Indian J. Applied & Pure Bio. Vol. 41(2), 1211-1218 (2026). **ISSN: 0970-2091**

A Pharmaceutical analysis of HVKIG – S Syrup -A Polyherbal Ayurvedic Anthelminthic Drug

[1]Suyesh Krishali, [2]Kavya Mohan and [3]Ishita Swami

[1-3]Department of Kaumarbhritya Parul Institute of Ayurved,
Parul University, Vadodara - 391760 (India)
Corresponding author Syesh Krishali
Mobile Number: 8532966716
Email ID: suyeshkrishali123@gmail.com

Abstract

The **HVKIG-S Syrup**, an Ayurvedic formulation renowned for its **anthelminthic** activity, necessitates thorough **standardization** to guarantee **uniformity** and enable reliable, large-scale pharmaceutical manufacturing, aligning with the principles of the Indian Systems of Medicine (ISM) and their holistic approach to **wellness** (*Svasthya*) and illness (*Asvasthya*). The increasing public interest in traditional remedies amidst evolving modern lifestyles underscores the critical need to scientifically characterize and validate these dosage forms. This study provides a comprehensive standardization profile for HVKIG-S Syrup, encompassing detailed evaluation of its **physicochemical properties** (such as pH, density, and refractive index), robust **qualitative analysis** to identify key constituents, and a sophisticated **chromatographic profile** established via High-Performance Thin-Layer Chromatography (**HPTLC**). These novel and reproducible findings are crucial for setting definitive **quality control benchmarks** for the syrup. Ultimately, this research facilitates a seamless transition for HVKIG-S Syrup from traditional knowledge to modern therapeutic application by ensuring its identity, purity, and consistent potency prior to widespread clinical use.

Key words : Ayurvedic Standardization, Anthelminthic Activity, HPTLC Profiling, Quality Control.

Standardization of polyherbal medicines is a critical quality control step, essential for guaranteeing the consistency of active principles and ensuring the therapeutic efficacy of the formulation. Given the dynamic nature of developing and modifying traditional dosage

[1]PG Scholar, [2]Associate Professor, [3]Assistant Professor,

forms, this study's primary objective was to establish definitive quality benchmarks for the HVKIG-S Syrup—a specific formulation with established anthelminthic properties. The novelty of the present research lies in its application of advanced analytical techniques, specifically characterizing the syrup through detailed physicochemical property determination, qualitative analysis, and a robust HPTLC chromatographic profile. The explicit aim is to generate a comprehensive, reproducible dataset that aids in the standardization of this particular syrup batch, thereby supporting its safe and consistent application in therapeutic settings.

Standardization of poly herbal medicine is the process of developing and agreeing upon technical standards. Specific standards are set carry out the experimentation, which would lead to the development of a set of characteristics exhibited by the particular poly herbal medicine. Hence, standardization is a tool in the quality control process. While assuring the quality of the drug, consistency of active principles and therapeutic efficacy, standardization of herbal formulations is an essential part.

The polyherbal formulation **HVKIG-S**, an *Anubhoot Dravya* traditionally used for various conditions including *Agni Mandya*, *Atisara*, *Jwara*, *Kamala*, *Pandu*, and *Svasa*, and known as *Sarvarogahar*, comprises ingredients such as ***Haritaki***, ***Vidanga***, ***Kampilaka***, ***Indrayava***, ***Aragvadha***, ***Sitopala***, ***Madhu***, and ***Sigru***. Due to the need for improved **palatability**, particularly in the paediatric age group, the original *Churna* form was **modified into a syrup** without changing the ingredient proportions. The primary **aim** of this study was to establish essential **quality control** standards and analytical parameters for this modified dosage form, which is critical for ensuring the medicine's **consistency** and **therapeutic efficacy** in clinical practice. To achieve this, the HVKIG-S Syrup was rigorously analyzed using **organoleptic** evaluation, detailed **physico-chemical** property determination, and advanced **HPTLC** chromatographic finger-printing, providing a reproducible dataset for formal standardization.

Collection, Identification and Authentication of Raw Drugs :

All the raw material used for this study were procured from local market of Vadodara, Gujarat then identification and authentication of the raw drug were done at Pharmacy of Parul Institute of Ayurved, Vadodara, Gujarat.

Preparation of HVKIG -S Syrup :

Preparation of HVKIG -S kwath (Decoction)[10]*:*

Haritaki, Vidanga, Kamplilakka, Indrayava, Aragavadha, Sigru Each Drugs are taken in Quantity of 500gm in yavkuta form in a clean stainless steel decoction vessel along with Filter water. All drugs are then mixed properly in a vessel and is kept in Isolated place for whole night. After then Kwath was filtered and then Reduced to Quarter ¼ at A certain temperature.

