A STUDY ON THE NUTRITIONAL ANALYSIS OF INSTANT SOUP MIX PREPARED FROM ACALYPHA INDICA

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Health is one of the most fundamental aspects of human life, shaping our experiences, productivity, and overall quality of existence. In today's fast-paced world, understanding and prioritizing health has become increasingly vital as we navigate numerous challenges that affect our lifestyles.

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Abstract
The herb Acalypha indica which belongs to Euphorbiaceae family has multiple medicinal properties which include anti-oxidant, anti-bacterial, anti- fungal, anti-inflammatory, antiulcer, anti-helmintic, anti-cancerous, anti-venom,and neuro-protective activity. It is claimed to treat various health conditions andmanagement of chronic diseases. They are also used as diuretic, cathartic, anthelmintic and in treating psoriasis. Flavonoids, cyanogenic glucoside (acalyphin), tannins, saponins, and pyranoquinolinone alkaloid (flindersine) are the major chemical constituents present in Acalypha indica. In vitro, and in-vivostudies have been carried out to confirm various pharmacological activities present in this plant. Native to India and Southeast Asia, Acalypha indica is an evergreen shrub often used for ornamental purposes. As the world becomes increasingly aware of the benefits of plants, the future of Acalypha indica is looking bright. Addition of a preservative like brown sugar will increase the shelf life. On the product prepared had a great acceptability among childrenwith flavour and taste.
Key Words: Acalypha indica, phytochemicals, Soup.

Introduction

Nature is the major source of natural medicine (Ferdous et al., 2014). Plants have had an essential role in folklore of ancient cultures. In addition to the use as food and spices, plants have also been utilized as medicines for over 5000 years. It is estimated that 70-95% of the population in developing countries continues to use traditional medicines even today (Fridlender et al., 2015). India is a developing country with one of the most diverse populations and diets in the world (Sinha et al., 2003). It is also considered as "Botanical Garden of the world" and more than 2200 species of medicinal and aromatic plants have been identified after studies.

Plants produce primary and secondary metabolites which encompass a wide array of functions. However, out of 750,000 species available on earth, only 1 to 10 % is being potentially used. These metabolites are effective as cardiac and circulatory stimulants; anti-tumor; antipyretic; antiepileptic; anti-inflammatory; antiulcer; antispasmodic; diuretic antihypertensive; cholesterol lowering; antioxidant; antidiabetic; hepato protective; antibacterial and antifungal activities. They are claimed to treat different ailments in the indigenous system of medicine (Arora et al., 2013).

A number of plants have been used traditionally to heal illnesses for a long time. Ayurvedic medicine also makes use of plants that are abundant in these healingproperties. One of these medicinal plants with remarkable health-beneficialcharacteristics is Indian Kuppaimeni. This herb has a long history of use as a remedyfor many diseases. Ayurvedic, Unani, and Siddha systems of medicine reported the wide use of herbal medicine as a source of treatment in various physiological ailments because of the presence of a diverse range of active constituents. Acalypha indica Linn (Euphorbiaceae) is an erect herb found throughout India, Bangladesh, Sri Lanka, Philippines, and tropical Africa (Rahmani et al., 2010). This plant is commonly known as Indian Acalypha. It is a common annual herb, found mostly in the backyards of houses and waste places throughout the plains of India.

Lack of appetite is a common problem in people leading to the risk ofmalnutrition. Soup-based product formulation and supplementation is an interesting and convenient way to maintain nutritional status of the people (Sinchaipanit et al., 2023). Soup is a primarily liquid food, generally served warm or hot (but may becool or cold), that is made by combining ingredients of meat or vegetables with stock, milk, or water. Hot soups are additionally characterized by boiling solid ingredients in liquids in a pot until the flavors are extracted, forming a broth. Soups are similar to stews, and in some cases there may not be a clear distinction between the two; however, soups generally have more liquid (broth) than stews.

Wild edible and medicinal plants were an important component of traditionaldiets and continue to contribute to food security, nutrition, and health in many communities globally. For example, the preparation and consumption of soup made of medicinal plants for promoting health and preventing disease are a key component of the traditional diets of different society around the world. As environmental and socio-economic factors drive the shift away from traditionaldiets, there is a need for to create an awareness of the diversity of wild edible and medicinal plants as well as associated knowledge and practices (Binsheng et al., 2019).

Energy-yielding fluids generally have lower satiety value than solid foods. However, despite high water content, soups reportedly are satiating Soup is a very heterogeneous food category but, generally, soups differ in nutrient content from beverages, the other principal source of energy-yielding dietary fluids. The principle source of energy in the most widely consumed beverages (e.g., soda, fruit juices, sports drinks, sweetened tea, and coffee) is carbohydrate whereas this is more variable in soups. Studies, primarily with solid foods, indicate that, when presented as isoenergetic loads (preserving differences in energy density), there is a hierarchy of satiety values for the macronutrients: protein, carbohydrate, fat.

