WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.453
Volume 13, Issue 14, 1185-1192. Research Article ISSN 2277–7105

PHYTOCHEMICAL ANALYSIS OF VETTU MARVAN KULIGAI

Dr. K. Muthu Mari[1], Dr. T. S. Shamili[2], Dr. S. Sulfin Nihar[3], Dr. M. P. Abdul Kader Jeylani[4]

[1,2]PG Scholar, Department of Nanju Maruthuvam, Government Siddha Medical College, Palayamkottai.

[3]Professor, Department of Nanju Maruthuvam, Government Siddha Medical College, Palayamkottai.

[4]HOD and Professor, Department of Nanju Maruthuvam, Government Siddha Medical College, Palayamkottai.

Article Received on
31 May 2024,

Revised on 21 June 2024,
Accepted on 11 July 2024

DOI: 10.20959/wjpr202414-33236

***Corresponding Author**
Dr. K. Muthu Mari
PG Scholar, Department of Nanju Maruthuvam, Government Siddha Medical College, Palayamkottai.

ABSTRACT

Vettu Marvan kuligai is a poly herbal formulation which is mentioned in ancient Siddha literature for the treatment of various diseases. Ingredients of Vettu Marvan Kuligai are Omam, Nabhi, Thippili, Venkaram, Venmilagu, Lingam. This Standard Poly herbal formulation indicates for 64 types of fever according to Siddha literature. Phytochemicals are chemical compound produced by plants which have a lot of medicinal values. The selected sample of Vettu Marvan kuligai have some phytochemicals that are responsible for their pharmacological activity. The qualitative chemical screening of alcohol extract of VMK is revealed the presence of various secondary metabolites such as glycosides, steroids, phenol, tannins and sugar.

KEYWORDS: Vettu Marvan kuligai, Siddha, Phytochemical.

INTRODUCTION

The WHO describes traditional medicine as the total sum of “Knowledge, skills and practices indigenous and different cultures have used over time to maintain health and prevent, diagnose to treat physical and mental illness”. Siddha is derived from” Siddhi-Attaining perfection in life or heavenly bliss”. It is exclusively linked with tamil culture. Siddha science considers nature and man is essentially one “Nature is Man and Man is Nature”.

In Siddha system of Medicine, the raw materials like plant, minerals & animal resources are acquired from the natural surroundings. It also emphasizes the dose regimen and pertinent vehicle for every dose intake.

Fever is compared to Suram in Siddha system. Suram (fever) is considered as one of the diseases in Siddha system and it has 64 types, whereas western medicine considers as it a symptom of many diseases.

"VETTU MARVAN KULIGAI**"** as per the literature evidence from "PHARMACOPOEIA OF HOSPITAL OF INDIAN MEDICINE PART -II"- (ADDITIONAL HOSPITAL PHARMACOPOEIA**)** to evaluate its Antipyretic activity. The traditional use of "VETTU MARVAN KULIGAI**"** is substantiated at the management of 64 types of Suram.

MATERIALS AND METHODS

INGREDIENTS: Vettu Marvan kuligai

TAMIL NAME	ENGLISH NAME	BOTANICAL NAME
Omam	The bishop weed	Trachyspermum ammi
Thippili	Long pepper	Piper longum
Vellai milagu	White pepper	Piper nigrum
Nabhi	Indian aconitine	Aconitum ferox
Venkaram	Borax	Sodium borate
Lingam	Cinnabar	Mercuric sulphide
Inji	Ginger	Gingiber officinalis

GENERAL INFORMATION

DOSAGE	Milagu alavu (5o mg)
ADJUVANT	Cumin juice / Ginger juice
INDICATIONS	All types of fever (64 types of fever), Janni, Seetham etc…

METHOD OF ANALYSIS

PLIM -PROTOCOL – ASU information

PHYTOCHEMICAL ANALYSIS

PROCEDURE

Test for alkaloids

Mayer's Test: To the test sample, 2ml of mayer's reagent was added, a dull white precipitate revealed the presence of alkaloids.

