

An Insight into Simulated Product Development: Hibiscus Tea

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Abstract: Simulated product development is the new innovation in the field of Food Science and Food technology. It is an armchair science that accurately estimates the pulse of consumer preferences. The product is developed in reference to an imaginary framework based on fixed attributes of the proposed product. The simulated attributes are usually product attributes, which are of prime importance to both the manufacturer and the consumer. In this technique, product acceptability is assessed using a well formulated questionnaire. The questionnaire aims at the product conceived in virtual space. A detailed analysis of the data obtained is carried out. The questionnaire developed focuses on consumer awareness, recipe development and product value for money (VFM). This technique is the foundation for Novel Product Development and is a mandatory part of the process.

The current research on phytochemicals is broadening the horizons of this versatile area. The contemporary focus on the arena of health and wellness emphasizes on the benefits of natural preparations on human biochemistry. One aspect of this research is introducing innovations in food products incorporating the benefits of phytochemicals in routinely consumed food products. A promising product in this category is Hibiscus tea, prepared by infusing the calyces of the Roselle (*Hibiscus sabdariffa*) flower. Nutritionally, hibiscus tea is a rich source of antioxidative phytochemicals, vitamins A and C, in addition to omega-3 and omega-6 fatty acids. Thus, in traditional medicine systems, hibiscus tea has been used since ancient times for the management of high blood pressure, diabetes, high cholesterol, flu and various skin disorders. Hence hibiscus tea shows promise as an innovative and novel product idea.

In the industrial scale, expert panelists evaluate the product idea. Simulated product development is one of the most cost-effective and sophisticated technique of appraising the effectiveness of the proposed product. In this research endeavor, the acceptability of a virtually developed hibiscus tea is analyzed by simulated product development. The data obtained from the detailed questionnaire was analyzed statistically. This helped in ascertaining the acceptability of Hibiscus tea among the populace. Future prospects include isolation and characterization of antioxidative phytochemicals, characterization of fatty acids from Hibiscus and design of a simulated package for the product. Assessment of the organoleptic acceptability of other virtually developed products of Hibiscus species can also be done.

Keywords: Hibiscus, Hibiscus tea, novel product development, simulated product development.

I. Introduction

The scientific understanding of dietary components and their implications in human wellness has dawned the era for the science of Integrative nutrition. This science is considered to cater to and fulfill all the needs of an individual in accordance to the modern definition of health. It basically focuses and acknowledges the role of dietary components in the prevention, treatment and management of various diseases. Diets via the

science of integrated nutrition tend to cater to the biochemical, psychosocial and therapeutic needs of the individual.

The understanding of the diet and its therapeutic roles include not only its nutritional benefits, but also its effect on human emotions and wellness. Hence, the focus of the food industry is to cater nutritionally balanced meals with maximum consumer convenience. The amalgamation of the principles of integrated nutrition with convenience foods has given rise to the new arena of Novel product development, which focuses upon the inception, manufacture and marketing of nutritionally balanced foods with accentuated therapeutic value.

Thus, there is a greater inclination towards the mass production of novel food products, which attempt to present the benefits of dietary components in a favorable organoleptic profile. The novel foods market is one of the fastest growing food sectors in India. Affordability, willingness to experiment different and new products, changing tastes and preferences are the key drivers of this growth. The development of the simulated product will be helpful in achieving wholesome nutrition which will further enhance the health and wellness. Hence, the present study of the simulated product development for the hibiscus tea was carried out.

II. Simulated Product Development

'Novel Foods' are the newly developed, innovative food or food produced using new technologies and production processes. They are usually developed in the industry using the technique of Simulated Product development. Simulated Product development is the new innovation in product development because it is a more efficient technique of product development because it easily bridges gaps between the concept of the product and its translation into reality. This is the advanced technique by which the manufacturer or food producer conceives a product in virtual space. The various attributes of the product are made concrete using innovative thinking combined with the knowledge and expertise of food and nutritional sciences. It is more favored in the industrial scenario because it is a profitable venture. The costs associated with translating a virtual product into reality are much lower than developing tangible products with ultimately low market value.

The product is first evaluated by expert panels [usually Descriptive Flavor Assessment Panel (DFAP)] capable of conceptualizing and grading the product solely on the detailed description of its attributes. DFAP consists of individuals who are experts in Sensory evaluation techniques. They are chosen to assess and constructively suggest constructive alterations to introduce further innovations in the product so as to make it a unique and tangible venture. The product can also be evaluated using this technique by utilizing panels of naïve consumers after thorough briefing to ascertain the mass acceptability, demand and market share of the conceived product even before it is translated into reality. With this background, in this paper, an attempt was made for the Simulated product development of hibiscus tea.

