IN-VITRO CARMINATIVE ACTIVITY AND SCREENING OF HEAVY METALS INVAIPPU PERUNGAYAM –A SIDDHA POLY HERBAL FORMULATION

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Abstract

Siddha is one of the ancient traditional systems of Indian medicine. It is very safe and devoid ofany drastic side effects. Traditional Siddha medicine offers a wide range of carminative drugswhich are single herbal, polyherbal and minerals. This paper deals with Vaipu perungayam(VPG) documented in classic Siddha text "Thiruvalluva Nayanar Navarathna Vaithiyam 800".The main ingredients of the VPG are Panai vellam (Palmyra palm), Sukku (Zingiberofficinale), Vellai kunkiliyam (Vateria indica), Poondu thailam (Allium sativam), Vaalluzhuvaivithu (Celastrus paniculatus), Vilva pazha sathai (Aegle marmelos), Ulunthu mavu (Vignamungo), Kadugu ennai (Brassica nigra) which helps in Soothagasoolai (Dysmenorrhea),Gunmam (Peptic ulcer), Mandham (Indigestion), Paeruvayiru (Ascites), Valinoi (Vadhamdisorders). The study was aimed to evaluate the In-vitro carminative properties and screening ofheavy metals in vaipu perungayam. The VPG extract showed significant results for carminativeproperties at different doses and the heavy metals are below toxic levels.

Key words: Vaipu Perungayam, In-vitro, Carminative, Siddha.

Introduction

Saraku vaipu is the unique method of siddha system of medicine. This mimics the original drugwith

all its properties and actions. Vaippu Perungayam is the one of the Vaippu Murai wheremultiple herbals were added according to proper propositions and procedure. Vaipu Perungayam(VPG) was taken from classic Siddha text "Thiruvalluva Nayanar Navarathna Vaithiyam 800".

Nowadays adulteration in asafoetida is tremendously increasing; in order to avoid that Vaippumurai can be the solution. So, this study deals with the carminative property of VaippuPerungayam which helps to use in medicine preparations as well as in food and also screening of heavy metals for safer use.

Aim and Objective

To evaluate the carminative activity and screening of heavy metals in vaippu perungayam – aSiddha formulation.

Methods

"Vaipu Perungayam" was taken from the Siddha literature "*Thiruvalluva naayanaar NavarathinaVaithiyam 800".*

Collection of Raw Drugs

The above-mentioned raw drugs were purchased from a well reputed siddharaw drugs shop.

Authentication

Alltherawdrugsandfruitswereidentifiedandauthenticatedbybotanistsand Gunapadamexperts in Sri Sairam Siddha Medical College and Research Centre, Chennai-44.

Preparation of the Medicine

All the raw drugs were purified as per literature, drugs Such as Chukku *(Zingiber officinale)* wereadded to the Kalural (Ebony Mortar and Pestle) and made into fine powder, mix it withUlunthumavu *(Vigna mungo powder)* andvasthrakayam (filtered using cloth) were done. AddVellaikunkiliyam *(Vateria indica),* Panaivellam (Palm jaggery), grind well and add Vaalluzhuvai Vithu *(Seeds of Celastrus paniculatus) w*hich turns oily texture and consistency.

Then add Vilva pazham sathai*(Fruit of Aegle marmelos),* Poondu Thailam (required amountof garlic*(Allium sativum)*were peeled off the papery skin and then crushed and placed into the cloth andfirmly introduce into the flame, then the extract starts to ooze which was collected in a vessel),required amount of Kadakuennai (Mustard oil)was added and grinded into fine paste form.

Pudam Process

The prepared Vaippu Perungayam is burried under Nel umi (paddy husk) and it is taken afterforty days.

