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A STUDY ON ADHATODA VASICA (*ADHATODA VASICA NEES*) LEAVES POWDER INCORPORATED COOKIES FOR TUBERCULOSIS

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Abstract : One of the deadliest infectious diseases in the worldwide, causing millions of deaths annually is Tuberculosis. Tuberculosis (TB) is an infectious fatal disease primarily affecting the developing countries. *Mycobacterium tuberculosis* is the causative agent of Tuberculosis, a disease contributing significantly global morbidity and mortality. Presenting a major public health challenge, approximately one-third of the world's population infected with Tuberculosis. Plants have played a major role in sustaining human health and civilizing the quality of human life for thousands of years. *Adhatoda vasica*, utilized in herbal remedies for over 2000 years. Vasaka, a well-known herb that is scientifically named as *Adhatoda Vasica Nees* belongs to the family *Acanthaceae* renowned for its beneficial effects, especially in bronchitis. In Ayurveda, a preparation made from vasaka flowers, known as Gulkand is used to treat tuberculosis. Notably, *Adhatoda* leaves encompass two major alkaloids called vasicine and vasicinone. This compound relieves the irritable cough by its soothing action on the nerve and by liquefying the sputum, which makes easy expectoration. This study involves incorporation of Adhatoda leaves into cookies and analyse the health potential of the product in preventing Tuberculosis.

IndexTerms - Tuberculosis, Adhatoda Vasica, Mycobacterium Tuberculosis, Bronchitis, Gulkand.

I.INTRODUCTION

One of the deadliest infectious diseases in the world, causes millions of deaths annually is tuberculosis (Richard Owusu Nyarko et al., 2021). Tuberculosis (TB) is an infectious fatal disease mainly among the developing countries. It is caused by a bacterium called Mycobacterium tuberculosis which spreads through the air and infects the lungs and other organs and parts of the persons who come in contact to the infected persons (Mohajan, Haradhan, 2014). Tuberculosis, presenting a major public health problem with approximately one-third of the world's population infected. In 2014, tuberculosis was responsible for the death of nearly 1.5 million people, representing a global mortality impact larger than any other infectious disease (Adam J. Caulfield, Nancy L. Wengenack, 2016). Adhatoda Vasica is most well-known for its effectiveness in treating respiratory conditions. Adhatoda vasica is useful in treating bronchitis, tuberculosis and other lung and bronchiole disorders (K. P. Sampath Kumar et al, 2010).

II. OBJECTIVES

- To develop and standardize cookies by incorporating Adhatodha Vasica leaves powder.
- To analyse organoleptic characteristics of cookies incorporated with Adhatoda Vasica leaves powder among adults.
- To analyse nutrient content of the cookies incorporated with Adhatoda Vasica leaves powder.

III. REVIEW OF LITERATURE

Adhatoda vasica Nees belonging to family Acanthaceae, commonly known as Adosa, is a small, evergreen shrub found many regions of India and throughout the world, with many uses. Vasica shows an antispasmodic and expectorant effect, and has been used for centuries with much success to treat asthma, chronic bronchitis, and other respiratory conditions (Atul Kumar Gangwar and Ashoke K.Ghosh 2014**).** Various parts of the plant like flowers, roots, leaves have been used in Indian traditional medicine for the treatment of asthma, joint pain, lumber pain, sprains, cold, cough, eczema, malaria, rheumatism, swelling and venereal diseases.

(Ajay Sharma et al.,2018). Certain alkaloids are present in the drug and the chief principle is a quinazoline alkaloid, vasicine that is present in the leaves, roots and flowers (Dr. G.P. Kimothi). Adhatoda vasica is used as medicine in the treatment of various diseases because it has ability of the formation of secondary metabolites like tannins, alkaloids, saponins, flavanoids, reducing sugars and anthraquinone substances which are in turn used to restore health and heal many diseases (Kanthale P R and Panchal V H,2014).

IV.MATERIALS AND METHODS

A) Source of raw materials

Adhatoda leaves were collected from the local areas of Cuddalore district. Adhatoda was washed, dried, powdered.

B) Development and standardization of Adhatoda leaves powder incorporated cookies.

Wheat flour-50g, butter-30g, and jaggery-20g were used for the development of cookies.

C) Flow chart for the development of cookies.

Take a butter in a bowl and beat up to get the creamy butter.

⇩

Add jaggery and mix well.

⇩

Add the sifted wheat flour and mix well.

⇩

Kneaded and rolled the dough into desired shape.

⇩

Baked at 180^0 C for 15mins

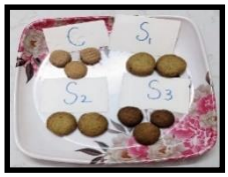

Plate 1: Adhatoda leaves powder incorporated cookies.