III. Simulated Product Development Of Hibiscus Tea

a) Introduction:

Teas are considered to be the most commonly consumed beverage in India, thus they form an integral part of Indian cuisine. In addition, it is the most versatile beverage, with multitude variations acceptable for the Indian palette. Tea is basically valued for its tremendous antioxidant profile and unique flavor. The growing health awareness among the consumers has fanned the new trend of consumption of floral teas, like hibiscus tea.

Hibiscus tea is an herbal tea made as an infusion from crimson or deep magenta-colored calyces (sepals) of the Roselle (*Hibiscus sabdariffa*) flower. It has a tart, cranberry-like flavor and can be consumed both hot and cold. Hibiscus tea is rich in antioxidants, particularly the anthocyanins. It is a nutritionally balanced

beverage as a rich source of nutrients like Vitamins A, C and E in addition to minerals like potassium, manganese, magnesium, iron and calcium. In addition, hibiscus tea also contains Omega-3 and Omega-6 fatty acids.

Since ancient times, Hibiscus tea has been used for the therapy and management of various diseases like hypertension, hypercholesterolemia, cold and flu, indigestion, skin diseases, elevated anxiety and clinical depression. The therapeutic potential of hibiscus tea is attributed to its superior antioxidant profile, which is readily bioavailable and effective in-vivo when consumed. This research was carried out to increase the awareness about the benefits of hibiscus tea and to change insights on the marketability and mass manufacture of products made from Hibiscus.

b) Assessment of Consumer demand:

In order to assess the consumer demand and acceptability of the hibiscus tea, a questionnaire was developed. It focused on various non-invasive attributes of the tea and the concept of simulated hibiscus tea to ascertain consumer awareness. After thorough briefing, 35 semi-trained panelists answered the questionnaire. The collected data was then analyzed biostatistically.

c) Data analysis:

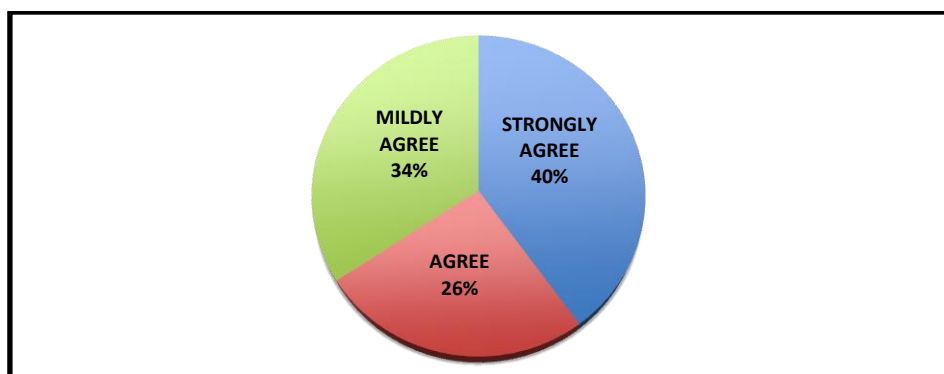


Figure 1: Panelist opinions on the consumption of tea.

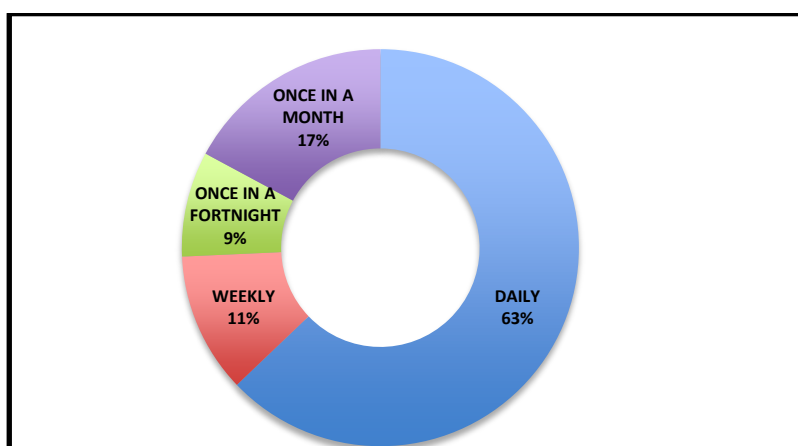


Figure 2: Panelist opinions on their frequency of consumption of tea.