Ingredients

Table: 1. Ingredients

Name of theIngredient	**Botanical Name**
Panai vellam	*Palmyra palm*
Chukku	*Zingiber officinale*
Vellai kunkiliyam	*Vateria indica*
Poondu thailam	*Allium sativam*
Vaalluzhuvai vithu	*Celastrus paniculatus*
Vilva pazha sathai	*Aegle marmelos*
Ulunthu mavu	*Vigna mungo*
Kadugu ennai	*Brassica nigra*

In Vitro Carminative Activity

In-vitro Carminative activity by acid-base titration Method:

In-vitro carminative activity of the siddha formulation Vaippu Perungayam was evaluatedby modified method of Swapnil Sharma et al. About 10, 20 and 40 ml of the VPG in water wereplacedinconicalflaskfittedwithair-tightnozzle,tothis100mlofdistillwaterwasadded.About 100 ml of NaOH {1M, previously standardized to oxalic acid} was poured into a plasticcontainer fitted with aeration tubing system that was connected directly to the reaction vesselcontaining varying volume of VPG. The flask was agitated manually for the next 45 mins andvigorously for another 30 mins and was allowed to stand for overnight. The carbon dioxide gasevolved from the reaction vessel was allowed to pass into a plastic container containing excesssodiumhydroxidewhereitwasabsorbedandconvertedintoequivalentamountofsodiumcarbonate.
The resulting mixture consisting of excess sodium hydroxide and sodium carbonatewastitratedwithstandardHClusingphenolphthaleinasindicatortogetfirstendpointandin continuation to this the second endpoint was enumerated using methyl orange as indicator. Thedifference in milliliters between the first & second endpoints was used to calculate the carbondioxide content per gram of sample.

Vol. of titrant x molarity of std. acid x mol. Wt. of CO_2 = mass of CO_2 in gmMolarity of the Acid is 0.09184 M

Mol. Wt. of CO_2 is 44.01 g/mol

Triplicate 1

Volume of Test Sample	Difference in Titration value (ml)	Mass of CO2 in gm
10	3.4	13.74
20	6.4	25.86
40	9.2	37.18

Triplicate 2

Volume of Test Sample	Difference in Titration value (ml)	Mass of CO2 in gm
10	3.1	12.52
20	7.2	29.10
40	9.6	38.80

Triplicate 3

Volume of Test Sample	Difference in Titration value (ml)	Mass of CO2 in gm
10	2.8	11.31
20	6.6	26.67
40	9.1	36.78

