Thus, it is seen that WA was able to initiate emetic bouts within the stipulated time of 1 muhurta, i.e. 48 min with average times of 17.30 min.

Duration of Vamana Karma

With regards to duration of VK the minimum duration of VK was 38 min and maximum of 70 min with mean value of 49.48 min. Thus, it was seen that with WA VK was able to be completed within 1 muhurtha (48 min) with average time being 49.48 min which is close to 1 muhurtha.

Self-commencement of Vamana Karma

On self-commencement of VK 56.66% patients, i.e. 17 patients it was observed and in 43.33% patients, i.e. 13 patients it had to be initiated.

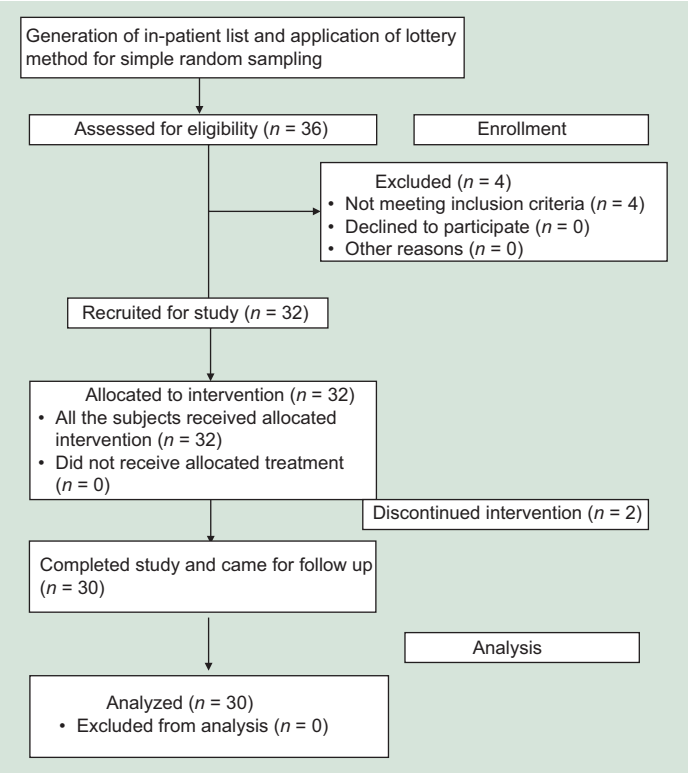
Self-stopping of Vamana Karma

In all the 30 patients, i.e. 100% self-stopping of VK was observed. Thus, it can be concluded that WA as a vamaka yoga did not cause any complication.

Condition during Vega

With regards to condition during Vegas forceful Vegas were observed in 18 patients, i.e. 60% and in 40%, i.e. 12 Patients forceful Vegas were not observed.

Thus, WA was able to cause forceful Vegas in general but in those in which Vegas were not forceful, it may be due to the reason that the dosage of medicine was not sufficient to expel fluid forcefully.



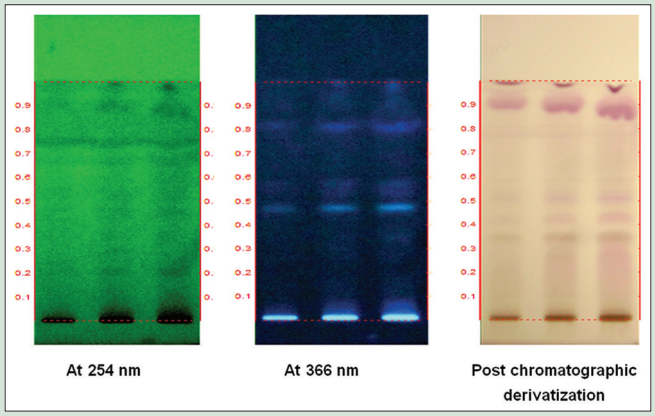


Figure 1: Thin layer chromatography photo documentation of alcoholic extract of Kutaja choorna. Track 1 - alcoholic extract of Kutaja choorna 4 µl; 2–8 µl; 3–12 µl. Solvent system - 9:1 (toluene:ethyl Acetate)

