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Research Article

Hibiscus Sabdariffa, Clove, Ginger, Cinnamon: 'An Evaluation of Natural Remedies for Hypertension Parameters'

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ABSTRACT

Food, herbal drinks, hot and cold beverages, food industry flavoring, and herbal medicine are among the traditional uses of Hibiscus sabdariffa L. (Hs, roselle; Malvaceae). In vitro and in vivo studies, together with a few clinical trials, provide the majority of the data for phytochemically poorly defined extracts. The extracts showed lipid metabolism (anti-cholesterol), anti-diabetic, anti-hypertensive, nephro- and hepato-protective, and renal/diuretic effects in addition to their antibacterial and antioxidant qualities. This may be related to strong antioxidant qualities, inhibition of α-glucosidase and α-amylase, suppression of angiotensin-converting enzyme (ACE), direct vaso-relaxant actions, or regulation of calcium channels. The effects of hibiscus sabadariffa are likely mediated by anthocyanins (delphinidin-3-sambubioside and cyanidin-3-sambubioside), organic acids, and phenolic acids (especially protocatechuic acid).

INTRODUCTION

The nutritive and therapeutic herb Hibiscus sabdariffa, commonly referred to as roselle, belongs to the Malvaceae family. It is an annual summer shrub that grows straight and typically branches, with a taproot that penetrates deeply. It has large, short-peduncled blooms with a dark center, and its leaves are green to crimson in color. Both humans and animals eat roselle, which is a significant vegetable. While the immature fruit, exquisite calyces, and sensitive shoots are chopped and put to the sauce, the young roselle herbs are consumed fresh in a salad preparation. The portion of the plant that is most frequently used is its calyces, which can be red, green, or dark green. Zobo is an aqueous extract made from the dried reddish-brown petals (calyces) of Hibiscus sabdariffa. Originating in Malaysia and India, the plant is widely cultivated in numerous tropical

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countries throughout both hemispheres. This dicotyledonous plant is often grown in the south-western regions of Nigeria, including Ondo and Osun, as well as in the middle belt states, including Plateau, Nasarawa, and Benue. Phytochemicals including anthraquinones, glycosides, alkaloids, tannins, polyphenols, and saponins have been found to be present in roselle. In addition to being an antihypertensive, antibacterial, stringent diuretic, and purgative, the plant is said to be an excellent treatment for cancer, abscesses, cough, debility, dysuria, scurvy, and fever. Usually sweetened with sugar to taste, the extract is also occasionally flavored with natural flavors like pineapple and lime juice, artificial flavors like strawberry vanilla, and spices like ginger hot pepper. According to reports from past research, Hibiscus sabdariffa has a significant amount of ascorbic acid. Builders et al. (2010) and Teye et al. (2019) claim that H. sabdariffa has a low sugar content and a high calcium, iron, riboflavin, and niacin content. Anthocyanins, a colored byproduct of the flavonoid pathway, are believed to be the cause of H. sabdariffa's alleged health advantages. The anthocyanins found in H. sabdariffa have been found to have antioxidant activity, which protects against atherosclerosis and cancer. They also have something to do with better cholesterol action and liver protection. Evidence suggests that the antioxidant potential is significantly higher than that of common antioxidants such as ascorbate.

(Hibiscus sabdariffa)

Morphology of the plant

Hibiscus sabdariffa is a shrub that is a member of the genus Hibiscus and family Malvaceae. With a reddish or green stem that is either nearly branchless or bears branches at the base, it is an annual erect shrub. The stem bears little tubercles and is glabrous, or slightly hairy. The upper leaves are palmately 3-5 lobed, while the lower leaves are oblong and undivided. The leaves are serrated. The epicalyx is joined at the base with a dark red to purple calyx, and the fleshy capsules are ovoid-shaped and contain several seeds. The flowers are huge yellow with a dark crimson eye.

