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Redefining food with Tulsi leaves: A review on novel food product development

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Abstract

The review shows that Tulsi powder has the potential to transform the food service industry. Tulsi is known in India for its medicinal properties and has been considered a sacred herb since ancient times. Today, Tulsi is showcasing innovations in food formulations. This article has shown the functional properties of Tulsi leaves and highlighted the health benefits like anti-inflammatory properties that can help in managing stress and boosting the immune system. It also shows the unique taste of Tulsi and how it can be used in various food applications. Recent research has shown that it has been integrated into various food categories such as baked goods, confectionery, snacks and beverages. The report also addresses the consideration associated in using the Tulsi powder in the production of food. It also looks to the future to find the potential applications of Tulsi powder in developing tasty as well as functional food products to redefine the way we experience food.

Keywords: Tulsi leaves, inventive food product, food application, functional properties

Introduction

The food industry always looks for new methods to delight taste buds and satisfy consumers' increasing demand for healthier options. Sometimes this pursuit of creativity leads us back to traditional knowledge where ingredients that are tried and tested have the power to completely change contemporary cuisine. Tulsi (*Ocimum tenuiflorum*), a herb valued in India for its therapeutic properties for thousands of years, is one such example (Nadkarni, 2008)^[11]. Historically known as 'Holy Basil', Tulsi is not only used in spiritual contexts but is also appearing in new culinary creations. This review examines Tulsi powder's capacity to alter one's food perception.

Tulsi has a unique flavour that improves food preparation in addition to its historic significance and probable health benefits (Jaiswal *et al.*, 2014)^[7].

Tulsi powder is considered one of the options for producing functional food that can provide taste as well as desired health benefits (Singh *et al.*, 2014)^[12]. This review article helps in identifying the unique characteristics of Tulsi leaf powder, focusing on both its distinct flavour as well as its potential health benefits. The study concludes by understanding its future applications that can help in redefining food preparations.

Properties of tulsi

Chemical composition and functional properties

- **Essential oil:** Tulsi contains essential oil which is mainly eugenol. This essential oil is also found in cloves, camphor, linalool, etc. Essential oils provide an aromatic sensation and essence to the herb (Verma *et al.*, 2016)^[14]. Tulsi gets its spicy flavour and pleasant scent due to the presence of eugenol and is considered advantageous to health (Bandyopadhyay *et al.*, 2009)^[2].
- **Phenolic series:** Some of the phenolic modules that are found in Tulsi powder are carvacrol, rosmarinic acid, thymoquinone, etc. These are antioxidants that help to protect the body from the harsh consequences of free radicals that are present in the body (Manikandan *et al.*, 2014)^[10]. Research has shown that antioxidants has its capacity in contributing to immune system stimulation and thus help in decreasing inflammation (Jafari *et al.*, 2019)^[6].

- **Adaptogens:** Adaptogens are a group of naturally occurring substances which are responsible for helping the body combat stress. Different research on it has identified that Tulsi can lower the levels of cortisol and increase stress tolerance as it contains adaptogenic substances (Mandal *et al.*, 2008)^[9].
- **Powerful Antioxidant:** Tulsi powder has antioxidant properties which have been derived due to the presence of phenolic content in them. Antioxidants work to bind and suppress free radicals in the body which harm cells and are considered one of the major causes of chronic diseases (Goon *et al.*, 2007)^[5]. According to different studies, Tulsi leaves or its powder can help in reducing oxidative stress, thus strengthening the heart and also preventing some types of cancers (Singh *et al.*, 2014)^[12].

Incorporating tulsi powder into food products

Flavour applications

Drinks

- **Infused water:** Tulsi leaves can be consumed using in infused water. The taste of Tulsi powder can help in enhancing the flavour of water. The process can include soaking the leaves in hot water for a few minutes. A teaspoon of honey or probably half of the lemon, if added, can boost the flavour profile even further (Bisht *et al.*, 2017)^[4].
- **Herbal teas:** Tea is a beverage which is consumed by most of the people. Ginger and Tulsi are excellent mixtures for the preparation of tea along with using lemongrass and a few other ingredients. It can provide a calming sensation and give an experience of good taste by also promoting well-being (Jafari *et al.*, 2019)^[6].

