



A Literature Review of the Poly Herbo-Mineral Formulation (*Vellai Venkaiyah Kulikai*) that Is Commonly Used in Siddha Medical System of the Sri Lanka

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ABSTRACT

A poly herbo-mineral preparation (Pill) (*Vellai Venkaya Kulikai*) which is used for treating painful menstruation, gastrointestinal disorders and abdominal pain in Siddha Medicine which is one of the traditional medical systems in Sri Lanka. Based on references, the preparation method of *Vellai Venkaya Kulikai* (VVK), which is mentioned in the Siddha Book of *Pararajasekaram* (*Karppa roga nithanam*) is commonly practiced in the health services of the Siddha medical system in Sri Lanka.

Therefore, this preliminary step was taken to provide documentary evidence for the therapeutic effects of the ingredients which are used to the preparation of VVK. Data for the review of 28 ingredients were collected from relevant research sources from September 2020 to April 2021. Data entry form was prepared based on the characteristics of the ingredients such as families; morphology; parts used; siddha properties; pharmacological actions and phytochemical contents. Among these ingredients, all were identified as 25(89%) herbal, 2(7%) minerals and 1(4%) metal. These herbal ingredients are belonging to 15 families and 5(20%) of the species were found in the family of Umbelliferae. Based on the growth habit, these plant materials were classified as 17(68%) herbs and 9 (36%) species were used as seeds. Among 28 ingredients, siddha properties such as 15(48%) pungent taste, 21(81%) hot potency and 15(80%) pungent efficacy; carminative 17(11%) and stimulant 16(10%) actions and phytochemicals as volatile oil 20(15.87%) were found. Although this study provides the clear information for the therapeutic effects, further scientific studies for VVK and each medicinal ingredient should be performed in future.

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Introduction

Three systems of Indigenous Medicine, namely, Ayurveda, Siddha and Unani are mainly practiced in Sri Lanka. In all three indigenous systems, plants play a major role and constitute the backbone of the system. Siddha Medicine is one of the traditional medical systems and popular among the Tamil speaking people of Northern and Eastern Provinces

of Sri Lanka. Siddha Medicine is most prominent in all other medical systems in the world and it originates from BC 10000 to BC 4000 (1).

The origin of Siddha is attributed to Lord Shiva, who was handed it down to his wife Parvathi (Shakti) who in turn passed on the sacred knowledge to 'siddhars' such as *Agasthiyar*, *Thirumoolar* through Lord *Muruga* (2). *Siddhars*

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who were considered the greatest scientists in ancient times and were men of highly cultured, intellectual and spiritual faculties combined with supernatural powers (3).

Everything in this universe is made of five basic elements; earth, water, fire, air and space. According to the Siddha system, man is the microcosm of the universe and has all universal elements in his body. The five primordial elements are present in the body in the form of three vital humors such as *vaatham* (air and space), *pitham* (fire and water), *kabham* (earth and water); Seven basic structures or tissues such as *chyle* (water), blood (fire), muscles (earth), fat (earth and water), bone (earth), bone marrow (water), and sperm (water) or ovum (fire); and three excretory matters such as sweat, urine, and stool. All these are together made up the physical or material aspect of a man. The three humors, such as *vatam*, *pittam*, and *kapham* constitute the fundamental concepts of Siddha medicine. Health is considered the maintenance of equilibrium between three humors, while any disturbance or imbalance causes disease (4, 5).

The resources of Siddha medicine are classified into three major divisions, namely, herbal, metals and minerals and animal materials. In Siddha system, equal importance has been given to internal as well as an external medicine because Siddha Medicine advocates 32 types of internal and 32 types of external medicine with their shelf life (6).

'*Maathirai*' or '*kulikai*' (Tablet or Pill) is one of the forms of 32 types of internal medicine and it is made by grinding the mixture of powdered herbs and or minerals with herbal extracts or decoction and rolled with dried as proper size pills (7).