Cultivation and Collection:

Hibiscus sabdariffa, commonly referred to as Roselle or Hibiscus tea plant, requires regular watering, lots of sunlight, and well-drained soil. For best results, start with seeds or seedlings, give them enough space, and keep them consistently moist. When the calyces are fully grown, harvest them for tea or other culinary purposes. Bushier growth can be encouraged through pruning. India is home to the cultivation of H. sabdariffa (Mesta, Roselle) on an area of roughly 1.5 lakh hectares, with an average production of About 11 q/ha 6 of crop is produced. It is also grown for a variety of purposes, including medicinal, nutrition, fiber collecting, and food consumption in numerous nations, including Sudan, America, South Africa, and others. The Roselle is a perennial shrub that requires five months to harvest after planting, making it an annual event shrub.

Evaluation Parameter

Angle Of Repose: -

Can Be Calculated by Following Formula-

Angle Of Repose Can Be Calculated By **Following Formula-**

θ = tan-1H / R

Where h stands for height and r stands for radius
By putting the respected values h-2 cm r-2.5 cm

θ= tan-1 2\2.5

= 38.65

Moisture content:-

- Moisture content: is the ratio of the mass of water to the mass of the dry material, usually expressed as a percentage.
- It's a measure of the amount of water present in a substance, whether it's food, soil, wood, or other materials.
- Moisture content can be determined by drying the sample and measuring the weight loss.

The moisture content of this product is 2.96 which is equivalent to 3%.

Bulk Density: -

TO measure the mass of a material and its volume, then divide the mass by the volume.Bulk density is the mass per unit volume of a loose powder bed. The unit volume includes the spaces between the particles, and the envelope volumes of the particles themselves. The method used to fill the material into that volume can affect the degree to which the powder is compressed and can thus influence the bulk density value. where M=mass in grams and V_o=untapped apparent volume in milliliters.

Bulk Density (g/mL) =M/Vo.

The Bulk density of the product is found 10gm/ml

Tapped Density: -

Tapped density of a powder is the ratio of the mass of the powder to the volume occupied by the powder after it has been tapped for a defined period of time. The tapped density of a powder represents its random dense packing.

Tapped density is denoted by = initial – final 10 – 6= 4

After tapping the product, the density is found 4 gm/ml.

Composition: -

Hibiscus Sabdariffa - 30 Gm

Clove - 10 Gm
Cinnamon - 2 Gm
Ginger - 8 GM
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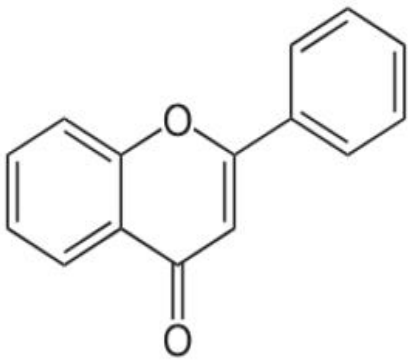
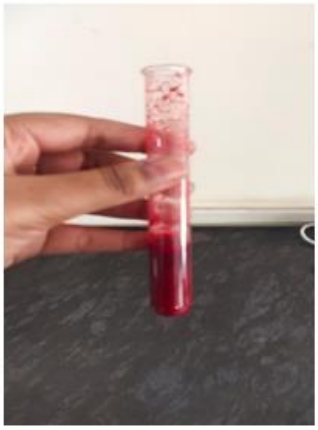
50 GM

Ingredient: - (Phyto-Constituents Test)

Drug: - Hibiscus sabdariffa

Flavonoids

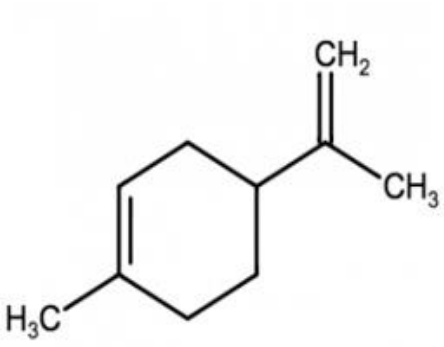




Procedures: -

Test for flavonoids One to five drops of concentrated hydrochloric acid (HCl) were added to little amount of ethanolic extract of the plant material. Immediate development of a red colour indicates the presence of flavonoids.