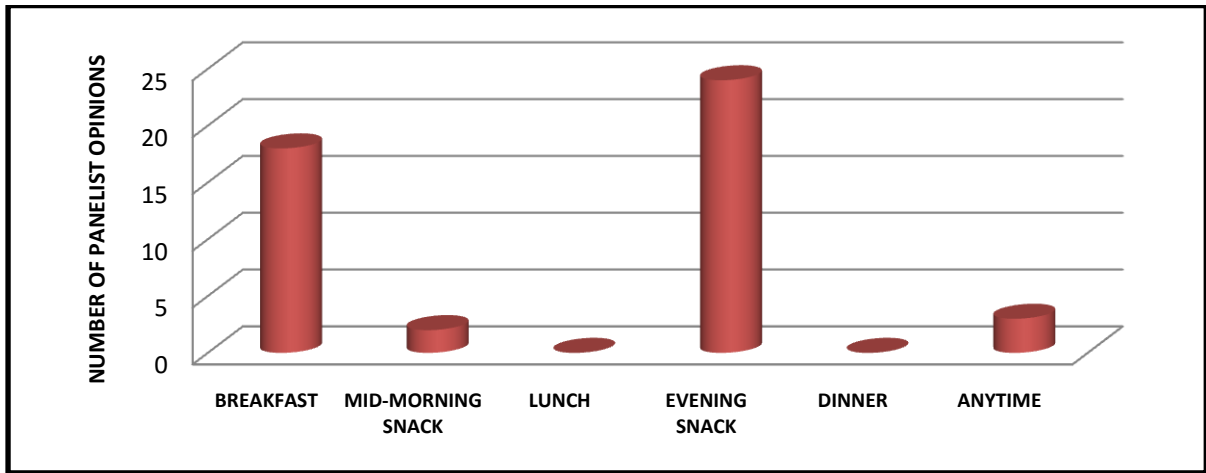


Figure 3: Panelist opinions on the meals of the day they prefer to consume tea.

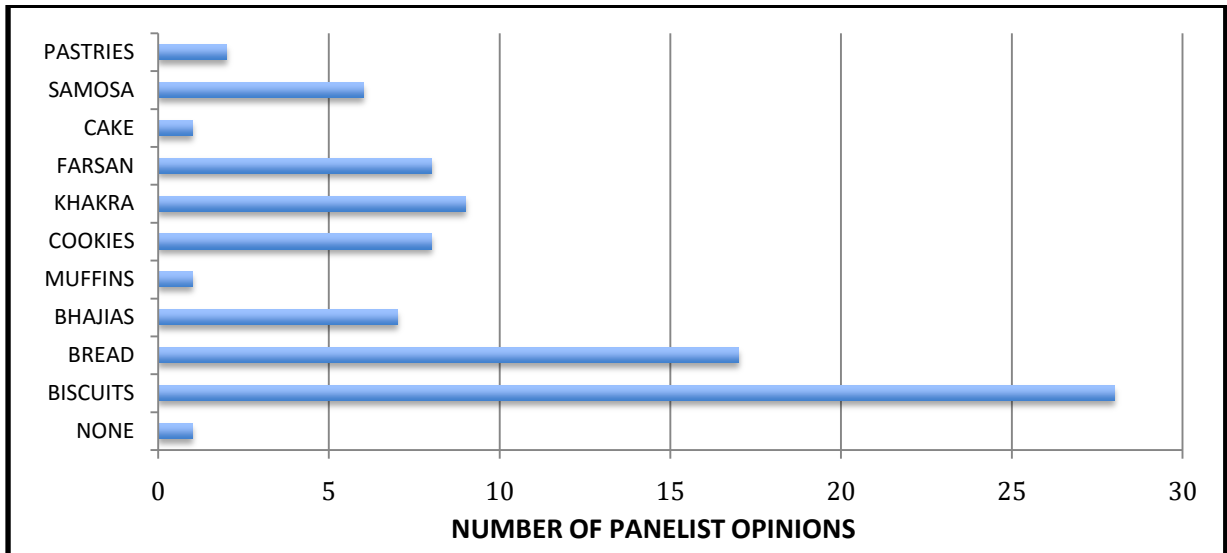


Figure 4: Panelist opinions the accompaniments they usually prefer to consume with tea.