'*Vellai Venkaya Kulikai*' ('*Ulli Kulikai*' or '*Vaivu Kullikai*') is a poly *herbo*-mineral preparation, which is the type of internal medicine (Pill) and used for treating gastrointestinal disorders, nausea, indigestion, abdominal pain, dysmenorrhea, uterine pain, and vague pain in pregnant mothers. Additionally, it is also used as a pain killer and reduces hypertension and blood cholesterol (8).

The Jaffna District, which is one of the 25 Districts and it, is located in the northern part of Sri Lanka. Jaffna district highly occupied by Tamil speaking community and the Siddha system of Medicine is closely associated with their tradition and culture. At present, the health services in Siddha Medical systems in Jaffna District are performed through the Siddha Teaching Hospital, District Siddha Hospital, Rural Siddha Hospitals, Central Siddha Dispensaries and Free Siddha Dispensaries.

Based on the literature references, the preparation method of '*Vellai Venkaya Kulikai*' (VVK) and its uses is mentioned in the book of Pararajasekaram, which is the most important Sri Lankan Traditional Siddha Book in Jaffna (8). Although two methods of preparation of VVK were mentioned in the *Pararajasekaram (Karppa roga nithanam)* (Obstetrics and Gynecology) and *Bala roga nithanam* (Pediatrics),

one preparation method which is mentioned in the *Pararajasekaram (Karppa roga nithanam)* is commonly used in the above-mentioned health services of the Siddha and traditional medical systems for the treatment in Jaffna District, Sri Lanka. Therefore, the preliminary step was taken to do the literature review of the therapeutic effects of the ingredients which are used for the preparation of VVK to document purpose.

Methods

It is a narrative literature review related study of the ingredients which are used to prepare the VVK.

The data acquired from all existing sources such as old and new editions of eleven Siddha Medical text books from Libraries at Unit of Siddha Medicine and University of Jaffna, electronic books from the Web sites of the Unit of Siddha Medicine, University of Jaffna (9); and Siddha medicine related web sites as TKN Siddha Ayurveda *Vaidhyashala* (10) and Tamil bookshelf (11); research articles; and other websites during the period from the September 2020 to April 2021. The search for review was limited to publications and or studies in the Tamil and English language only.

Data entry form was prepared based on the specific objectives related to the basic characteristics of the medicinal ingredients of the VVK preparation, which was mentioned in the textbook of *Pararajasekaram (Karppa roga nithanam)*. Based on this book, the VVK, which is prepared with the usage of 25 herbal materials, two minerals and one metal ingredients altogether. Detailed literature review was done to these all 28 ingredients from the relevant sources (12-21). Data entry form includes the details of the medicinal ingredients were 'scientific and selected vernacular names', 'families', 'morphology', 'categorical division', 'specific parts used', 'siddha properties', 'pharmacological actions' and 'phytochemical contents' which were used to as searched keywords for this study. Duplicate publications and non-relevant articles or books were excluded.

Acquired data were entered into MS Excel 2010. After that, these data were processed and the results were exhibited as descriptive in frequency and percentage level only.

Results

Classification of the Medicinal Ingredients

Based on this review, 25 (89%) herbal, 2 (7%) minerals and 1 (4%) metal are used to prepare VVK, which was mentioned in the book of Pararajasekaram (*Karppa roga nithanam*).

Scientific and Vernacular names of the Medicinal ingredients

The scientific and selected vernacular names of the plants, metal and minerals are summarized in Table 1.

Table 1. Scientific and selected Vernacular names of the Medicinal ingredients.