Terpenoids

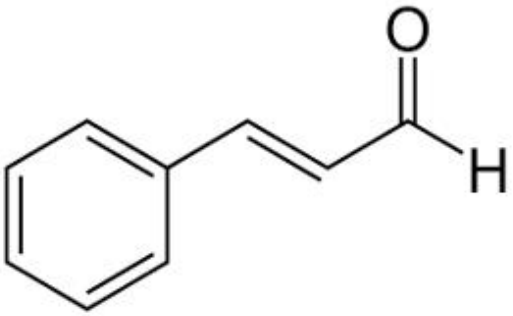


Procedure: -

In a test tube containing 2 mL of chloroform, 0.5 mL of extract was added. This is then followed by the addition of 3 mL conc. H2SO4 which forms a layer. Reddish brown coloration of the interface indicates terpenoids**.**

Drug: - Cinnamon

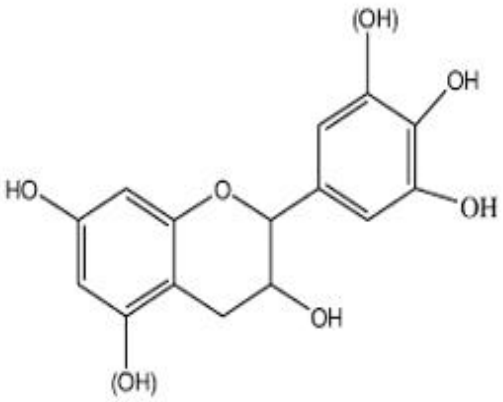
Cinnamic Aldehyde



Procedure: - Cinnamaldehyde can be identified using Tollen's test.

1ml AgNo3 (sliver nitrate) add dilute NAOH which give brown precipitate. After that add dilute NH3 dropwise until brown precipitate of sliver oxide dissolve.

Tannin

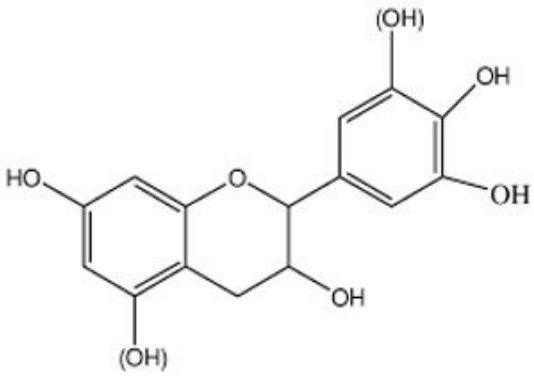


Procedure: - Ferric test for Tannins Detection

3 ml sample add dilute chloroform then add acetic anhydride (1ml) Finally sulphuric acid (1ml) add carefully by side of test tube which gives green colour.

Drug: - Ginger

Gingerol

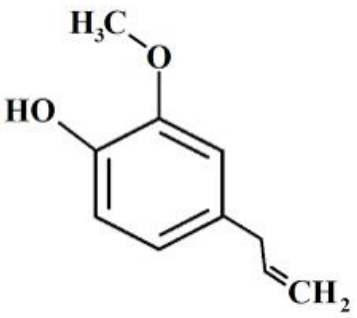


Procedure: -

A confirmatory test for gingerol can involve several techniques, but the most common and versatile is Thin Layer Chromatography (TLC).

Drug: - Clove

Eugenol



Procedure: -

The analytical tools employed to identify eugenol and other naturally occurring chemical components in the cloves extract include colour tests, thin layer chromatography (TLC).

CONCLUSION

Ginseng has long been recognized as a supertonic herb that can be used to treat a wide range of illnesses, including cancer, cardiovascular disorders, impotence, diabetes, palpitations, insomnia, hyperdynamic disorders, anorexia, and many more. This is true of traditional medical systems such as the Chinese and Ayurvedic systems. Techniques for collecting and cultivating unique plants are discussed. Saponins, glycosides, sugars, amino acids, peptides, volatile oil, and enzymes are among the primary groups of phytochemicals that have been reported. The pharmacological properties of miraculous ginseng, which include anti-inflammatory and antioxidant properties, are explored.

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