Syrup preparation[9] *:*

After adding the recommended amount

of powdered sugar to this filtered kwath, the liquid was heated and stirred until the solution reached thread consistency. Following chilling, the [necessary amounts of syrup honey 120gm and sodium benzoate 100gm preservative were added, and the mixture was then sealed in a sterile, airtight container.]

Analysis and phytochemistry :

HPTLC, physicochemical parameters, solubility tests, and organoleptic characteristics were performed at the Parul Institute of Ayurveda Pharmacy in Limda Waghodia, Vadodara. Using a variety of analytical parameters, HVKIG-S syrup was examined Color, odor, and consistency were all carried by the organoleptic property. Total Ash Value, Acid Insoluble Ash, pH, specific gravity, Refractive Index, and Total Solids Content were all analyzed by a physicochemical analysis.

HPTLC finger printing[2,5,8] *:*

Five grams of syrup sample weighed and diluted with 10 ml of distilled water. Mixture transferred to a separate funnel and partition done with 20ml of ethyl acetate. The layer of ethyl acetate collected and procedure repeated with 15 ml of ethyl acetate. Both the ethyl acetate layers pooled in evaporating dish and evaporated till these are completely dried. Reconstituted the sample with 2 ml of ethyl acetate and obtained solution was applied on a pre coated MERCK - HPTLC silica gel60 F254 on Aluminium sheets to a band width of 10mm using CAMAG Linomat 5 – applicator. HVKIG -S syrup plate was developed in Toluene: Ethyl acetate: Formic acid: Methanol in the ratio of 3:2:0.5:1respectively. After derivatization in CAMAG-dip tank for one minute with. The plate was scanned at 254 nm, 366 nm, 540 nm and Rf, colour spots and densitometric scan were recorded.

Organoleptic characters of the HVKIG -S syrup are illustrated in (Table-2). The dark brown colour of kwath turned to light brown after adding sugar syrup. Physicochemical parameters (Table-3) pH of any liquid provides the quantitative indication of the acidity or alkalinity of a solution which was 5.3 i.e. acidic. Specific gravity of HVKIG -S syrup was1.2930, suggests that the quality of prepared syrup is within normal limits. Refractive index 1.4860, Total Ash value 0.69 w/w, Acid insoluble ash 0.21% w/w and Total solids were75 . Solubility test of HVKIG -S syrup (Table 4) shows that it is soluble in Methanol, Chloroform,0.5 N HCL, water and insoluble in Diethyl ether. Chromatographic study (HPTLC) of final product HVKIG -S syrup carried to establish fingerprinting profile. Rf values and colour of the spots in chromatogram developed in Ethyl acetate: Toluene : Formic acid Methnol (2:3:0.5:1 v/v/v/v) was recorded. TLC photo documentation revealed presence of many phytoconstituents with different Rf values and HPTLC densitometric scan of the plates showed numerous bands. Study revealed, at 254 nm got 10 spots, densitometric scan at 254 nm revealed 7 peaks corresponding to 8 different compounds in the syrup, compounds with Rf - 0.11,0.25,0.43,0.59,0.68,0.76,0.92 (Fig. 1). At 366 nm 3 peaks in the syrup, compounds with Rf - 0.03, 0.63, 0.75were found (Fig. 2).

Table-1. Composition, parts used and physicochemical parameters of HVKIG -S syrup

S.no	Sanskrit name	Scientific name	Part used	Ratio
1.	Haritaki	*Terminalia chebula* Retz	Phala	1 part
2.	Vidanga	*Embelia ribes* Burm. f.	Beeja	1 part
3.	Kampilakka	*Mallotus phillipinesis*	Phala Raja	1 part
4.	Indrayava	*Holarrhena antidysenterica*	Beeja	1 part
5.	Aragvadha	*Cassia fistula* Linn	Phala Majja	1 part
6.	Sitopala	Sugar		20w/v%
7.	Madhu	Honey		60w/v%
8.	Sodium Benzoate	Preservative		1% in 1 litre
9.	Sigru	*Moringa oleifera* Lam.	Beeja	1 part

Table-2. Organoleptic characters of HVKIG - S syrup

Parameters	Results
Color	Brown
Odor	Aromatic
clarity	Opaque
Consistency	Liquid

Table-3. Physico-chemical parameters of HVKIG – S syrup

S.no	Parameter	Results
1.	Total Ash Value (%w/w)	0.69%
2.	Acid Insoluble Ash (%w/w)	0.21
3.	Ph Value	5.3
4.	Specific gravity (cc)	1.2930
5.	Refractive index	1.4860
6.	Total solid content	75