S. No	Botanical name/Chemical Name	Tamil name	English name	Sinhala name	Sanskrit name
Herbal Ingredients					
01.	<i>Allium sativum</i> L.	Ulli, Vellai poondu	Garlic	Sudu lunu	Lasuna, Arishtha
02.	<i>Pergularia daemia</i> (Forssk.) Chiov.	Uththamakani, Veliparutthi	Trellis-Vine, Pergularia	Meda hangu	Kakajangha, Phala – antaka
03.	<i>Myristica fragrans</i> Houtt	Sathikkai, Jadhikkai	Nutmeg Mace tree	Sadikka	Jati-phalam, Jatiphala
04.	<i>Trachyspermum ammi</i> (L) Sprague ex Turrill	Omam	Ajwain, bishop weed Lovage	Asamodagam Yamani	Ajamoda, Yavani
05.	<i>Piper nigrum</i> L.	Milaku, Kurumilaku	Pepper (black)	Gammiris	Maricha, Cavyam, Dhanwantari
06.	<i>Trigonella foenum gracum</i> L	Venthayam, Vendayam	Fenugreek, Feugreek	Uluhaal	Methi, Bahuparni
07.	<i>Anacyclus pyrethrum</i> (L) Link	Akkarakaram	Pellitory, Mount Atlas Daisy	Akrapatta Akkrakara	Akkarakara
08.	<i>Piper longum</i> L	Thippali, Tippili	Long pepper	Thippili, Wagapul	Pippali, Krushna
09.	<i>Zingiber officinalis</i> Roscoe	Chukku, Injzi	Dried ginger	Inguru	Nagara, Sunti
10.	<i>Elletaria cardamomum</i> (L) Maton	Elam Ancha	Cardamom, Malabar cardamom	Enasal	Ela, Trutih
11.	<i>Picrorhiza kurooa</i> Royle ex Benth	Kadukurohini	Black hellebore, Yellow gentian	Katukarosana	Vakragra Katurohini Krishnabhedi
12.	<i>Acorus calamus</i> L	Vasambu	Variiegated Sweet flag,	Wada kaha	Vacha
13.	<i>Saussurea costus</i> (Falc.) Lipsch.	Goshtam, Kosbtham, Kottam	Kushta, Kust, Indian costus root	Goda mahanel	Amaya, Suwanda Kottan
14.	<i>Syzygium aromaticum</i> (L.) Merr. & L.M. Perry	Lavangam, Karambu	Cloves	Karabuneti, Karabu, Babbula	Lavanga
15.	<i>Cinnamomum verum</i> J. Presl	Karuva (Lavanga pattai)	Bark of cinnamon	Kurundu Val kurundu	Twak
16.	<i>Glycyrrhiza glabra</i> L	Athimathuram	Jamaica Liquorice	Welmee	Madhuka, Yashti madhu, jalayashiti,
17.	<i>Peucedanum graveolens</i> (L.) C.B. Clarke /	Sathakuppai, Sataguppi, Catakuppai,	The dill Anet	Enduru Shatapushpa Satakuppa	Misi, Madhura
18.	<i>Alpinia officinarum</i> Hance	Sittaraththai, Chitharathai	lesser galangal	Heen araththa	Rasna
19.	<i>Coriandrum sativum</i> L	Kotthu malli, Malli	Coriander	Koththamalli	Dhanyaka Kustumbari
20.	<i>Myristica fragrans</i> Houtt	Vasuvasi (Sathipathiri)	Arillus of the nut/nutmeg/ mace tree	Vasavasi	Jatipatri Jatiphala
21.	<i>Symplocos racemose</i> Roxb	Velli lodhram, Belli lotai	Lodh tree	Lothsumbula	Savaraka, Lodhram
22.	<i>Cuminum cyminum</i> L	Seerakam / Jeerakam	Cumin seeds	Soodhuru, Suduru	Jiiraka, Ajajika
23.	<i>Nigella sativa</i> L	Karuncheerakam	Black cumin/small fennel	Kaluduru	Upakunchika Krishna jiraka
24.	<i>Ferula assa-foetida</i> Linn.	Paal perungayam	Asafoetida, Stinking gum, Devil's dung	Perumkayam, Singu, perungayam	Hingu, Ramata
25.	<i>Brassica nigra</i> (L.) W.D.J. Koch	Kadugu	Black mustard	Aba, kaluaba	Rajika Sarshapa
Metal and Mineral Ingredients					
26.	Magnetic oxide of iron	Oosikantham	Magnetite	-	-
27.	Sodium Biboate Sodii biboras or S.boras	Venkaram, Vengaram	Sodium borate Borax	Pushara	Tankana Tunkana Rasa shodhan
28.	-	Ennaikaaram (details are not available)	-	-	-