Test for coumarins

To the test sample, 1 ml of 10% sodium hydroxide was added. The presence of coumarins is indicated by the formation of yellow color.

Test for saponins

To the test sample, 5 ml of water was added and the tube was shaken vigorously. Copious lather formation indicates the presence of Saponins.

Test for tannins

To the test sample, ferric chloride was added, formation of a dark blue or greenish black color showed the presence of tannins.

Test for glycosides

Borntrager's Test

Test drug is hydrolysed with concentrated hydrochloric acid for 2 hours on a water bath, filtered and the hydrolysate is subjected to the following tests. To 2 ml of filtered hydrolysate, 3 ml of chloroform is added and shaken, chloroform layer is separated and 10% ammonia solution is added to it. Pink colour indicates presence of glycosides.

Test for flavonoids

Alkaline reagent test. Two to three drops of sodium hydroxide were added to 2 mL of extract. Initially, a deep yellow colour appeared but it gradually became colourless by adding few drops of dilute HCL, indicating that flavonoids were present.

Test for phenols

Lead acetate test: To the test sample; 3 ml of 10% lead acetate solution was added. A bulky white precipitate indicated the presence of phenolic compounds.

Test for steroids

To the test sample, 2ml of chloroform was added with few drops of conc. Sulphuric acid (3ml), and shaken well. The upper layer in the test tube was turns into red and sulphuric acid layer showed yellow with green fluorescence. It showed the presence of steroids.

Triterpenoids

Liebermann–Burchard test: To the chloroform solution, few drops of acetic anhydride was added then mixed well. 1 ml concentrated sulphuric acid was added from the sides of the test tube, appearance of red ring indicates the presence of triterpenoids.

Test for Cyanins

Aanthocyanin: To the test sample, 1 ml of 2N sodium hydroxide was added and heated for 5 min at 100°C. Formation of bluish green colour indicates the presence of anthocyanin.

Test for Carbohydrates

Benedict's test: To the test sample about 0.5 ml of Benedic's reagent is added. The mixture is heated on a boiling water bath for 2 minutes. A characteristic coloured precipitate indicates the presence of sugar.

Test for Proteins

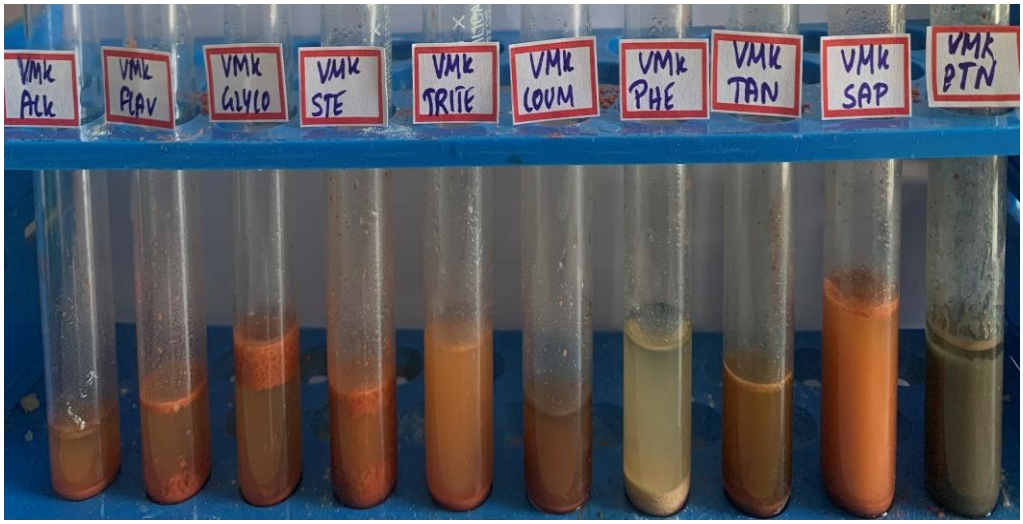
Biuret Test: To extracts 1% solution of copper sulphate was added followed by 5% solution of sodium hydroxide, formation of violet purple colour indicates the presence of proteins.