D) Sensory evaluation of Adhatoda leaves powder incorporated cookies.

In this study, standardized cookies incorporated with Adhatoda leaves powder was organoleptically analysed for its acceptability such as its appearance, colour, flavour, taste, texture by semi-trained panelists comprising 15 members including staffs and students at Jamal Mohamed college (autonomous), Tiruchirappalli.

E) Nutritive value calculation of Adhatoda leaves powder incorporated cookies.

The nutritive value of Adhatoda leaves powder incorporated cookies such as protein, fat, iron, calcium and potassium were analysed. The nutritive value of the standardized Adhatoda leaves powder cookies was calculated using nutritive value of Indian foods.

V. RESULT AND DISCUSSION

I. Sensory evaluation and mean acceptability score of Adhatoda leaves powder incorporated cookies.

Three different variations (V1-1 g, V2- 1.5 g, V3- 2 g) of Adhatoda leaves powder incorporated cookies were prepared. The figure 1 showed the overall accepatability of Adhatoda leaves powder incorporated cookies. The scores showed that V1- 1g incorporation of Adhatoda leaves powder into the cookies was most acceptable when compared to other samples.

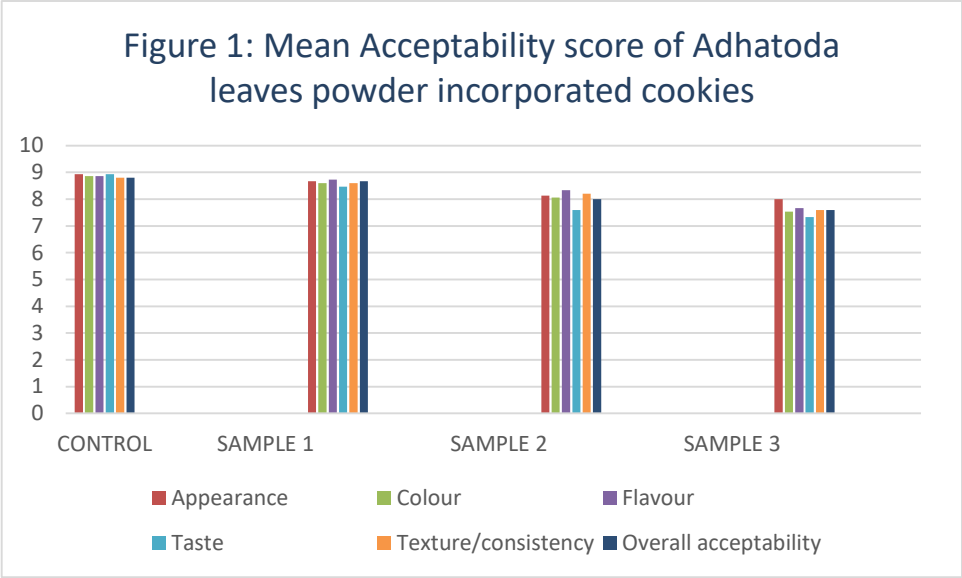

Figure 1: Mean acceptability score of Adhatoda leaves powder incorporated cookies

II. Nutrient composition of Adhatoda leaves powder.

Table I: Nutrient composition of Adhatoda leaves powder.

S.NO	NUTRIENT	VALUE/100g
1.	Protein (g)	0.286
2.	Fat (g)	0.135
3.	Iron (mg)	0.0158
4.	Calcium (mg)	0
5.	Potassium (mg)	0.055

Table II: Nutritive Value calculation of Adhatoda leaves powder incorporated cookies.

S.NO	INGREDIENTS	QUANTITY (g/ml)	PROTEIN (g)	FAT (g)	CALCIUM (g)	IRON (mg)	POTASSIUM (mg)
1	Wheat flour	49	5.18	0.75	15.16	2.01	152.39
2	Butter	30	0.26	24.33	7.2	0.01	7.2
3	Jaggery	20	0.37	0.03	21.4	0.93	97.6
4	Adhatoda leaves powder	1	0.0028	0.0013	0	0.0001	0.0005
	TOTAL	**100**	5.812	25.111	43.76	2.95	257.19

VI.CONCLUSION

In conclusion, the incorporation of Adhatoda leaves powder into the cookies, particularly V1 (variation 1- 1g) was mostly accepted by many people because of the reduced bitterness compared to another sample. Due to the presence of major alkaloids like Vasicine and Vasicinone in the Adhatoda leaves not only aids to suppress the cough and cold but also aids to prevent the communicable disease like Tuberculosis by defeating the Mycobacterium Tuberculosis.

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