Family Distribution of the Herbal ingredients

Among the 28 medicinal ingredients of the VVK, 25 plant species belonging to 15 families, which have been documented as herbal ingredients for the preparation of VVK were used for

this review. The families of the 25 herbal ingredients are given below in Figure 1. From these 25 herbal ingredients, 5 (20%) of the species were found in the family of Umbelliferae and followed by 3 (12%) in the family of Zingiberaceae.

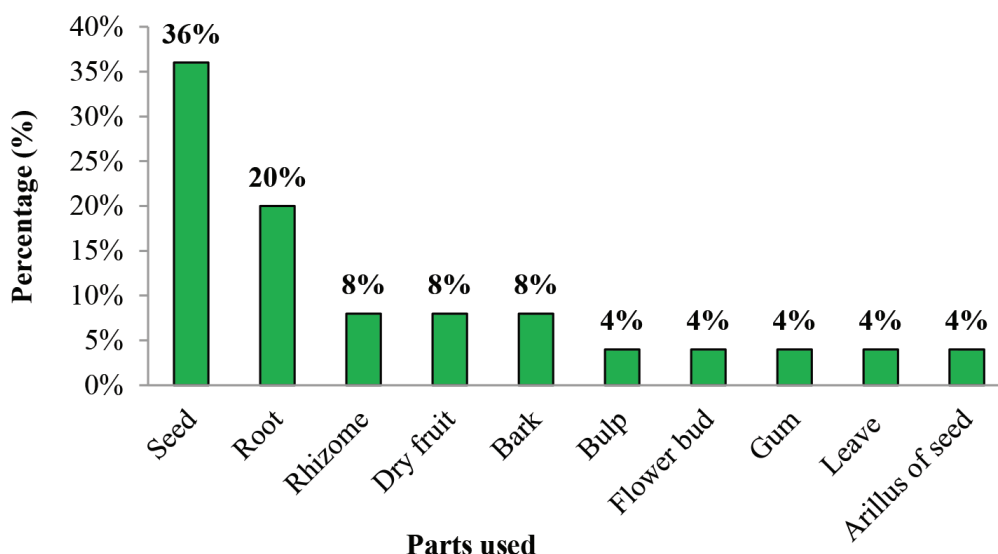


Figure 1. Families of the Herbal Ingredients for VVK

Morphology of the Herbal ingredients

Based on this review of herbal ingredients were classified to be 17 (68%) herbs and 5 (20%) trees.

Parts of the Herbal ingredients

Figure 2 denotes the parts of herbal ingredients which are

used to prepare the VVK. Based on this figure, the parts used to prepare VVK were seeds 9 species (36%), root 5 species (20%) and other parts such as rhizome, dry fruit, bark, bulb, flower bud, and mace of seed.