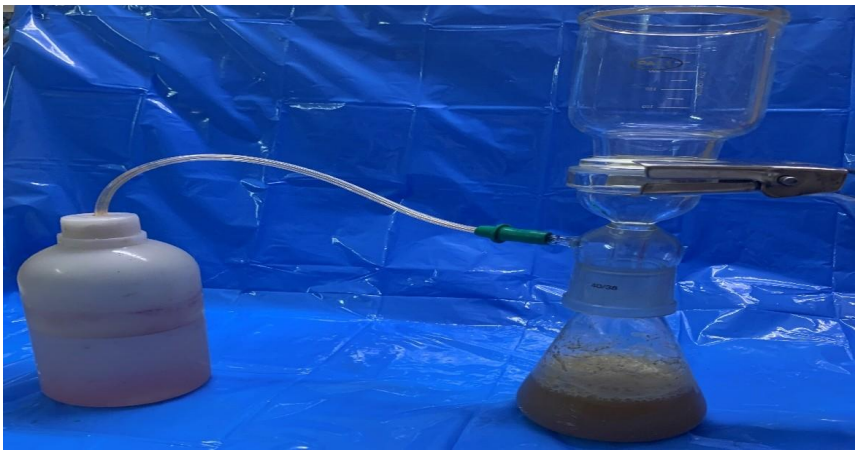

Fig.No.1. Reaction Setup – Sample VPG

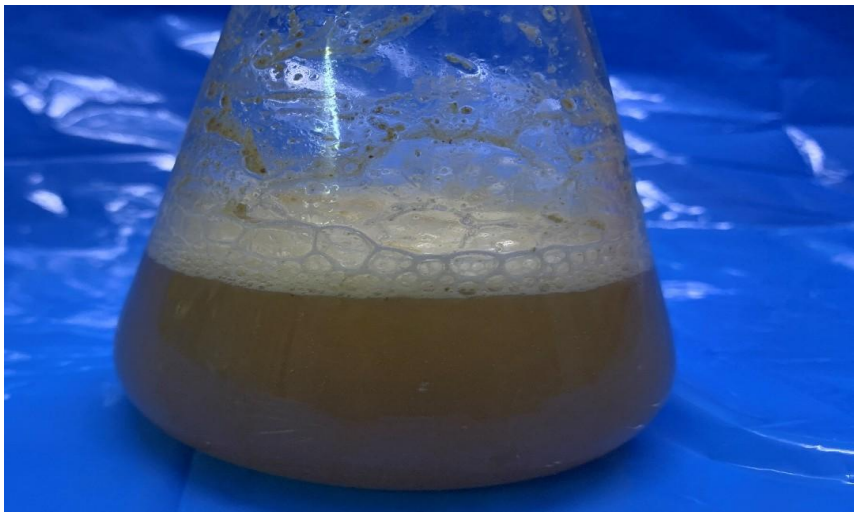

Fig. No.2. Evolvement of Carbon dioxide from the reaction mixture

Analysis

The carminative profiling of the test sample VPG was evaluated on basis of the amount ofcabon-dioxide evolved from the reaction mixture with varying volume of VPG. The amount ofcarbon dioxide {g} produced by the 10 ml of the sample VPG was found to be (12.53± 1.213),for 20 ml of sample it was (27.22± 1.683) and for 40 ml of sample it was (37.59± 1.069).

Table 3. Amount of Carbon dioxide produced by different doses of Vaippu Perungayam

Volume of Test Sample	Mass of CO2 in gm
10	12.53 ± 1.213

20	27.22	± 1.683
40	37.59	± 1.069

Each value represents the mean ± SD. N=3

Heavy Metal Analysis by Atomic Absorption Spectrometry

Standard: Hg, As, Pb and Cd – Sigma

Methodology

Atomic Absorption Spectrometry (AAS) is a very common and reliable technique for detectingmetals and metalloids in environmental samples. The total heavy metal content of the samplewas performed by Atomic Absorption Spectrometry (AAS) Model AA 240 Series. In order todetermine the heavy metals such as mercury, arsenic, lead and cadmium concentrations in thetest item.

Sample Digestion

Test sample was digested with 1mol/L HCl for determination of arsenic and mercury.Similarly, for the determination of lead and cadmium the sample were digested with 1mol/L ofHNO3.

Standard Preparation

As & Hg- 100 ppm sample in 1mol/LHCl

Cd&Pb-100ppmsamplein1mol/LHNO

Results

It was concluded from the results of the present investigation that the sample VPG possessespromising carminative activity in the tested medium which was measured as an index of mass ofCO2 released from the medium and the concentrations of heavy metals such as mercury, arsenic,lead and cadmium were listed in table 4.

Table 4. Heavy Metal Analysis of Vaippu Perungayam by Atomic Absorption Spectrometry

Name of heavy metal	**Absorption max** **A max**	**Result analysis**
Lead	217.0 nm	10.97
Arsenic	193.7 nm	2.24
Cadmium	228.8 nm	BDL
Mercury	253.7 nm	1.04

* BDL – BELOW DETECTION LIMIT

Discussion and Conclusion

Vaippu Perungayam was done using various ingredients by following proper proposition andprocedure. In day-to-day life Perungayam (Ferula asafoetida) is a commonly used in food as wellasinmedicinalpreparationsinsiddhasystem.NowadaysadulterationinAsafoetidaisincreasingtremendously due to increase in need. In order to avoid the usage of that, an alternate source forPerungayam is needed to compensate the insufficiency of naturally occurring Perungayam. Thepresent study revealed the concentrations of heavy metals in Vaippu Perungayam are below thetoxic level and reveals that there is no much effect and its potent carminative effect. Thus, VaippuPerungayam can be used as the alternative for adulterated asafoetida**.** The study recommendsfurther studies to standardize Vaippu Perungayam.

Conflict of Interest

There is no conflict of interest.

Source of Funding

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