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This is to certify that **Swati Vilhekar, Prerna Bhatkar, Janhavi Chulbhare** have published a research paper entitled '*Phytochemical Investigation, Characterization, and Use of the Traditional Herb Zingiber Officinale (Ginger)*' in the International Journal of Scientific Research in Science and Technology (IJSRST), Volume 11, Issue 11, March-April-2024.

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Phytochemical Investigation, Characterization, and Use of the Traditional Herb *Zingiber Officinale* (Ginger)

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ABSTRACT

As people's usage of technology and lifestyles evolve, they are becoming more prone to serious physical and mental diseases. A variety of factors, including contemporary lifestyle, nutrition, stress, and the widespread use of synthetic chemicals in food processing and agriculture, have hastened the emergence of a number of human disorders. Researchers from all around the world are looking for natural therapeutic compounds that can be used to treat or prevent the onset of various lifestyle-related diseases. Because they contain a wide range of bioactive compounds, many different types of medicinal plants have the potential to be used often in therapies. It is time to return to nature and make good use of herbs, one of which is ginger (*Zingiber officinale*). Since ancient times, the ginger plant has been used to prevent and treat a variety of ailments. It is well-known for its anti-oxidant, anti-microbial, and other medical characteristics; yet, its nephroprotective effects have received less attention than its other therapeutic benefits.

The project's major emphasis is the ginger extract using the Soxhlet extraction process. The extraction time for each solvent, ethanol and water, was 18 hours. Various phytochemical studies were done, including the determination of carbohydrates, alkaloids, glycosides, tannins, steroids, and flavonoids.

Keywords: Ginger, natural medicine, plant drug, *Zingiber officinale*

I. INTRODUCTION

With rapid economic development and increasing westernization of lifestyle in the past few decades,

prevalence of hypertension, diabetes mellitus, dyslipidemia, etc. has reached alarming proportions in the recent years.[1] As Ayurveda is recognized as foremost life science and describes ways to prevent

and manage lifestyle disorders, the world is being attracted towards its potential. Researchers from all around the world are looking for natural therapeutic compounds that can be used to prevent these diseases. Many different types of medicinal plants have the potential to be used often in therapies. It is time to return to nature and make good use of herbs, one of which is ginger.

Zingiber officinale is a member of the *Zingiberaceae* plant family, native to East and southern Asia. Its generic name *Zingiber* is derived from the Greek *zingiberis*, which comes from the Sanskrit name of the spice, singabera; the Latin name, Zingiber, means shaped like a horn and refers to the roots, which resemble a deer's antlers. The plant is known as Sringavera in Sanskrit[2]

Ginger has been reported for multiple medicinal properties such as antibacterial, antioxidant, anti-inflammatory[3,4,5,6]. The Nephroprotective properties of ginger are less explored than their other therapeutic properties. Few research data suggest that the aqueous extracts of ginger lowered blood glucose, serum, urea, and Creatinine levels in diabetic-induced rats[7,8]. Besides that, ginger is used for cooking, as a flavoring for cookies, Biscuits and cake. Ginger extract possesses characteristic of the automatic odour of the specie. It is produced by Soxhlet extraction process. Thus the main objective of the project is phytochemical analysis and characterisation of Ginger extract.

II. METHODS AND MATERIAL

Fresh ginger, ethanol and distilled water as solvents, Soxhlet extraction apparatus. The fresh ginger used as sample in this study was purchased from the local market in Airoli, Navi Mumbai, India. The ginger was washed thoroughly with tap water after which it was dried in an open air. The ginger was finely grinded with mortar and pestle. 10 g of the ground ginger sample was placed inside a thimble and inserted into the Soxhlet extractor. 200 mL of ethanol was added to

10 g ginger sample and extraction was carried out for 18 hours. The procedure was repeated with 200 mL distilled water using same sample. The quantity of ginger sample. The refluxing temperature was 80°C for ethanol and 105°C for water. After extraction, the solvents was removed by evaporating it to room temperature leaving the extraction behind.

III. RESULTS AND DISCUSSION

The phytochemical investigation of fresh ginger such as alkaloid, carbohydrate, Glycoside, phenol, amino acid, saponins, tannin, flavonoid, terpenoids and steroid were determined and the results were shown in Table (I).

TABLE I PHYTOCHEMICAL CHARACTERISTICS OF FRESH GINGER

TESTS & EXTRACT	REAGENTS	OBSERVATION	INFERENCES
CARBOHYDRATES h ₂ o	IODINE TEST	BLUE COLOUR	+
ALKALOIDS h ₂ o	HANGER'S	YELLOW COLOUR	+
STERIODS h ₂ o	FOAM TEST	FOAM LASTS FOR 15/ MORE SEC.	+
STERIODS h ₂ o	FOAM TEST	FOAM LASTS FOR 15/ MORE SEC.	+
FLAVONOIDS etoh	SULPHURIC ACID	ORANGE TO RED COLOUR	+

TABLE II ORGANOLEPTIC TESTS FOR CHARACTERISATION

A. Organoleptic tests	Characters
Shape	Irregular
Size	Rhizome 2.5-7.5cm in length
Colour	Dark grey rhizomes crowned with brownish soft fibres

Fracture	Easy and splintery
Surface	Rough
Odour	Pleasant
Taste	Pungent

IV. CONCLUSION

Ginger is used as flavouring in foods and beverages and as fragrances in Pharmaceutical and industrial products. In this research, fresh ginger powder was used to extract ginger's components by Soxhlet extraction method. This method is used to extract the components present in sample. The ginger extract was used further for phytochemical analysis and characterization.

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