RESULTS

Phytochemical analysis of VMK

S.NO	TEST	OBSERVATION
1	ALKALOIDS	-
2	FLAVANOIDS	-
3	GLYCOSIDES	+
4	STEROIDS	+
5	TRITERPENOIDS	-
6	COUMARIN	-
7	PHENOL	+
8	TANNIN	+
9	PROTEIN	-
10	SAPONINS	-
11	SUGAR	+
12	ANTHOCYANIN	-
13	BETACYANIN	-

(+)Indicates Positive and (-) Indicates Negative VMK – Vettu Marvan kuligai



PHYTOCHEMICAL COMPOUNDS OF VMK

GLYCOSIDES

Glycosides are classified based on the type of sugar, the nature of the aglycone, and the biological activity. Glycosides are colourless crystalline materials that contain hydrogen and oxygen atoms; however, some glycosides contain nitrogen and sulfur and are usually water-soluble botanical ingredients. Antiviral effects of glycosides have been observed in various studies like the cardiac glycosides were seen effective against both DNA and RNA viruses including cytomegalo virus, herpes simplex virus, influenza virus and coronavirus. Their validated functions include cardioprotective, antidiabetic, anticancer, antithrombotic, antifungal, analgesic, antiviral and antioxidant activity.

STEROIDS

Plant steroids, also known as phytosterols, are steroid compounds found in plants. The compounds present in plant that are responsible for medicinal property are usually secondary metabolites which are having definite chemical structure. Among all these compounds, steroids have the fundamental structure of four carbon rings called the steroid nucleus. different chemical groups at different positions on backbone leads to the formation of many different types of steroidal compounds including sex hormones progesterone and testosterone, the anti-inflammatory steroids like corticosteroids, cardiac steroids digoxin 7,8 and digitoxin, animal steroid like cholesterol, steroidal glycosides. Plant steroids synthesized by cyclisation of 2,3- epoxysqualene into cycloartenol are further metabolized owing to the distribution of the various classes of plant steroids in different plants and their pharmacological activities. Plant steroids possess many interesting medicinal, pharmaceutical and agrochemical activities like anti-tumor, immunosuppressive, hepatoprotective,

antibacterial, plant growth hormone regulator, sex hormone, anti-helminthic, cytotoxic and cardiotonic activity.

PHENOL

Phenolic phytochemicals are the largest category of phytochemicals and the most widely distributed in the plant kingdom. Phenol (CHOH) considered the simplest class of this group of natural compounds. Phenolic compounds are a large and complex group of chemical constituents found in Plants. They are plant secondary metabolites, and they have an important role as defence compounds. Phenolics exhibit several properties beneficial to humans and its antioxidant properties are important in determining their role as protecting agents against free radical-mediated disease processes. They show anticancer, anti-inflammatory, antioxidant, antimutagenic, and antidiabetic effects.

TANNIN

Tannins constitute a large group of complex organic, non-nitrogenous, phenolic compounds of high molecular weight and are widely distributed in plant kingdom. Tannins are soluble in water and alcohol, have astringent taste, precipitate proteins, and produce acidic reaction. Tannins may be employed medicinally in antidiarrheal, hemostatic, and anti-hemorrhoidal compounds. The anti-inflammatory effect of tannins help control all indications of gastritis, esophagitis, enteritis, and irritating bowel disorders. Diarrhoea is also treated with an effective astringent medicine that does not stop the flow of the disturbing substance in the stomach; rather, it controls the irritation in the small intestine. Tannins not only heal burns and stop bleeding, but they also stop infection while they continue to heal the wound internally. The ability of tannins to form a protective layer over the exposed tissue keeps the wound from being infected even more. Tannins are also beneficial when applied to the mucosal lining of the mouth. Tannins can also be effective in protecting the kidneys. Tannins have been used for immediate relief of sore throats, diarrhoea, dysentery, hemorrhaging, fatigue, skin ulcers and as a cicatrizant on gangrenous wounds. Tannins can cause regression of tumors that are already present in tissue, but if used excessively over time, they can cause tumors in healthy tissue. They have also been reported to have anti-viral effects.