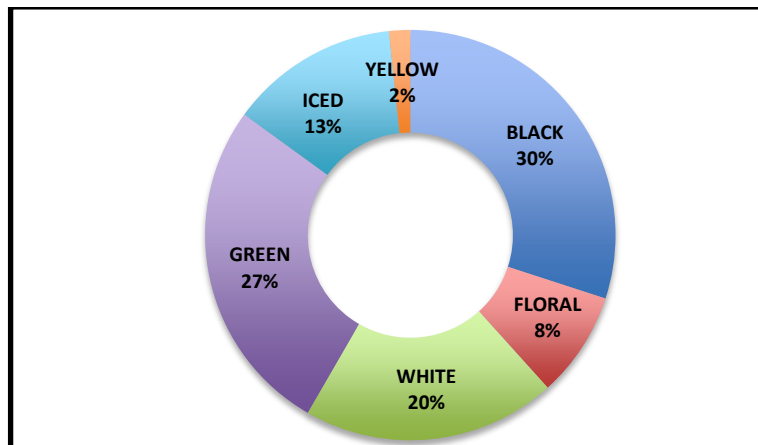


Figure 5: Panelist opinions on the variants of tea they prefer to consume.

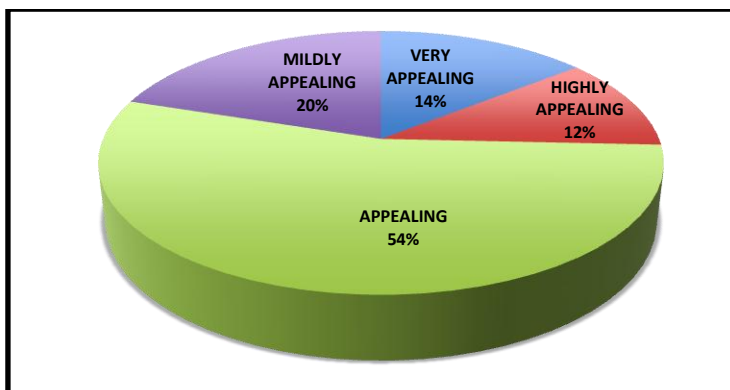


Figure 6: Panelist opinions on the appeal of a tea derived from flowers.

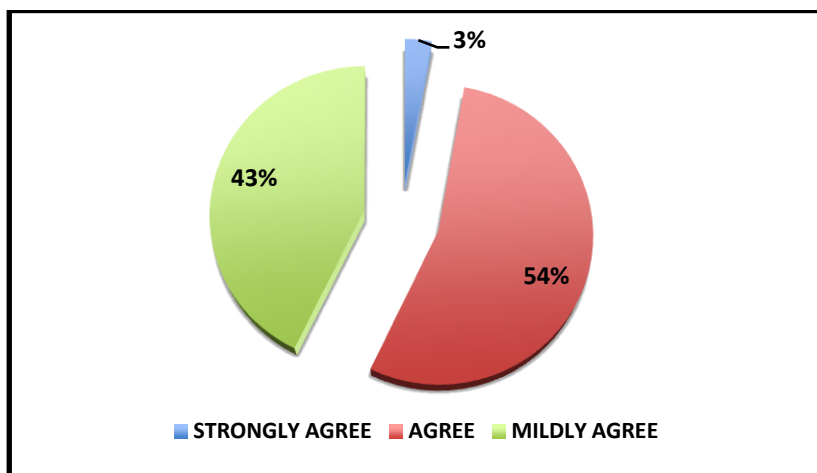


Figure 7: Panelist opinions on the appeal of the Hibiscus tea.

