Original Research Article

Descriptive Sensory Evaluation and Consumer Acceptance of Herbal Amla-Curry Sauce

ABSTRACT

Sensory acceptability of a value-added amla curry product is critical factor in their consumption. This study investigated factors influencing consumer preference for processed sauce. Amla and curry leave both are rich in antioxidant properties they boost our immunity to provide us good health and the aim of the study is determination & optimization of amla curry sauce formulation, evaluate its functional properties of developed sauce and the analysis of sensory characteristic of the product. Fresh amla fruit processed by boiling, curry leave roasting, mixing the herbs which is used to make the sauce. The sauce was evaluated by 10 panel members using hedonic scale test and ranked by 40 consumers for preference. The result showed that sauce was more distinguishable by appearance, taste, and mouthfeel than by aroma, flavor and after taste. Sauce was green in color and preference was significantly positively influenced by the color. We applied the methodology which involves in determination with more than one variation of the ingredients and selected the specific combination of the sample.

KEYWORDS

Antioxidants, consumer preference, sensory analysis,amla, curry leave, hedonic test

1. INTRODUCTION

In general, amla is referred to as an Indian gooseberry. Because of their useful qualities, the berries of the trees are powerfully applied in pharmaceutical preparations. Small, spherical, yellowish-green berries that are found on amla trees are present. Amla has five distinct flavours, including pungent, astringent, sweet, bitter, and sour. In addition to this, it promotes greater physical and mental wellness. This is the reason it is referred to as "Divyaushada," a divine medication. Sanskrit refers to amla as amalaki, which translates to "nectar of life." Amla contains a lot of different antioxidants. It is usually accepted that antioxidants might scavenge free radicals produced by the body when it is under stress. The ability of antioxidants to scavenge free radicals generated by the body while under stress is well documented. Amla has a significant potassium content in addition to antioxidants. **Saini *et al.* (2015)** offer this information. If patient has any blood pressure related problem, then potassium can be regulated it. It reduces the higher chance of cardiovascular disease. On this stage the intake of amla juice or amla pulp-based food product can beneficial. As we know amla fruit has high antioxidant properties which is useful to avoid damage of brain cells and it also enhance our memory. This could be the reason that Amla is really very magical fruit which is common in India. It is also making some positive effects dementia. The curry tree, a distinctive citrus tree found only in Sri Lanka and parts of India, is now almost universally linked to Indian food.**Kamdod*et al.* (2012).** Curry leaves, which are a member of the citrus family, have a pungent taste akin to lemongrass. Curry leaves, when

used as an herb, add a deep depth of taste to any meal and have a far more delicate flavour than curry powder. Curry leaves are used in cooking to enhance other aromas and give Indian food its aromatic, strong flavour. Curry leaves are also known as sweet neem leaves because of their mildly sweet flavour. Curry leaves are used in Asian cuisine as a flavourful herb, but they also offer a variety of health benefits. In ayurvedic medicine, they are often administered. Amla is a vitamin C enriched anti-oxidant fruit offers a promising approach for the promotion of health by mean of reducing immunity of human body. Curry leaves are full of anti-oxidants which is better for absorption of iron and folic acid also reduce the risk of cancer, heart disease and helps in management of diabetes. The objective of this study is to prepareamla-curry sauce that can be a good serving option during the consumption of fast food. It will provide help to maintain naturality with the avoidance of chemical-based sauces.

2. MATERIALS AND METHODS

2.1 Sample collection and preparation

Fully matured amla fruit having green colour of specific variety were taken for preparation, analysis purpose and for good physical characters. Picked the fresh amla from our local market Rajani Khand, south city, Lucknow. Thereafter ground in a mixer and filtered through a muslin cloth to obtain the pulp and then taken the fresh green curry leave and boiled it for making puree. Amla pulp and curry leave puree were mixed together as a paste for cooking with a specific standard measurement.