Although there is some evidence that the hierarchy holds in fluids, surveys generally indicate beverages with different macronutrient compositions (e.g., soda, alcohol, milk) are all ineffective in prompting dietary compensation (Richard Mattees, 2005).

It is an erect herb, up to 0.6 m high. Stems simple below. Leaves ovate, serrate, distinctly petiolate, with petioles up to 55 mm long. Female bracts repand- dentate, 5-11 mm long when mature. Female flowers sessile. Flowers green. Acalypha indica has been used traditionally in asthma and bronchitis. It is stated in the ancient book that expressed juice of Acalypha indica leaves is useful in chronic bronchitis and asthma (Nandhakumar et al., 2009). As per the Siddha system of medicine, Acalypha indica (Kuppaimeni) leaf powder cures respiratory diseases (Ram et al., 2009). As per Nighantu Adarsh, the leaves of Acalypha indica may be used in cough and hence it is also called Khokli orKuppi (Vaidya, 2019). Various active compounds are reported to be present in the leaves of Acalypha indica Linn such as kaempferol, clitorin, nicotiflorin, biorobin, acalyphamide, sterols, cyanogenic glycoside, acalypus, acalyphine (Das. et 2005). Acalypha indica L. (family: Euphorbiaceae) is a weed widely distributed throughout the plains of India. It has been reported to be useful in treating pneumoniae, asthma, rheumatism and several other ailments. The dried leaves of Acalypha indica was made into a poultice to treat bedsores and wounds and the juiceof Acalypha indica is added to oil or lime and used to treat a variety of skindisorders. The leaves have also been reported to possess contraceptive activity.

Acalypha indica is a kind of herb belonging to Euphorbiaceae family. The scientific name for Indian Acalypha is "***Acalypha indica***". A number of plants have been used traditionally to heal illnesses for a long time. Ayurvedic medicine also makes use of plants that are abundant in these healing properties. One of these medicinal plants with remarkable health-beneficial characteristics is Indian Kuppaimeni. This herb has a long history of use as a remedy for many diseases. Although it originated in the tropics, *Acalypha indica* is now commonly grown in South Africa, Yemen, Pakistan, India, and Sri Lanka. In India, you can findthis herbal plant growing along roadsides, wastelands, and agricultural regions. The *Acalypha indica* plant tends to flourish in dry, gloomy environments. This plant is typically found along highways, farms, wooded areas, rocky hills, and riverbanks. Indian Acalypha provides a number of health advantages. This popular herb isemployed in many Ayurvedic formulations.

This herbal plant is employed in traditional medicine and powerful pharmacological processes including anti-inflammatory, anti-bacterial, anti-cancer, anti-diabetic, and anti-hypertensive. It is well-known for treating respiratory issues, rheumatoid arthritis, scabies, insect bites, and it also aids in the healing of wounds. Bronchitis, amniocentesis, mouth ulcers, asthma, pneumonia, and epilepsy are all treated with a decoction produced from whole herbs. Scabies, dermatitis, and other skin illnesses respond well to Indian Acalypha treatment. Headaches are thought to be treated using a cure made from flower buds. Indian Acalypha has historically been used to cure intestinal worms, acne, psoriasis, eczema, and other skin conditions as well as undesired hair growth.

Traditional Indian medicine uses *Acalypha indica* roots to cure a variety of conditions, including gonorrhoea, diarrhoea, dysentery, chest pain, ear infections,and wounds. In some regions of Africa, root decoction is used to heal stomach discomfort and get rid of intestinal worms. Root decoction is also used as a laxative, to cure fever and diabetes, and to treat diabetes.

Cumin has been a part of the human diet for thousands of years. It's grown inthe Middle East, Mediterranean, India, and China. Today, most cumin sold in the United States originally comes from India. People across the world use cumin as a seasoning in food and extract its oil for perfumes. It's also a popular remedy in traditional medicine—and for good reason. Cumin packs a lot of health benefits into a few tiny seeds. Black pepper, also known as the king of spices has a load of health benefits and a major benefit of consuming pepper is that it aids in weight loss. It is also said to be good for digestion and prevents cancer by detoxifying the body. When this spice is added to the food, it makes your food taste better and spicier.

Historically spices have enjoyed a rich tradition of use for their flavor- enhancement characteristics and for their medicinal properties. The rising prevalenceof chronic disease world-wide and the corresponding rise in health care costs is propelling interest among researchers and the public for these food related items for multiple health benefits, including a reduction in cancer risk and modification of tumor behavior. Since time immemorial, spices have played a vital role in world trade, due to their varied properties and applications. They have been used for flavor and fragrance as well as color, preservative and inherent medicinal qualities.