Bakery Goods

- **Cookies and Bars:** In bakery goods, Tulsi powder can be utilised for the preparation of cookies and bars, so as to provide these a natural flavour that works well with dry fruits, chocolate chips, etc. Thus, trying various kinds of Tulsi can help in giving small taste changes to different varieties of bars as well as cookies and biscuits (Ahmad *et al.*, 2017)^[1].
- **Bread:** Breads can also be made healthy as well as tasteful with the addition of Tulsi powder. It can also prove itself to be much more advantageous than normal breads. Tulsi can be mixed with the dough before kneading in any form, thus generating a tasty and healthy loaf of bread (Yadav *et al.*, 2018)^[15]. Different fermentation methods, after investigation, have indicated that some of the Tulsi varieties can be improved by the acidic environment as well (Sugihara *et al.*, 2019)^[13].

Confectionery

- **Chocolate:** Dark chocolate is healthier than dairy chocolates. If they are infused with Tulsi powder, they can become a health-conscious treat for everyone who likes eating chocolates. The classic undertone of Tulsi can help balance out a little of the bitterness that is found in dark chocolates, thus helping to generate an intricate flavour overall (Singh *et al.*, 2014)^[12]. Multiple tempering methods can be used to achieve the

desired mouthfeel for the chocolate and this can be a great experiment to go with (Beckett, 2017)^[3].

- **Candies:** Candies which are hard and some lollipops can also be infused with Tulsi, thus helping in providing a different yet helpful twist on classical sweets. By doing experiment with different base recipes of candies, especially by utilising natural sweeteners such as stevia or others, can benefit customers who are very health conscious (Jaiswal *et al.*, 2014)^[7].

Uncovering the adaptability of tulsi

A range of innovative uses

- **Harnessing the ability of various Tulsi varieties:** The genus *Ocimum* includes more than 60 species, each with different flavour profiles and having different phytochemical compositions (Jafari *et al.*, 2019)^[6]. There are certain varieties that have more sweet or lemony tastes whereas there are many others which have more peppery-type or clove-like tastes (Ahmad *et al.*, 2017)^[1]. This diversity in taste can be utilised to produce a variety of targeted products.
- **Natural food colouring with a practicable twist:** Tulsi powder's rich green colour helps to provide a nutritious choice as an artificial food colouring. Different studies have shown that Tulsi leaves help to maintain a stable amount of chlorophyll even after a bit of processing done on it, thus helping to generate the best choice for the colouring applications (Manikandan *et al.*, 2014)^[10].
- **Prebiotic potential for better gut health:** Tulsi leaves contain prebiotic fibres, particularly Xylan, which is considered responsible for improving gut health (Mahapatra *et al.*, 2010)^[8]. By nourishing advantageous bacteria that are present in gut, prebiotics are indigestible in nature and can help in maintaining a balanced microbiome in the gut region. Tulsi powder can thus be included in functional foods like cereal for breakfast, prebiotic bars and many other foods (Mahapatra *et al.*, 2010)^[8].

Conclusion

Tulsi powder has proved itself as an advantageous component for functional foods in future. Its qualities and health benefits provide a unique room for innovation. The food industry can find recent opportunities by investigating innovative applications, such as utilising the flavourful profile of Tulsi varieties. Also, a concentration on its sensory evaluation is required to attain the adoption of the consumer. The industry can expand the products infused with Tulsi that satisfy the palate and offer a delicious sensory experience by cautiously understanding the inclinations of consumer through rigorous studies. As scientific research and consumer insights converge, Tulsi powder is on track to get evolved from a valued herb to a mainstream functional food ingredient. This will help shape a future where holistic well-being and culinary enjoyment are closely linked.

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Conflicts of Interest

The authors declare no conflict of interest.

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