2.2 Evaluation of varieties for preparation of sauce and puree

Different recipes of sauce as given by **Bhatt*et al.*** **(2002), Arya*et al.*** **(2004), Sukul*et al.*** **(2001),Singh*et al.*** **(2006), Siddappa *et al.*** **(2008)** were evaluated organoleptically through hedonic rating test scale. The amount of sugar salt and spices and vinegar were kept constant. The recipe which scored maximum was selected to prepare sauce for this study.

2.3. Extraction of pulp

For the preparation of amla-curry sauce and puree, pulp was extracted manually with the help of mixer-grinder. Fruits were washed in running water to remove the dirt and dust and then boiled it properly and then ground in a mixer-grinder and obtained ground material was filtered through a single layer of muslin cloth to obtain the pulp. Sauce and puree were prepared from amla & curry.

2.4 Preparation of sauce and puree

Sauce was prepared by mixing 400g of pulp with calculated amount of sugar, salt, vinegar and spices. Firstly, grind alma & curry pulp together, cooking pulp with one third quantity of sugar, putting butter on the pan and mix all the spices properly also adding the vinegar / acetic acid as preservatives and cooking about 88° C.

Amla curry sauce processing*

Fig.1.Flow chart for preparation of Amla Sauce

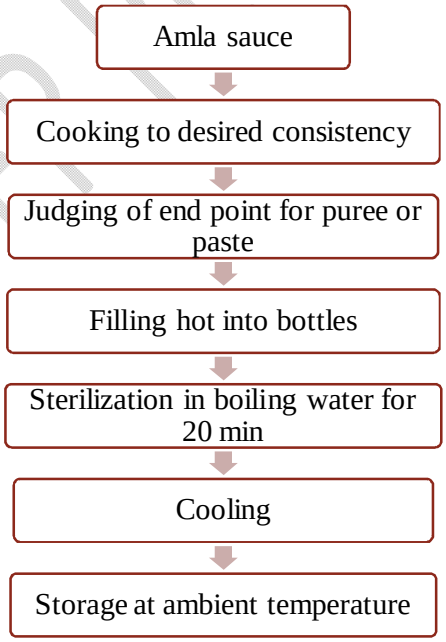


Fig.2. Flow chart for preparation of amla sauce puree

2.5 Variation of ingredients composition

Ingredients	control (g)	T1(g)	T2(g)	T3(g)	T4(g)	T5(g)
Amla	**400g**	**350g**	**300g**	**250g**	**345g**	**380g**
Curry	**200g**	**250g**	**300g**	**350g**	**150g**	**180g**
Butter	**50g**	**45g**	**45g**	**40g**	**50g**	**50g**

Table 1. List of variation

2.6 Descriptive sensory evaluation

2.6.1 **Selection of panel members**

Analytical separation method was used to select the panelists and a descriptive hedonic scale was used to rate the amla-base sauce. 40 people were selected, all students and staff of the Department of Food and Nutrition, Babasaheb Bhimrao Ambedkar University Lucknow. As a panelist, participating in the descriptive sense analysis, the panelist also decided on the words underlying the descriptive terms and standards to be used. Attributes describing appearance, color, flavor, taste, smell, texture, mouthfeel. The panelists took the hedonic test lightly and gave their possible verdicts.

2.6.2 **Sample presentation**

Sensory panelists were significantly checked the sample. Panel members gave their valuable feedback according to their taste buds there were no session effect on the result for sauce sample. The vitamin c enriched amla-curry sauce was prepared in department of food & nutrition. About 10g of sauce was served. The temperature of the sauce at the time of evaluation was about 37°C. Panelist were asked to eat at least one spoonful of sample. We also mentioned to give all possible suggestions that we can enhance the nutritive value of amla-curry sauce.