Table 2: R_f values alcoholic extract of Kutaja choorna

At 254 nm (12 µL)	At 366 nm (12 µL)	Postderivatization (12 µL)
0.21 (light green)	-	-
-	-	0.28 (light pink)
0.36 (light green)	-	0.36 (light purple)
-	-	0.44 (light pink)
0.46 (light green)	-	-
-	0.49 (fluorescent blue)	-
-	-	0.51 (light pink)
-	0.55 (fluorescent dark blue)	-
0.58 (light green)	0.58 (fluorescent light blue)	0.58 (light purple)
0.68 (light green)	-	-
0.75 (dark green)	-	-
-	0.82 (fluorescent dark blue)	-
0.88 (dark green)	-	-

Type of purification (overall outcome of Vamana Karma)

In relation to suddhi, 20 patients with 66, 66% had madhyama suddhi, 26.66% i.e. 8 patients had pravara suddhi and 6.66% i.e. 2 patients had avara suddhi. Thus, WA as a vamaka yoga was able to give madhyama suddhi, i.e. in 66.66% patients.

Drug palatability

Regarding drug palatability in 17 patients i.e. 56.66% patients it was moderately palatable, 9 patients or 30% it was not palatable, and it was palatable for 4 patients, i.e. 13.33%.

Complications

In 100% or all 30 patients, no complication or vyapad of VK was observed. It indicates the safety of WA as an vamaka yoga. Kutaja Beeja is also mentioned and is stated as to have lesser complications and can be used for VK in Sukumara. Hence, chances of complications were invariably less.

WA as vamaka yoga was mostly moderately palatable or not palatable amongst most of the patients which defines the qualities of vamaka yogas. VK drug preparation should be such that it has unpleasant taste and smell and looks ugly and disgusted as VK Yoga generally has unpleasant smell and ugly appearance the patient should be advised to take it as quickly as possible, but practically it is not possible to prepare unpleasant taste and smell and looks ugly VK Yoga.[16] Because most of the time if patient vomited during administration of drug, then it is not possible to achieve proper VK features. VK is the first measure amongst Panchakarma, has been considered as the best line of treatment for the Kaphaja disorders.[17] In the classical texts of Ayurveda, large numbers of formulations are described for the VK but only a few are in practice. Shodhita Madanaphala Pippali (*Randia dumentorum* Linn.).[18] is being very commonly used drug for VK as it has less complication, but Shodhana of Madanaphala Pippali is time consuming and expensive. Approximately 5 kg of Madanaphala fruit is required to get 1 kg of Shodhita Madanaphala Pippali. Kutaja Beeja is also mentioned and is stated as to have lesser complications and can be used for VK in managing Skin disorders.[19]

Effect of *Wrightia antidysenterica* induced therapeutic emesis on psoriasis

In the parameter of Scaling, there was 24.07% change was seen before treatment (BT) and after Snehapana. After VK there was 33.33% relief in the symptom of Scaling then BT. After samsarjana Karma, there was 41.48% relief in Scaling than BT. Hence, there was overall 41.48% relief in the parameter of Scaling. In the parameter of Itching, there was 29.30% change was seen BT and after Snehapana. After VK, there was 68.96% relief in the symptom of itching then BT. After samsarjana Karma, there was 73.44% relief in itching BT. Hence, there was overall 73.44% relief in the parameter of itching.

There was no effect of therapy in on AS. Hence the effect of therapy at all assessment level was 0%, CS there was 17.39% change was seen BT and after Snehapana. After VK, there was 86.96% relief in the parameter of CS then BT. After samsarjana krama, there was 86.96% relief in CS BT. Hence, there was overall 86.96% relief in the parameter of CS. While PASI score was changed by 20.47% BT and after Snehapana and changes in PASI BT and after VK was appreciated as 25.25% and PASI changes BT and after Samsajana Krama was 29.01% summarized as shown in Table 3.