Table-4. Solubility test of HVKIG -S syrup

Sr no.	Solvent	Result
1.	Methanol	In soluble
2.	Formic acid	Soluble
3.	Toluene	Soluble
4.	Ethyl Acetate	Soluble

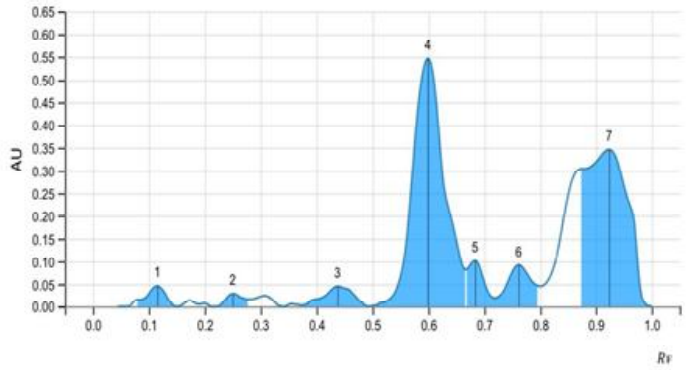
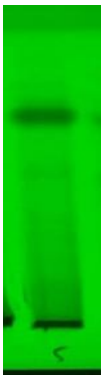


Fig. 1. HPTLC CHROMATOGRAPH @254nm

Table-5. Rf value @ 254 nm

Spot No .	Track 05
1.	0.11
2.	0.25
3.	0.43
4.	0.59
5.	0.68
6.	0.76
7.	0.92



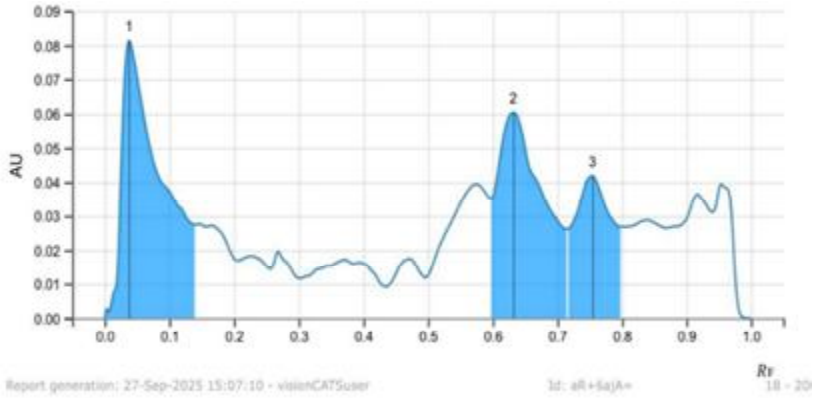


Fig. 2. HPTLC CHROMATOGRAPH @366nm

Table no 6 Rf @ 366nm

Spot No.	Track 5
1	0.03
2	0.63
3	0.75

An increasing number of ailments, particularly those related to lifestyle, are being treated with the Ayurvedic medical approach. The chemicals were discovered and pharmacognostically verified before being used in the formulation . The therapeutic efficacy of any plant or compound used for medical purposes is determined by the consistency of the ingredients employed in its creation. In addition to HPTLC, the manufactured medication, HVKIG-S Syrup, was analyzed physicochemically and qualitatively. All of these measures can be used in the formulation process as analytical standards for quality control.

The active ingredients of Haritaki, Vidanga, Kampilakka, Indrayava, Aragvadha, Sitopala, Madhu, Sodium Benzoate, and Sigru vary widely, but identifying Sigru at 0.11 Rf under 254nm UV with diethyl ether suggests a chromatographic fingerprinting approach.

Table-7. Phytochemical and Mode of Action of Ingredients
HVKIG-S Syrup contain Active compound by ingredient Haritaki (Terminalia chebula) Chebulinic acid, gallic acid, ellagic acid, Vidanga (Embelia ribes) Embelin, quercetin,

Ingredient	Phytochemicals	Mode of action
Haritaki (*Terminalia chebula*)[1]	Hydrolysable Tannins, specifically Chebulagic acid and Chebulinic acid, along with gallic acid.	Antioxidant, laxative, antimicrobial, enhances digestion and detoxification Haritaki's action is primarily driven by its high tannin content.[3]
Vidanga (*Embelia ribes*)	Embelin (a benzoquinone derivative).	Antihelmintic, antifungal, antioxidant, effective against intestinal parasite, Vidanga is famously known as Krimighna ("destroyer of worms") in Ayurveda. Its action is primarily attributed to embelin.[7]
Kamapilakka (*Mallotus philippensis*)	Rottlerin (a complex phloroglucinol derivative)	Antihelmintic, anti- inflammatory, contains rottlerin with disrupts parasite metabolism, Kampillak is traditionally used, especially for tapeworms (cestodes). Its mechanism is potent and multifaceted.
Indrayava (*Holarrhena antidysenterica*)	Steroidal Alkaloids, most notably Conessine	Antidiarrheal, antimicrobial pathogens, While primarily known for its anti-dysenteric properties, the seeds (Indrayava) are also used for helminthic infections.[6]