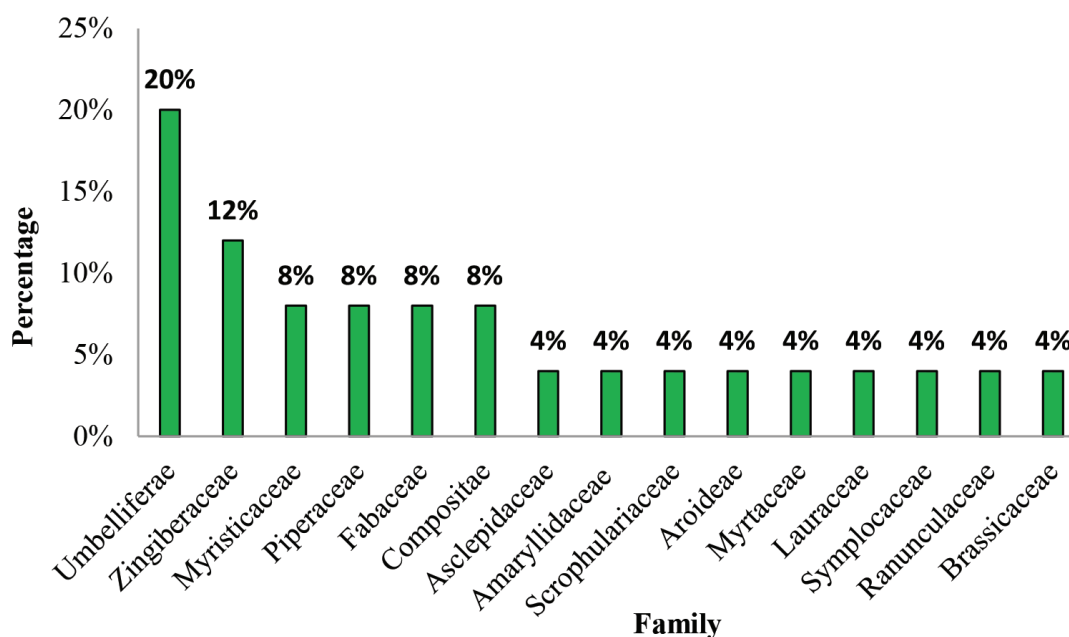


Figure 2. Parts of the Herbal ingredients for VVK.

Siddha properties of the medicinal ingredients

Table 2 show, within these medicinal ingredients that highly have Siddha properties such as pungent taste 15 (45%); hot potency 22 (81%) and pungent efficacy 20 (80%). Further, those ingredients have bitter, sweet and astringent taste and sweet efficacy too. A Siddha property refers to evaluation of the medicinal ingredients by taste, character, potency, class/efficacy and action.

Table 2. Siddha properties of the Medicinal ingredients for VVK.

Taste	Fq.	%	Potency	Fq.	%	Efficacy	Fq.	%
Sweet	06	18%	Hot	22	81%	Pungent	20	80%
Bitter	08	24%	Cold	06	19%	Sweet	05	20%
Astringent	04	12%						
Pungent	15	45%						

Fq.: Frequency, %: Percentage

Pharmacological Actions of the Medicinal ingredients

Based on Table 3, pharmacological actions such as carminative 17(11%); stimulant 16(10%); antiseptic 13(8%) and stomachic 13 (8%) were highly present in these medicinal ingredients of VVK.

Table 3. Pharmacological Actions of the Medicinal ingredients for VVK.

S.No.	Action	Fq.	%	S.No.	Action	Fq.	%
1	Carminative	17	11%	20	Digestive	2	1%
2	Stimulant	16	10%	21	Galactagogue	2	1%
3	Stomachic	13	8%	22	Refrigerant	2	1%
4	Antiseptic	12	8%	23	Resolvent	2	1%
5	Aphrodisiac	9	6%	24	Rubefacient	2	1%
6	Diuretic	10	6%	25	Sedative	2	1%
7	Tonic	8	5%	26	Sialagogue	2	1%
8	Expectorant	7	4%	27	Alternative	1	1%
9	Antispasmodic	5	3%	28	Antidote	1	1%
10	Aromatic	5	3%	29	Appetiser	1	1%
11	Emmenagogue	6	4%	30	Cathartic	1	1%
12	Laxative	5	3%	31	Cholagogue	1	1%
13	Antiperiodic	4	3%	32	Cordial	1	1%
14	Astringent	5	3%	33	Deobstruent	1	1%
15	Emetic	3	2%	34	Diaphrotic	1	1%
16	Emollient	3	2%	35	Hypnotic	1	1%
17	Acrid	2	1%	36	Narcotic	1	1%
18	Antibilious	2	1%	37	Vesicant	1	1%
19	Demulcent	2	1%				

Fq.: Frequency, %: Percentage.