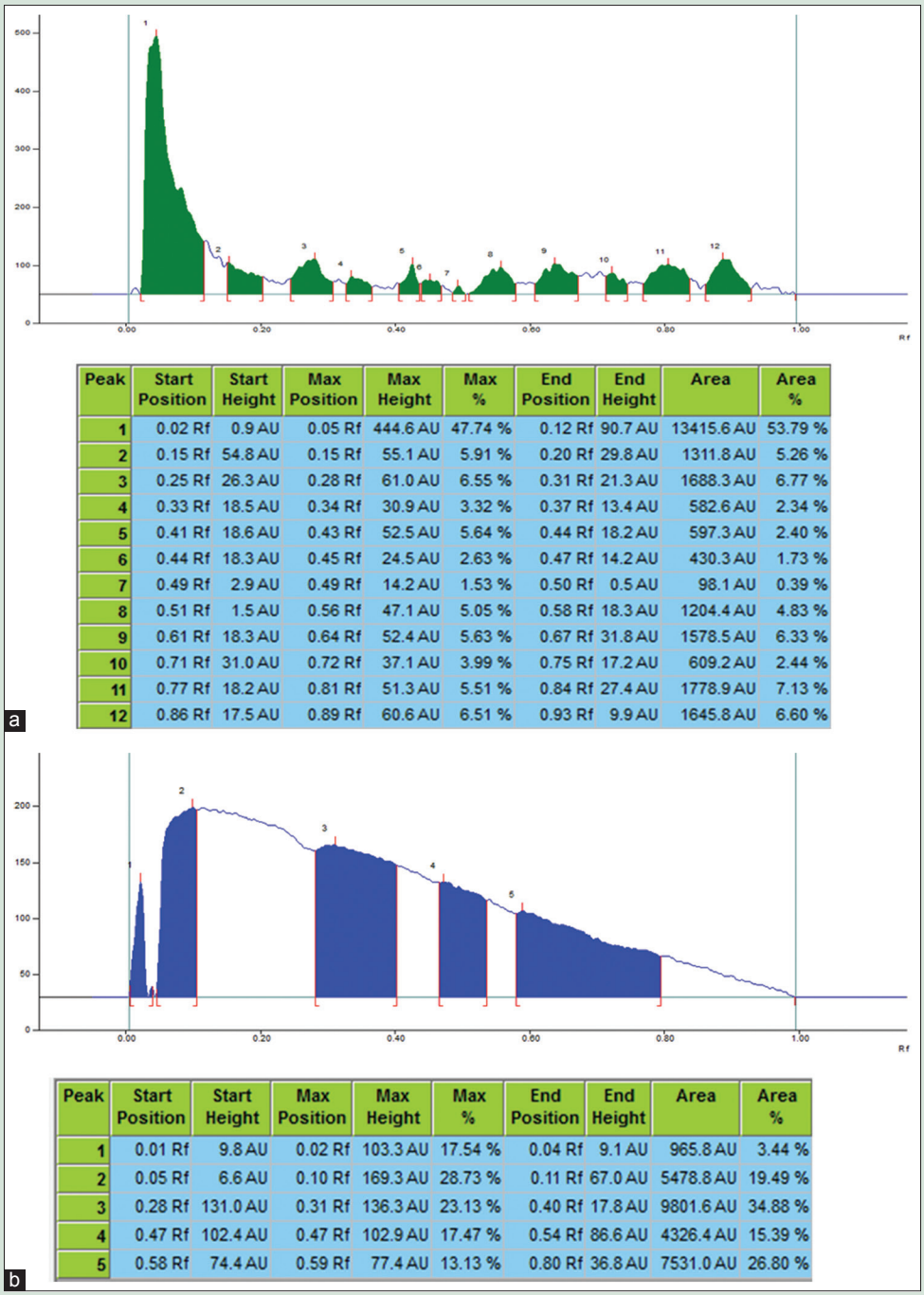
DISCUSSION

Analytical study

Standardization was carried out as it is an important aspect in maintaining and assessing quality and safety of the crude drug. Seeds of WA free from any foreign matter were selected for the study. The excess moisture content of a herbal drug is detrimental to its quality, moisture attracts molds, and bacteria. Surface wash with dilute ethanol is found to be beneficial in bringing the microbial load down in air dried drugs.[20] Total ash due to inorganic salts present in plants derided either through physiological activities of plants or nonphysiological activities of the plants are found to play significant role in quality characterization of herbal drugs. The acid insoluble part of ash is the inference of silica content of herbs. Solvent soluble extractives are indicative of percentage active and nonactive constituents in herbal drugs. Determination of ash and extractive values is the quickest means of determining quality of herbs.[12] HPTLC is an important tool in standardization and quality control of herbal formulations used for development of quality standards for plant-based medicines.[21,22]

