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PHYTOCHEMICAL ANALYSIS OF SIDDHANANDHA BAIRAVA MATHIRAI

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ABSTRACT

Plants are able to produce a large number of diverse bioactive compounds. High concentrations of phytochemicals, which may protect against free radical damage, accumulates in medicinal plants. This review includes a brief description of a wide range of different assays. The antioxidant, antimicrobial, and anticancer properties of phenolic natural products the medicine Siddhanandha Bairava Mathirai have been discussed.

KEYWORDS: Phytochemical analysis, Siddhanandha Bairava Mathirai, Medicinal plants, Anti oxidants.

INTRODUCTION

Siddha system of medicine is one of the oldest traditional system of medicine which has been originated from India and is used for treating various diseases including chronic conditions. The Siddha system of medicine sees the individual as a microcosm of the universe which is made up of five natural elements and three humours.

According to Siddhars, a healthy soul can only be developed through a healthy body. As a result they devised techniques and medications to strengthen their physical body and their

souls. There are several types of medicines developed under the Siddha branch of medicine each containing a different combination of metals, minerals and other products. When the doshas are in equilibrium, the body will be in homeostasis but when they are vitiated either single or in combination bring about disease.

Phytochemicals may have biological activity when consumed by humans. The most common sources of phytochemicals are fruits, vegetables, whole grains, nuts and seeds, and other plant foods. Phytochemicals are non-nutritive plant chemicals that have or exert protective or disease-preventing effects. They are not essential nutrients and are not required by the body for sustaining life. However, various phytochemicals have been associated with treatment of chronic diseases such as heart disease, cancer, hypertension, diabetes and other medical conditions.

MATERIALS AND METHODS

INGREDIENTS

SIDDHANANDHA BAIRAVA MATHIRAI

TAMIL NAME	BOTANICAL NAME
Lingam	Mercuric sulphide
Venkaram	Sodium tetraborate
Nabhi	Aconitum ferox
Perunkayam	Ferula asafoetida
Chukku	Zingiber officinale
Milagu	Piper nigrum
Thippili	Piper longum
Lemon juice	Citrus limon

DOSAGE

130mg (Kuntri Alavu)

ADJUVANT

Ginger juice, Breast milk, Honey.

INDICATION

Febrile fever (Janni suram)

Method of Analysis

PLIM- Protocol- ASU Formulations.

PHYTOCHEMICAL ANALYSIS

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 colour.

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 choloroform is added and shaken, choloroform layer is separated and 10% ammomia 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

Anthocyanin

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

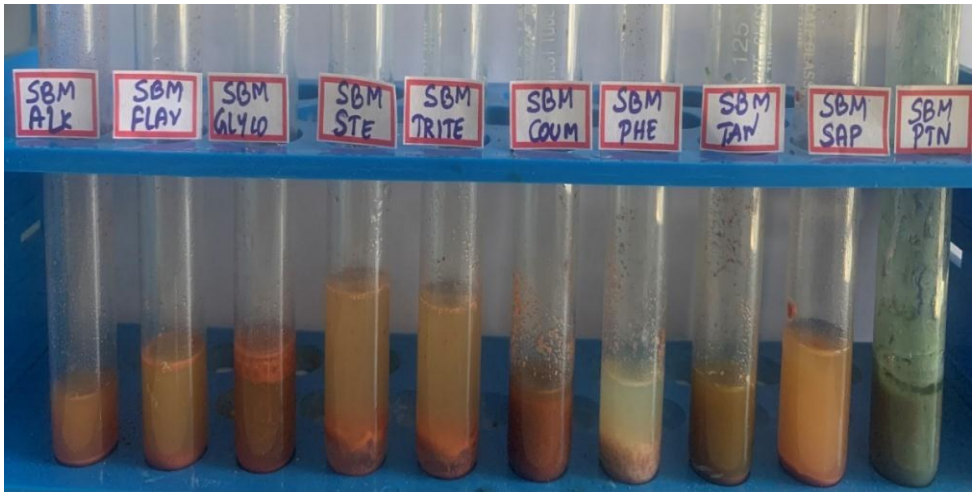
Phytochemical analysis of SIDDHANANDHA BAIRAVA MATHIRAI

SL .NO	TEST	OBSERVATION
1.	ALKALOIDS	+
2.	FLAVANOIDS	+
3.	GLYCOSIDES	+
4.	STEROIDS	-
5.	TRITERPENOIDS	-
6.	COUMARIN	-
7.	PHENOL	+
8.	TANIN	+
9.	PROTEIN	-

10.	SAPONINS	+
11.	SUGAR	+
12.	ANTHOCYANIN	-
13.	BETACYANIN	-

(+) -> Indicates Positive and (-) -> Indicates Negative

Qualitative Phytochemical Investigation



DISCUSSION

The medicinal extract was subjected to phytochemical analysis, which identified components known to have both physiological and therapeutic properties. Phytochemicals such as phenols, tannins, flavanoids, saponins, glycosides and alkaloids were found in the plant extracts. One of the biggest and most prevalent classes of plant metabolites is the phenolic compounds. Their biological attributes include cardiovascular protection, anti-aging, anti-carcinogen, anti-inflammatory, anti-atherosclerosis, and enhancement of endothelial function. Additionally, they inhibit angiogenesis and cell proliferation activities. The antioxidant qualities of medicinal plants that are high in phenolic compounds have been reported in a number of studies. Plants are the primary source of natural antioxidants, which are phenolic chemicals such tocopherols, phenolic acids, and flavonoids. Protein synthesis is hindered by tannins when they attach to proline-rich proteins. Plants produce flavonoids, which are hydroxylated phenolic compounds, in reaction to microbial infection. Studies conducted in vitro have shown that flavonoids are antimicrobial agents against a broad range of pathogens. Their capacity to form complexes with bacterial cell walls and extracellular, soluble proteins is most likely what drives their activity. They also exhibit potent anticancer properties and are powerful antioxidants.

It was also discovered that the plant extracts included saponins, which are known to have an anti-inflammatory impact. Red blood cells can precipitate and coagulate due to the properties of saponins. A few of the traits of saponins are their ability to produce foams in aqueous solutions, their hemolytic activity, their ability to bind cholesterol, and their bitterness. Alkaloids have been shown to have analgesic, antispasmodic, and antibacterial effects by a number of researchers. Numerous publications state that glycosides are known to reduce blood pressure.

CONCLUSION

From the above study it could be concluded that the medicinal extract is a great source of phytochemicals which can be used in treating various ailments. Alkaloids, Flavanoids, Sugars, Glycosides, Phenol, Tannin, Saponins were the phytoconstituents present in the above medicine. The study would be more effective if the detection, analysis, and separation of the phytoconstituents could be done.

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