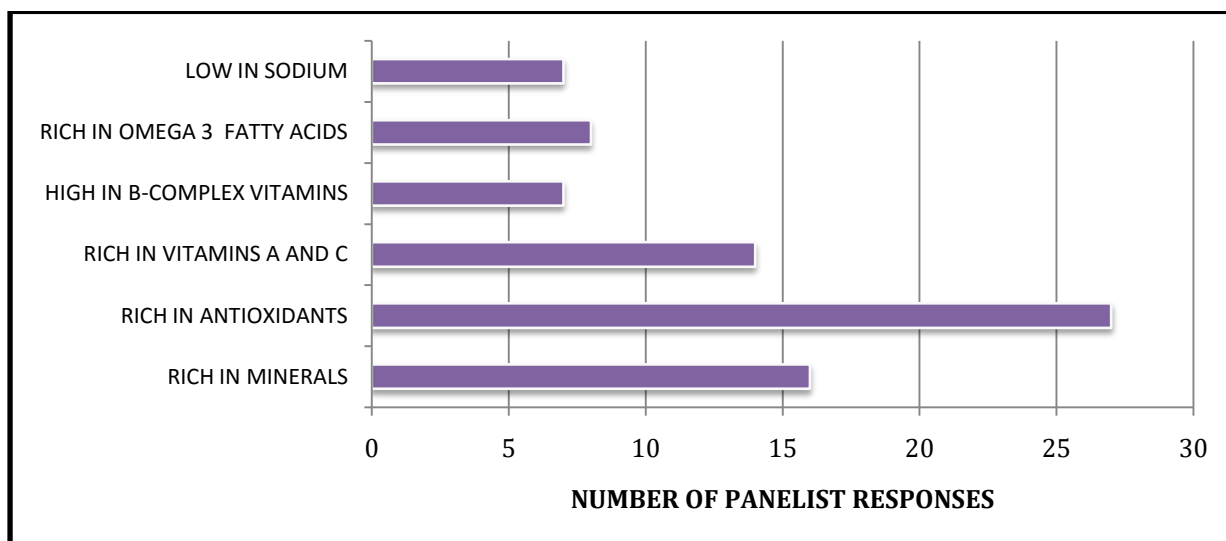


Figure 8: Panelist opinions on the nutritional benefits of Hibiscus tea appeal to them the most.

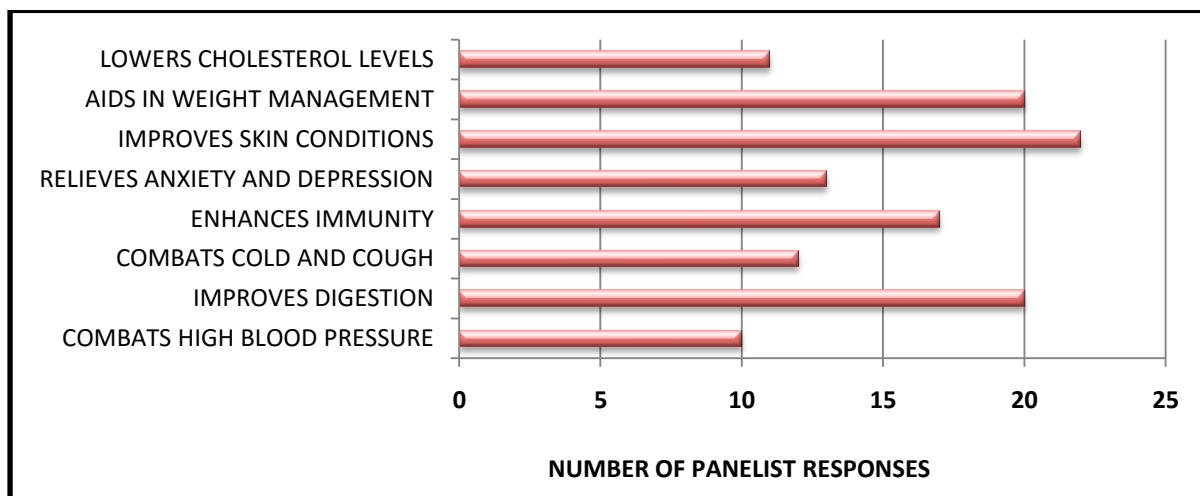


Figure 9: Panelist opinions on the health benefits of Hibiscus tea appeal to them the most.