Clinical intervention

WA as an vamaka yoga was mostly moderately palatable or not palatable amongst most of the patients which defines the qualities of vamaka yogas. Vamana drug preparation should be such that it has unpleasant taste and smell and looks ugly and disgusted as Vamana Yoga generally has unpleasant smell and ugly appearance the patient should be advised to take it as quickly as possible, but practically it is not possible to prepare unpleasant taste and smell and looks ugly Vamana Yoga.[23] Because most of the time if patient vomited during administration of drug, it is not possible to achieve proper Vamana features. VK is the first measure among Panchakarma, has been considered as the best line of treatment



a

Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.02 Rf	0.9 AU	0.05 Rf	444.6 AU	47.74 %	0.12 Rf	90.7 AU	13415.6 AU	53.79 %
2	0.15 Rf	54.8 AU	0.15 Rf	55.1 AU	5.91 %	0.20 Rf	29.8 AU	1311.8 AU	5.26 %
3	0.25 Rf	26.3 AU	0.28 Rf	61.0 AU	6.55 %	0.31 Rf	21.3 AU	1688.3 AU	6.77 %
4	0.33 Rf	18.5 AU	0.34 Rf	30.9 AU	3.32 %	0.37 Rf	13.4 AU	582.6 AU	2.34 %
5	0.41 Rf	18.6 AU	0.43 Rf	52.5 AU	5.64 %	0.44 Rf	18.2 AU	597.3 AU	2.40 %
6	0.44 Rf	18.3 AU	0.45 Rf	24.5 AU	2.63 %	0.47 Rf	14.2 AU	430.3 AU	1.73 %
7	0.49 Rf	2.9 AU	0.49 Rf	14.2 AU	1.53 %	0.50 Rf	0.5 AU	98.1 AU	0.39 %
8	0.51 Rf	1.5 AU	0.56 Rf	47.1 AU	5.05 %	0.58 Rf	18.3 AU	1204.4 AU	4.83 %
9	0.61 Rf	18.3 AU	0.64 Rf	52.4 AU	5.63 %	0.67 Rf	31.8 AU	1578.5 AU	6.33 %
10	0.71 Rf	31.0 AU	0.72 Rf	37.1 AU	3.99 %	0.75 Rf	17.2 AU	609.2 AU	2.44 %
11	0.77 Rf	18.2 AU	0.81 Rf	51.3 AU	5.51 %	0.84 Rf	27.4 AU	1778.9 AU	7.13 %
12	0.86 Rf	17.5 AU	0.89 Rf	60.6 AU	6.51 %	0.93 Rf	9.9 AU	1645.8 AU	6.60 %

b

Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.01 Rf	9.8 AU	0.02 Rf	103.3 AU	17.54 %	0.04 Rf	9.1 AU	965.8 AU	3.44 %
2	0.05 Rf	6.6 AU	0.10 Rf	169.3 AU	28.73 %	0.11 Rf	67.0 AU	5478.8 AU	19.49 %
3	0.28 Rf	131.0 AU	0.31 Rf	136.3 AU	23.13 %	0.40 Rf	17.8 AU	9801.6 AU	34.88 %
4	0.47 Rf	102.4 AU	0.47 Rf	102.9 AU	17.47 %	0.54 Rf	86.6 AU	4326.4 AU	15.39 %
5	0.58 Rf	74.4 AU	0.59 Rf	77.4 AU	13.13 %	0.80 Rf	36.8 AU	7531.0 AU	26.80 %

Figure 2: High performance thin layer chromatography photo documentation of Kutija Choorna (12 µl). (a) At 254 nm, (b) at 366 nm

for the Kaphaja disorders.[16] In the classical texts of Ayurveda large numbers of formulations are described for the VK but only a few are in practice. Shodhita Madanaphala Pippali (*R. dumentorum* Linn.).[24] is very commonly used drug for VK as it has less complication, but Shodhana of Madanaphala Pippali is time consuming and expensive. Approximately 5 kg of Madanaphala fruit is required to get 1 kg of Shodhita Madanaphala Pippali. Kutaja Beeja is also mentioned and is stated as to have lesser complications and can be used for Vamana in managing skin disorders.[17] Obtained R_f value in HPTLC was found to be standardized as per guidelines of Ayurveda pharmacopeia of India similar to Kutaja[25,26] hence it was proven as an effective therapeutic emetic agent without any complications.