SUGAR

Sugars are metabolic substrates playing a part in modulating various processes in plants during different phases of development. Thus, modulating the sugar metabolism can have intense effects on the plant metabolism. Glucose is a soluble sugar, found throughout the

plant kingdom. Apart from being a universal carbon source, glucose also operates as a signaling molecule modulating various metabolic processes in plants. From germination to senescence, wide range of processes in plants is regulated by glucose. The effect of glucose is found to be concentration dependent. Photosynthesis and its related attributes, respiration and nitrogen metabolism are influenced by glucose application. Endogenous content of glucose increases upon exposure of plant to various abiotic stresses and also when glucose is supplied exogenously. Glucose accumulation alleviates the damaging effects of stress by enhancing production of antioxidants and compounds similar to that of photosynthetic CO2 fixation which act as an osmoticum by maintaining osmotic pressure inside the cell, pH homeostasis regulator and reduce membrane permeability during stress.

DISCUSSION

The polyherbal formulation of Vettu Marvan Kuligai were analysed for shown the presence of phytochemicals. The result of qualitative analysis given, the sample contains presence of glycosides, steroid, phenol, tannin, sugar . Most of the phytochemicals having antioxidant, anti-inflammatory and antiviral activity. The pharmacological activity of above phytochemicals were compare with indication of Vettu Marvan Kuligai, which proven the theraupautic use of selected sample of Vettu Marvan Kuligai.

CONCLUSION

This study highlights the presence of phytochemicals that responsible for pharmacological activity of Vettu Marvan Kuligai. This analysis were screen, identify, extract and isolate the phytoconstituents to evaluate the therapeutic potential of the medicine and to develop phytochemical standards for the herbal medicine for quality control purpose. Further study needed to elucidate the possible mechanism of action of these phytochemical extracts.

ACKNOWLEDGEMENT

I would like to express my heartful gratitude to all those who helped me complete the project successfully. Thanks to my mentor (Dr. S.Sulfin Nihar), Laboratory institution (Noble Research Solutions) and my colleagues for their valuable guidance in completing this project. And also special thanks to my family members for supporting me.

REFERENCE

1. Dr. R.S. Uthamarayan, H.P.I.M /Pharmacopoeia of Hospital of Indian Medicine part -II (ADDITIONAL HOSPITAL PHARMACOPOEIA)/Tamilnadu Siddha Medical Board Madras -600 106, second edition, 1995.
2. Vaidhya Rathnam K.S.Murugesa Mudhaliyar, Gunapadam Mooligai Vaguppu, Department of Indian Medicine and Homeopathy, Madras, 6th edition, 2006.
3. A. Karthick1* , A. Manoharan2 /Qualitative Phytochemical analysis of Siddha herbal preparation - Karisalai Mathirai/ International Journal of Current Research in Medical Sciences, 2020; 6(4).
4. N. Kumar, A Textbook of Pharmacognosy, 3rd edition, AITBS Publication, 2018.
5. J.S. Qadry, Parmacognosy with 140 colour photographs, 16th edition, 2010.
6. Dr. Syed Aftab Iqbal & Dr. Noor Ahmed Khan, Textbook of Phytochemistry, First edition, DPH Publication, 2011.
7. https://www.ncbi.nlm.nih.gov.in.
8. https://www.sciencedirect.com
9. https://www. Researchgate.net.