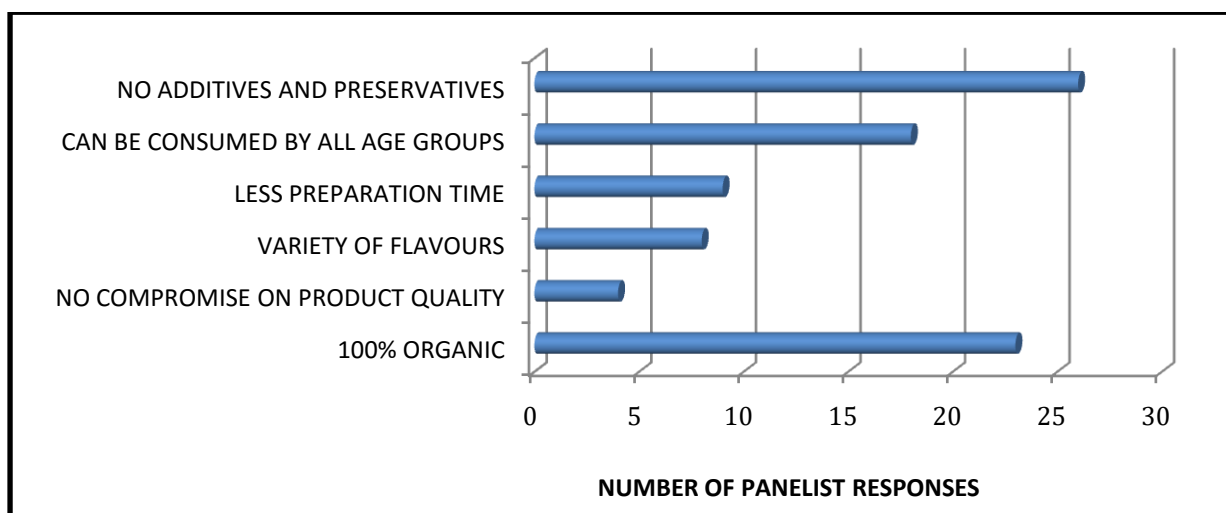


Figure 10: Panelist opinions on the Consumer benefits of Hibiscus tea appeal to them the most.

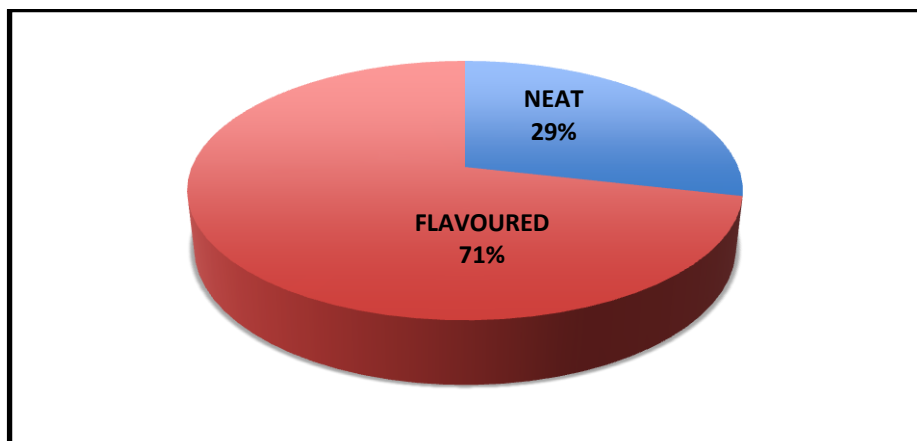


Figure 11: Panelist opinions on the manner they prefer to consume Hibiscus tea.

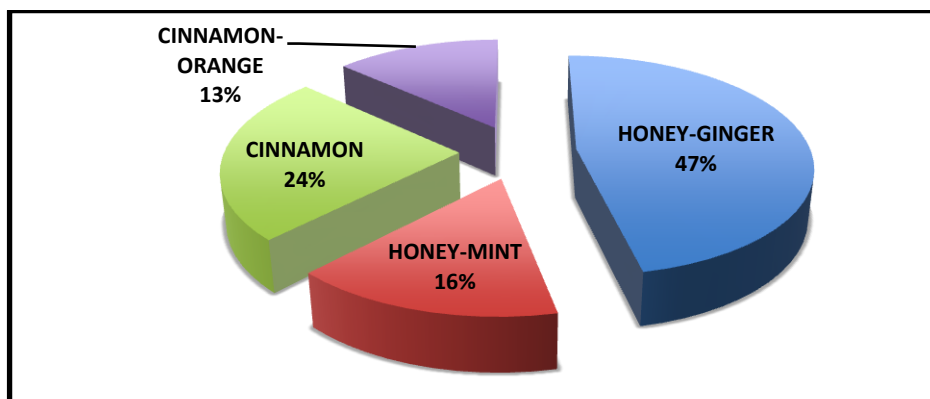


Figure 12: Panelist opinions on the flavor variants of Hibiscus tea they prefer to consume