Phytochemical contents of the herbal ingredients

The phytochemical contents of the herbal ingredients which are used to prepare the VVK are shown in Table 4. Phytochemicals such as volatile oil 20 (15.87%), fat 15 (11.9%), and alkaloid 11 (8.73%) were found to be high in these herbal ingredients.

Table 4. Phytochemical contents of the herbal ingredients for VVK.

S.No	Phytochemicals	Fq.	%	S.No	Phytochemicals	Fq.	%
1	Volatile oil	20	15.87%	15	Phenol	2	1.59%
2	Fat	15	11.90%	16	Bitter	3	2.38%
3	Alkaloid	11	8.73%	17	Vitamin C	1	0.79%
4	Mucilage	10	7.94%	18	Protein compounds	1	0.79%
5	Tannin	8	6.35%	19	Phytosterol	1	0.79%
6	Sugar	8	6.35%	20	Organic sulfur	1	0.79%
7	Starch	8	6.35%	21	Organic acid	1	0.79%
8	Proteins	7	5.56%	22	Malic acid	1	0.79%
9	Resin	5	3.97%	23	Malates	1	0.79%
10	Steroids	4	3.17%	24	Lignin	1	0.79%
11	Saponins	4	3.17%	25	Inorganic matter	1	0.79%
12	Terpenoids	3	2.38%	26	Glycerides	1	0.79%
13	Gum	3	2.38%	27	Cathartic acid	1	0.79%
14	Flavonoids	3	2.38%	28	Wax	1	0.79%

Fq.: Frequency, %: Percentage

Discussion

Classification of the Medicinal Ingredients

The resources of Siddha medicine are classified into three major divisions; namely, herbal, metals and minerals and animal materials (22). Present result attempts to screen the Siddha classics for references are highlighting the usage of minerals and metals for medicinal purposes.

Scientific and Vernacular names of the Medicinal ingredients

A commonly the botanical name conforming to the International Code of Nomenclature for Plants and generally, the botanical name has at least two words. The first word denotes the genus and the second word is the species name for the particular plant. These words form the species identifier for the plant. The third word is to be added to the botanical name to identify a distinct variety within the species. Botanical names are universal. The botanical name is unique to a specific plant. No other plant in the world will have the same botanical name (23). This scientific name is most important to the identification of the particular plant wherever in the world it is found, grown or studied. Therefore, the botanical or chemical name is important to correct ingredient identification. Harish Singh, 2008, mentioned in his research article that the local names to play an important role in ethno-botanical study and easy parameter for scientific identification of the taxa (24).

Family Distribution of the Herbal ingredients

Based on the common external features of plants such as visible details of the leaves, fruits and other parts, these plants can be grouped together as a family. It is important to users for the correct identification of the plant (24). Present review also encompasses more common families for the herbal ingredients to the preparation of VVK.

Morphology of the Herbal ingredients

Plant morphology is the study of the physical form and external structure of plant and it is useful in the visual identification of plants (25). Based on the size, nature of the stem and life span, and growth habit, plants are broadly categorized into three groups such as herbs, shrubs and trees. In addition to these, two more types need some support to grow. They are specifically called climbers and creepers (26, 27). Present results are emphasis the commonest morphology of the herbal ingredients which are used to prepare the VVK.

Parts of the Herbal ingredients

Many parts of a plant can be used for culinary or medicinal purposes. Medicinal properties can be derived from different parts of a plant such as leaves, roots, bark, fruit, seeds, flowers, bulb, wood, essential oil, fatty oil, gum, resin, rhizome and tuber. These different parts of a plant have contained different active principles that are toxic or non-toxic. An active ingredient also differs from different parts of a plant. Therefore, a part of the plant is edible, while another part of the same plant is toxic (28-31). This review denoted that the seeds and roots are more used in the VVK preparation.