3. RESULT AND DISCUSSION

3.2 **Sensory analysis**

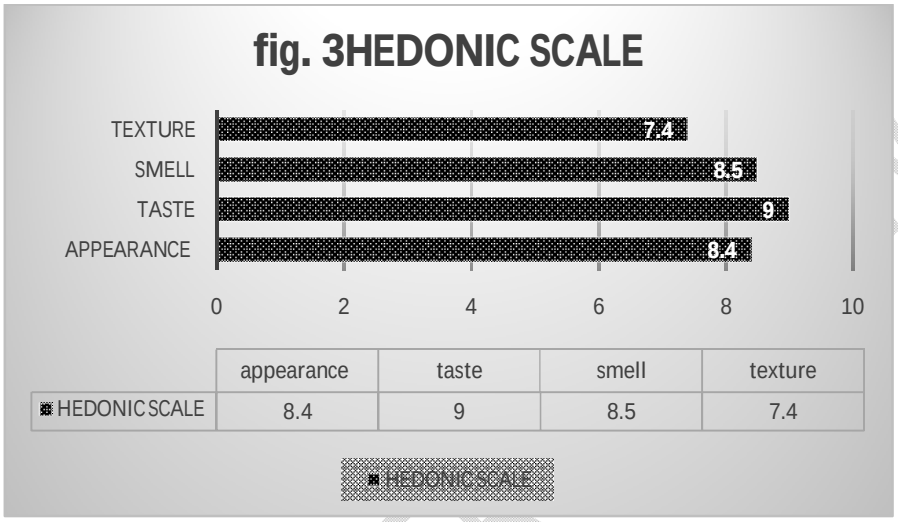
Sensory evaluation is a procedure where we can examine a particular food product by using our senses to perceive a product by evaluate its characteristics and values. So, we chosen the hedonic scale test &organize sessions for the testing. We used 10g of sample for each panelist to perceive it's all characteristic. The hedonic test results showed that all forty panelists distinguished amla sauce by its appearance, taste and mouth-feel than by the aroma, smell&flavor.

Table 2 : Sensory analysis and evaluation

S.NO	PARAMETERS	RATING
1	Appearance/Color	8.4
2	Taste/Flavor	9
3	Smell/Odor	8.5
4	Texture/Mouthfeel	7.4

The hedonic scale displays how much people generally like or dislike something, such as a product they tasted or an idea they saw. A product that achieves the score might be utilized safely as an excellent instance of the goal quality since a mean liking score of 7 or higher on a nine-point scale is often indicative of very acceptable sensory quality. Based on this, a product from a study set may be chosen to serve as a tangible example of the sensory quality that accurately depicts the consumer's acceptable boundaries.

3.2 Sensory chart



The appearance of the particular sauces was really impressive panelist gave their fine review on it as they said the colour of the sauce was pretty light it could be little darker as curry leave content and amla was in right ratio. After that they talked about flavor and taste, it was the best thing that they liked very much.The ratio of clove, cardamom & ginger was 5:10:20 but it was very easy to recognize the clear taste of clovewas very high. Then they came upon the smell and it was smelling like natural ayurvedic herbal product where is clear avoidance of any chemical supplement. Texture and mouth feel was not so smooth the fiber content of the amla made the texture little rough but overall acceptability was up to the mark.

3.3 Consumer preference

The consumer preference score indicated that the controlled variability accounted for 82% of the total variation in the amla sauce consumer preference data. According to the reviews, the ratio of amla to curry should be 10:5 and 1/4 of the spice mix is our best combination. Green color, burnt aroma and burnt aftertaste were significantly correlated with preference and were therefore considered to be the most important sensory determinants for liking amla-curry sauce.

4. Conclusion

Panel members clearly appreciated all the effort for executing whole idea. Vitamin c enriched amla-curry sauce was the best naturally prepared stuff which we can use with our spicy snacks and another type of street food like noodles, momos which we eat with highly chemical sauces. So, all selected panelists gave their valuable feedback by its appearance, taste, mouth feel than by the aroma and color. We took two-three variations of ingredients and the standard variation selected by the selectors which is used to make this sauce. Our approach of making this sauce work extremely good and it is

very helpful as an immunity booster stuff which is approved by the School of Home Science Department of Food and Nutrition. With low fat & less calories it can be use in good habits for cardiac patients.

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