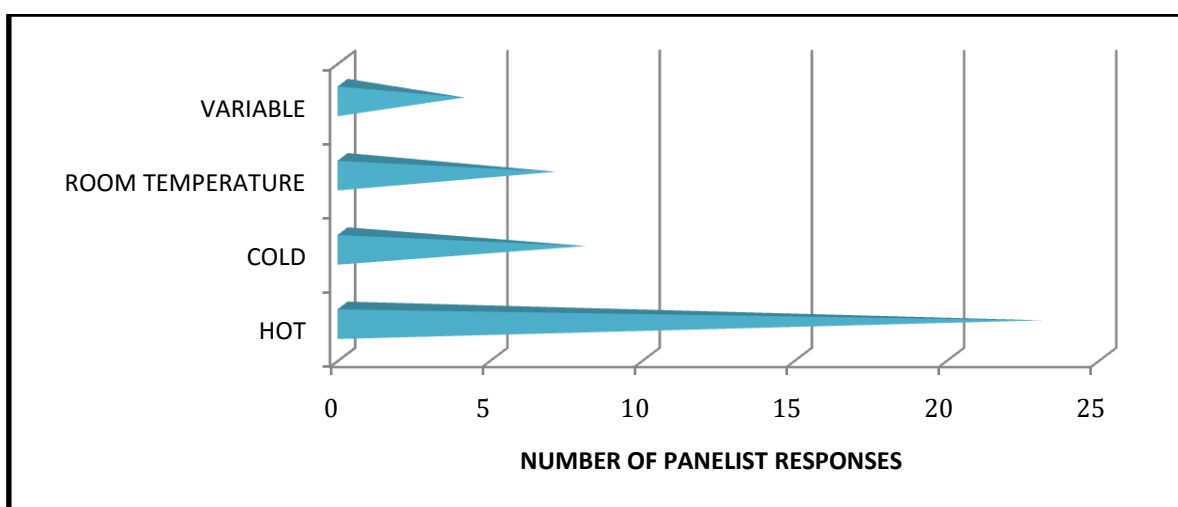


Figure 13: Panelist opinions on their preferred temperature range for Hibiscus tea consumption.

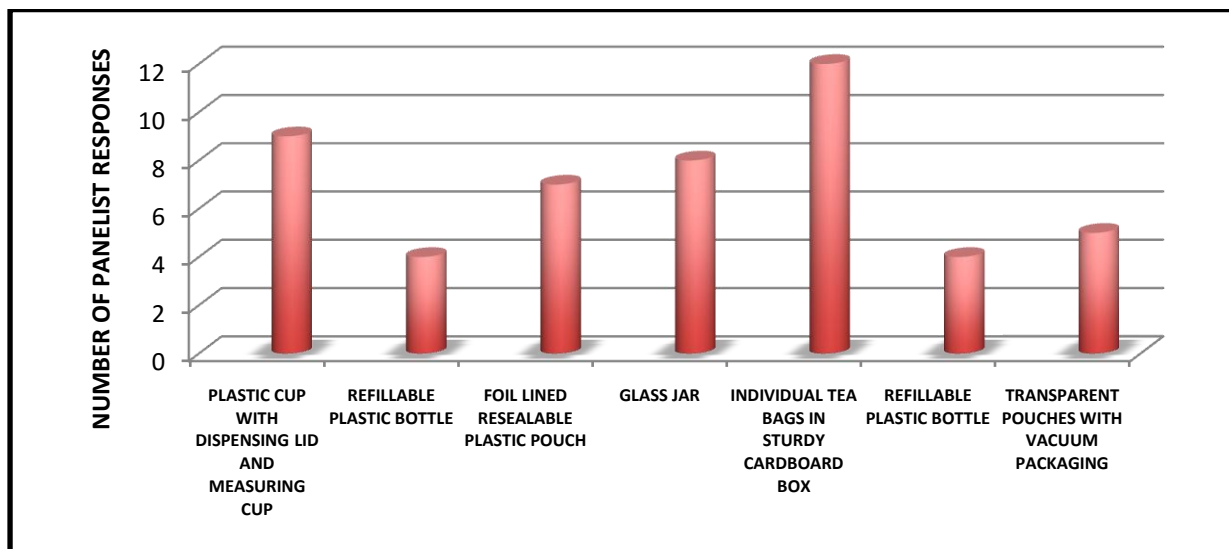


Figure 14: Panelist opinions on their preferred packaging for Hibiscus tea consumption.