Spices are botanically classified as fruits and vegetables. And since they no longer contain the water that makes up a significant part of fresh produce, spices offer an even higher level of antioxidants. In addition, spices are also rich in phytonutrients, such as carotenoids, flavonoids and other phenolic, all of which possess health promoting properties (Maheshwari et al., 2014).

Today herbal medicine is becoming more and more popular as a safe and effective means of treatment for many different medicinal conditions (Agarwal etal., 2014). Herbal drug treatment can be given to poor people in the rural areas to treat different diseases effectively at an affordable cost (Reddy et al., 2015).

Hence, this study aims to develop ready-to-eat (RTE) soup and instant soup powder using common agricultural commodities. In this regard, the study was planned with the following objectives: (1) To prepare an instant soup mix from the leaves of *Acalypha indica;* (2) To evaluate the sensory attributes of the instant mix; (3) To estimate the amount of carbohydrates and fiber in the instant mix.

Methodology

Selection of Ingredients: The plant Indian Acalypha was selected owing to its use in traditional medicinal with its enormous properties. The spices such as pepper and cumin were added to improve the flavor and acceptability of the product and further enhance digestibility.

Collection of Plant Material: The leaves of the plant were collected, washed, cleaned of impurities and is shade dried. The shade dried leaves are ground to a fine powder using mortar and pestle. It is further sieved to get fine powder. Similarly, the spices were cleaned, dried, ground and sieved to fine powder

Preparation of soupIngredients (one serving)

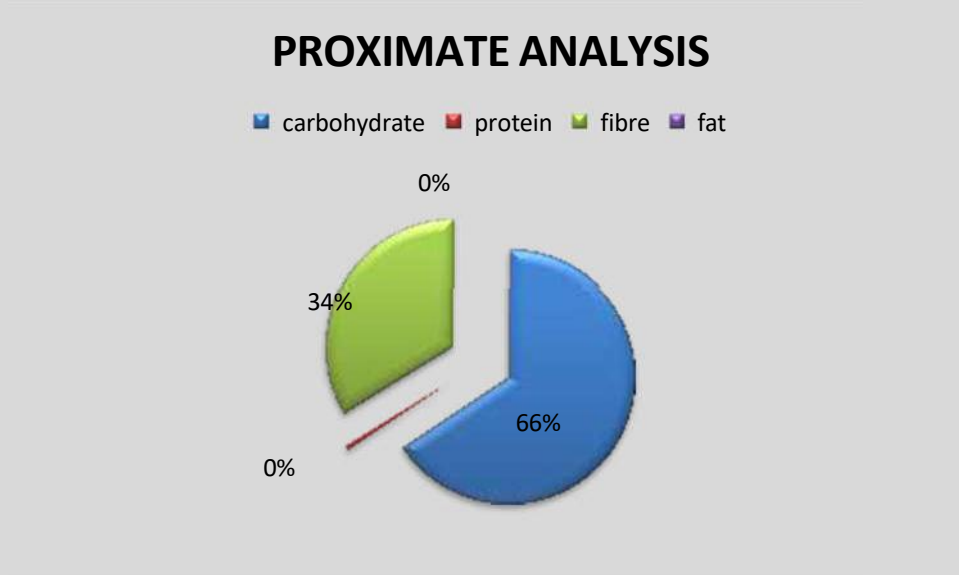
The soup is prepared with 50g of Acalypha Indica powder; 5g cumin powder; 5g pepper powder; 2g of turmeric powder; required amount of salt. A tablespoon of ingredients are mixed together with addition of salt. The mixed powders are added to hot water and mixed well. It is then strained further to remove particles if present. The soup is ready to consume. Its further subjected to sensory evaluation and nutritional analysis.

Sensory Evaluation: Sensory characteristics plays the major in the acceptance of food which would be influenced mainly by the composition including appearance, flavour, colour,texture and taste by 25 untrained panel members

Results And Discussion

Proximate Analysis

Proximate components include moisture, protein, total fat, ash and carbohydrates. The Difference between 100 and the sum of proximate components including total dietary fibre represents carbohydrate