Aragvadha (*Cassia fistula*)	Anthraquinones (*e.g.*, sennosides, rhein) and Flavonoids (*e.g.*, quercetin, kaempferol).	Laxative, Anti-inflammatory. Aragwadh has a distinct dual-action mechanism.
Sitopala (Sugar)	-	Energy source, used as a carrier of sweetener in formulations
Madhu (Honey)	-	Antibacterial, wound healing, antioxidant, enzymes and flavonoids inhibit microbial growth
Sodium Benzoate	-	Preservative; inhibits microbial growth by lowering intracellular ph
Sigru *(Moringa oleifera)*	Benzyl isothiocyanates (from glucosinolates), Tannins, and Saponins.	Antioxidant, anti – inflammatory, antimicrobial; quercetin and kaempferol modulate immune responses, Shigru (Moringa) seeds and leaves exhibit a broad-spectrum anthelmintic effect[4]

flavonoids, Kampilakka (*Mallotus philippensis*) Rottlerin, isorottlerin, Indrayava (Holarrhena antidysenterica) Conessine, holarrhenine, Aragvadha (Cassia fistula) Rhein, emodin, flavonoids Sitopala (Sugar) Sucrose, Madhu (Honey) Glucose, fructose, enzymesSodium Benzoate Preservative; antimicrobial agent, Sigru (Moringa oleifera) Quercetin, kaempferol, chlorogenic acid.

Intestinal worm infections in children are a "silent epidemic" worsened by high recurrence and resistance to standard drugs. Polyherbal preparations are a potential alternative, but they must be standardized for quality and reproducibility. High-Performance Thin-Layer Chromatography (HPTLC) fingerprinting is a key technique used to analyze these complex herbal mixtures. The goal is to use HPTLC data from preparations like HVKIG-S syrup to develop a Standard Manufacturing Process (SMP), ensuring a consistent and reliable remedy.

Consent It is not applicable.

Ethical Approval It is not applicable.

The authors are acknowledging hereby the management of Parul University and parul Central Lab for their support and cooperation in the study.

Competing Interests Authors have declared that no competing interests exist.

Author contributions

Dr Suyesh Krishali, Dr. Kavya Mohan

and Dr Ishita Swami conceived of the presented idea. Dr Suyesh Krishali, Dr Kavya Mohan developed the theory and performed the computations.

Dr Ishita Swami and Dr. Kavya Mohan verified the analytical methods. All authors discussed the results and contributed to the final manuscript**.**

Funding Source none

References :

1. Gupta, A., A. K. Mishra, P. Bansal, R. Singh, S. Kumar, and V. Gupta, (2010). *Journal of Pharmacy Research, 3*(2): 417-424.
2. Kumar, K.S., A. Amuthan, and G. Senthilvel, (2016). *International Journal of Clinical Sciences and Pharmacology*, *5*(1): 17–24.
3. Mammen, D., S. Bapat, and R. Sane, (2012). *International Journal of Pharmaceutical and Biological Archives*, *3*(1): 416-419.
4. Mortensen, L. L., L. H. Williamson, T.H. Terrill, R.A. Kircher, M. Larsen, and R.M. Kaplan, (2003). *Journal of the American Veterinary Medical Association*, *223*(4): 495–500.
5. Sethi, P. D. (1996). *High Performance Thin Layer Chromatography* (1st ed.). New Delhi: CBS Publishers and Distributors; 1-56.
6. Sharma, D. K., V. K. Gupta, S. Kumar, V. Joshi, R. S. K. Mandal, A. G. Bhanu Prakash, *et al.* (2015). *Veterinary World*, *8*(12): 1392-1395.
7. Sharma, V., D. N. S. Gautam, A. F. Radu, T. Behl, S. G. Bungau, and C. M. Vesa, (2022). *Antioxidants (Basel)*, *11*(7): 1359.
8. Stahl, I. (1969). *Thin Layer Chromatography, A Laboratory Handbook*. Berlin: Springer-Verlag; *127*(8): 52-86.
9. Swami, I. and S. D. Sharma, (2025). Pharmaceutical analysis of an Anubhut Yoga- HVKIG Syrup. *International Journal of Biology, Pharmacy and Allied Sciences (IJBPAS)*, January Edition.
10. Swami, I., A. Patil, C. R. Swapnil, S. Pani, and V. Prajapati, (2021). *Journal of Pharmaceutical Research International*, *33*(47A): 854-860.