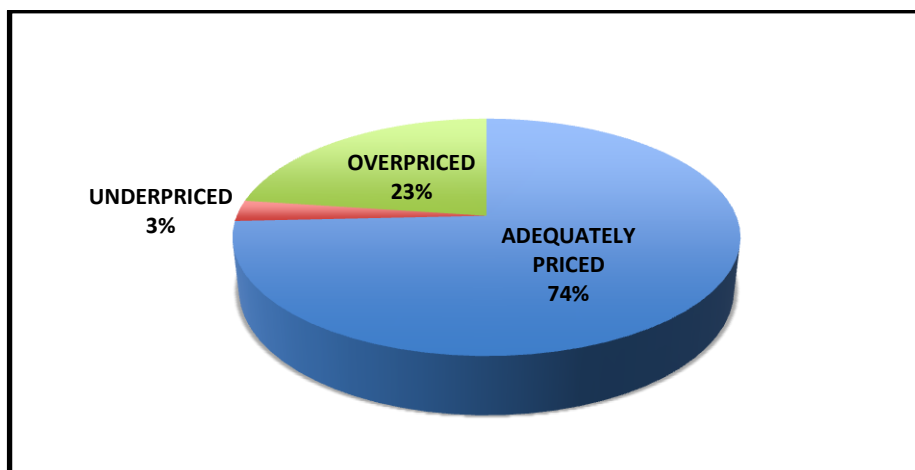


Figure 15: Panelist opinions on the pricing (Rs 175 for 25 tea bags) of Hibiscus tea

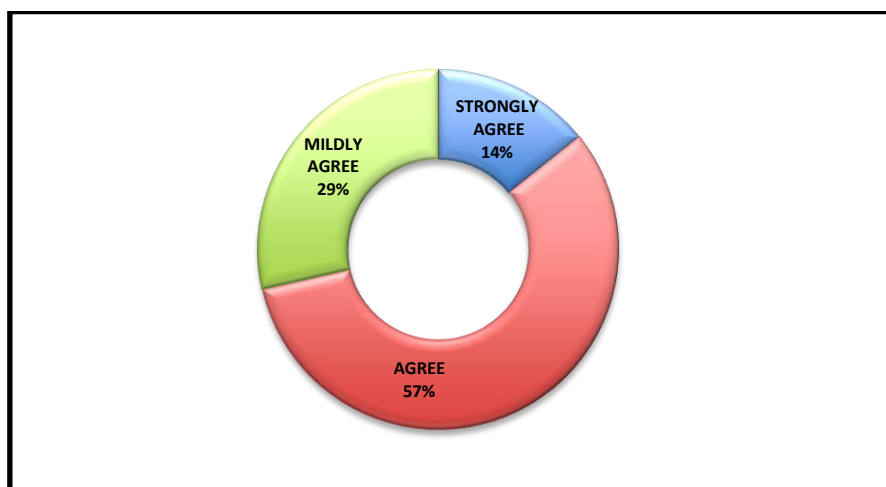


Figure 16: Panelist opinions on whether they would buy Hibiscus tea if it were commercially available.

IV. Results

- The number of panelists who strongly agreed on the consumption of tea were 40%.
- The consumption of tea on daily basis was observed in 63% of the panelists.
- Around 69% panelists preferred to consume tea with their evening snack, followed by breakfast (51% of panelists).
- Biscuits were preferred by 80% of the panelists as the most favorable accompaniment to tea.
- The consumption of black tea was preferred most by panelists.
- Around 54% panelists found the idea of a tea derived from flowers appealing and 57% panelists agreed that they find the idea of hibiscus tea appealing.
- Majority of the panelists (77%) were appealed by the fact that hibiscus tea is a rich source of antioxidants.
- 63% panelists were appealed by the fact that hibiscus tea aids in improving skin conditions, whilst 57% panelists were appealed by hibiscus tea strengthening digestion and aiding in weight management.
- The fact that no artificial additives were added to the hibiscus tea product appealed 74% of the panelists.
- Flavored hibiscus tea was preferred by 71% of the panelists.
- The honey-ginger flavor variant of Hibiscus tea was preferred by 47% of the panelists.
- The consumption of hot hibiscus tea was preferred by 66% of the panelists.
- 34% panelists suggested individual tea bags in a sturdy cardboard box as the most convenient packaging for Hibiscus tea.
- Around 74% panelists agreed that the pricing of hibiscus tea was adequate. Thus the product exhibits high Value for money (VFM). In addition, 71% panelists agreed to buy hibiscus tea if it were commercially marketed.

V. Conclusion

This research endeavor indicates that hibiscus tea has high organoleptic and consumer acceptability with high market demand. Hence, hibiscus tea could be a healthy alternative to conventional teas. The simulated product development exercise concludes that if the mass-manufacture of such healthy recipes is carried out, there could be a high consumer demand for the products. The interpretation obtained could be further used in product development.

In addition, this study suggests that there could be a rising market demand for innovative foods using wholesome novel ingredients that exhibit consumer convenience as one of the main priorities of product design. It highlights the superiority of simulated product development as a science a technique to ascertain consumer acceptability of a product idea. Further, this technique is highly suitable in the industrial scenario as it is cost-effective and functions as the scientific foundation of recipe development.

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