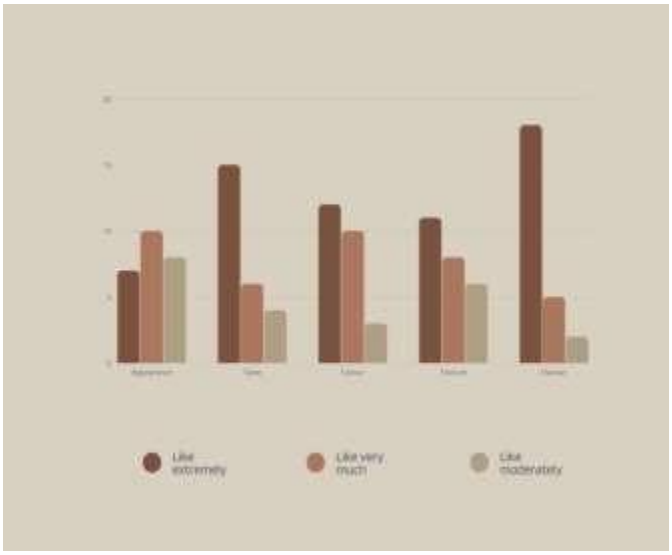
'by difference'.

The above depicts the percentage of proximate principles present in 100 g of the sample analyzed. Total carbohydrate showed about 66% in the sample while fiber accounted for about 34%. Only 0.5% of protein was reported and the amount offat was found to be nil. Available carbohydrate is the sum of total free sugars and total starch. Free sugars are individual monosaccharides (galactose, glucose and fructose) and disaccharides (sucrose, lactose and maltose). The values for available carbohydrate have generally been obtained from the sum of individually analyzed values for these components and will differ with figures for carbohydrate 'by difference'. Available carbohydrates are those which is digested and absorbed, and are glucogenic inhuman corresponding to the term 'glycaemic carbohydrates'.

Total dietary fibre (TDF) is made of complex and heterogeneous polymeric materials such as soluble and insoluble polysaccharides and non-digestibleoligosaccharides, as well as a range of non-swellable, more or less hydrophobic compounds such as cutins, suberins and lignins. Currently three different AOAC approved methods for measuring TDF values are available. TDF was analyzed using enzymatic gravimetric method (AOAC 991.43). Protein values were calculated fromthe estimated total nitrogen in the food using the Jones. Total fat content of foods is determined by gravimetric methods, including acid hydrolysis and extraction methods using a mixed solvent system of chloroform and methanol. Total fat includes the triglyceride and other lipid components such as glycerol, sterols and phospholipids.

Sensory Evaluation

The sample shows good amount of carbohydrates and other components such as vitamins and minerals.



The above figure depicts the sensory evaluation of the soup among various panel members. From Sensory evaluation, it was concluded that the sample was liked extremely by all the trainee analysed.

Sensory science is a broader research field used to measure and interpret responses to product properties, which is not limited to consumer liking. Acceptanceis evaluated through hedonic tests to assess the overall liking and degree of liking forindividual sensory attributes. Descriptive analysis provides both qualitative and quantitative results of the product's sensory profile (Fiorentini et al., 2020).

Globally consumers demand consistent supply of high quality foods. Food quality may encompass parameters such as organoleptic characteristics, physical, functional properties, nutritional value and consumer protection from adulteration;on the other hand food safety is more associated with the content of various food chemical and microbiological characteristics. Food safety can be measured via the examination of food items with regard to their microbial contamination, chemical contaminants or presence of physical foreign matter. There is general view that food safety is of great concern especially when it comes to human health, and various efforts have been dedicated by several sectors to ensure that safer foods are obtained to the highest degree possible.

Product developers make use of many tools in the development of a product. These tools include for example, chemical tests, microbiological procedures and the use of physical equipment to determine elasticity, hardness, viscosity, color intensityand more. It is unfortunately possible for food products to reflect similar measurements or results when these tools are applied individually, yet still result in different perceptions, acceptability or preferences on consumption of the product. Grading methods for food and beverage products, traditionally involved one or two trained "experts" assigning quality scores on the appearance, flavour and texture of the products based on the presence or absence of predetermined defects. These traditional judging methods have several shortcomings: they can't predict consumer acceptance; their quality assessments are subjective; assigning quantitative scores is difficult; and they don't combine analytically oriented attribute ratings with affectively oriented quality scores (Ackbarali and Maharaj, 2020).

The samples analysed are a good source of micronutrients. They can be consumed as a morning substituent for coffee or tea. This stimulates the immune system of an individual and improves their defense mechanism. Thus it acts as an effective medicine in treating various diseases. Regular consumption of a glass of soup improves digestibility, sores in intestine and thus preventing ulcer formation as it aids in healing the sores present. The phytochemical and functional components present in the leaves helps in refining the health of an individual

SUMMARY AND CONCLUSION

Plants have had an essential role in folklore of ancient cultures. In addition to the use as food and spices, plants have also been utilized as medicines for over 5000 years. It is estimated that 70-95% of the population in developing countries continues to use traditional medicines even today.

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