Siddha properties of the medicinal ingredients

In Siddha Pharmacology, each raw drug or crude drug is classified in to taste, character, potency, class/efficacy (bio transformation) and action according to the five basic elements as earth, water, fire, air and space. These classifications are commonly known as Siddha Properties (32). According to siddha Science, the six tastes of food or plant materials are also composed of five basic elements. Every taste is constituted by the combination of two basic elements. The dynamics of Siddha preparations are based on taste parameters as sweet (air and space), sour (earth and fire), salty (water and fire), pungent (spicy) (air and fire), bitter (air and space) and astringent (earth and air). The siddha drug will exhibit the properties of taste due to its dominance (4, 21, 33 - 35). Therefore, taste is playing an important role in the maintenance of equilibrium between basic humors, which are disturbed in disease conditions (4, 5). Taste is traditionally valued as an important ethno-pharmacological category, and correlate with certain therapeutic activities (36). Further, Dragos and Glica have suggested that phytochemical taste is more relevant than chemical class for ethno-pharmacological activity prediction (36, 37).

Siddha Pharmacology defines twenty-one characters of drugs like lightness, heaviness, dryness, etc. which are comparable to physical properties of the drugs (4, 32).

Potency is defined as an active constituent of the siddha drug. This constituent is responsible for the pharmacological activity of the medicinal plant. Commonly the siddha drugs have cold and hot potency based on the presence of Fire or Water element in them (35). Hot potency neutralizes the affected the vital humors of vatham and kabham while cold potency neutralizes

the affected humor of pitham (4, 33).

Class (bio transformation) is said to be the post absorptive taste (efficacy), which is also considered being an important aspect (21, 33). It is a concept explaining the assimilation of six tastes in the digestive tract into three primary tastes namely Sweet, Sour and Pungent. Mostly Sweet and Salt becomes Sweet, Sour remains Sour, Bitter, Pungent and Astringent becomes Pungent (35).

Based on these results, the efficacy of VVK may be depending on the pungent taste, hot potency and pungent efficacy.

Pharmacological Actions of the Medicinal ingredients

The pharmacological action is a function of drug, which mentions the outcome effect of the drug like tonic, carminative, stimulant, diuretic, etc. An ingredient can have more than one action (21, 33).

Herbal clinicians should have an excellent knowledge about the primary actions of plants and specific indications. The first step to use medicinal herbs successfully is to understand the actions of each herb and how they work to treat an individual patient's symptoms (38). Researchers found that the VVK has highly shown carminative and stimulant actions.

Phytochemical contents of the herbal ingredients

Phytochemicals are defined as bioactive nutrient plant chemicals in plant materials that provide immense health benefits and reduce the risk of most chronic diseases due to great antioxidant potential (39). Examples for phytochemicals such as polyphenols, flavonoids, isoflavonoids, terpenoids, and fibers, therefore, a phytochemical involvement is crucial in each and every herbal formulation. The VVK's ingredients have shown the volatile oil, fat, and alkaloid which are responsible for the radical scavenging activity.

Conclusion

A poly herbo-mineral preparation (*Vellai Venkaya Kulikai*) is commonly used for treating gastrointestinal disorders in the Siddha medical system of the Sri Lanka. Based on the literature references, the preparation method of '*Vellai Venkaya Kulikai*' (VVK) which is mentioned in the Sri Lankan Traditional Siddha Book of Pararajasekaram (*Karppa roga nithanam*) and this preparation of VVK which is commonly used in the health services of the Siddha and traditional medical systems in Jaffna District. Therefore, this preliminary step was taken to provide documentary evidence for the therapeutic effects of the ingredients which are used to the preparation of VVK. However, there is a need for further extensive scientific studies for VVK and each medicinal ingredient should be performed to prove in the future.

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