Probable role of *Wrightia antidysenterica* on psoriasis

WA can also play a role in Psoriasis as it is having Tikta pradhana rasa (Bitter Taste). Hence, it will act on Pitta. Pitta and Rakta (Blood) as Asraya Asraye, it will also have effect on Psoriasis which is a Raktaja Pradoshaja Vikara (Disorders of blood). Further, WA has Kapha-Pitta Shamaka (Pacification) properties. Kapha being one of the doshas in Psoriasis, it might show effect in Psoriasis. Morbid Vata, Kapha, and Pitta play a major role in the manifestation of Psoriasis. Hence, VK induced by WA plays a major role here to expel this complex morbidity.

Table 3: Summarized effect of *Wrightia anidysenterica* induced therapeutic emesis over psoriasis

Variable	Level	FP	CHS	Ranks	*n*	Mean rank	Sum of ranks	*P*	Level of significance
Scaling	Snehapana-BT	0	40.083	NR	13	7	91	0.000	HS
				PR	7	0	0		
				Ties	10				
				Total	30				
	VK-BT			NR	16	8.5	136	0.000	HS
				PR	7	0	0		
				Ties	7				
				Total	30				
	Samsarjana-BT			NR	16	8.5	136	0.000	HS
				PR	7	0	0		
				Ties	7				
				Total	30				
Itching	Snehapana-BT	0	50.455	NR	17	9	153	0.000	HS
				PR	7	0	0		
				Ties	6				
				Total	30				
	VK-BT			NR	19	10	190	0.000	HS
				PR	7	0	0		
				Ties	4				
				Total	30				
	Samsarjana-BT			NR	19	10	190	0.000	HS
				PR	7	0	0		
				Ties	4				
				Total	30				
Candle grease	Snehapana-BT	0	52.421	NR	7	0	0	0.046	NS
				PR	4	2.5	10		
				Ties	19				
				Total	23				
	VK-BT			NR	7	0	0	0.000	HS
				PR	20	10.5	210		
				Ties	3				
				Total	30				
	Samsarjana-BT			NR	7	0	0	0.000	HS
				PR	20	10.5	210		
				Ties	3				
				Total	30				
PASI	Snehapana-BT	0.001	17	NR	7	4	28	0.000	HS
				PR	7	0	0		
				Ties	16				
				Total	30				
	VK-BT			NR	7	4.5	31.5	0.003	NS
				PR	8	4.5	4.5		
				Ties	15				
				Total	30				
	Samsarjana-BT			NR	7	4	28	0.008	NS
				PR	7	0	0		
				Ties	16				
				Total	30				

BT: Before treatment; FP: Freidman's *P* value; CHS: Chi-square value; NR: Negative ranks; PR: Positive ranks; VK: Vamana karma; *n*: Sample number; HS: Highly significant; NS: Nonsignificant

CONCLUSION

WA is one of the drugs which are proven as a safe therapeutic agent showed zero complication as an emetic agent. The parameters showed standardized value which shows the quality of drug as per API guidelines. However, when it was used as emetic agent in the management of Psoriasis provided HS change over Parameters of Psoriasis such as overall 41.48% relief in the parameter of Scaling. 73.44% relief in the parameter of itching. 86.96% relief in the parameter of Candle grease sign. 29.01% relief in the parameter of PASI score with $P < 0.000$. However, there is a need to make an in-depth trial of this drug with compound formulations such as tablets so that it can be brought into practice. Therefore, it can be concluded that is can be a highly effective Therapeutic emetic agent (vamaka yoga) in the management of skin disorders.

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Conflicts of interest

There are no conflicts of interest.

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