



ISSN (E): 2277-7695

ISSN (P): 2349-8242

TPI 2024; 13(6): 29-31

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www.thepharmajournal.com

Received: 27-03-2024

Accepted: 30-04-2024

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Sensory evaluation of rhizome turmeric pickle

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Abstract

Sensory evaluation concept is closely related to human response because sensory test methods are usually done with the use of eyes, tongue, nose, ears, and skin. Through these five senses, we are able to assess the sensory attributes of products such as color, appearance, size, taste, and texture. Thus, it is only fair to use a tool to evaluate product characteristics and consumer acceptance via human sense. Krishi Vigyan Kendra Raigarh (C.G.) conducted an On Farm Trail on "Sensory evaluation of rhizome turmeric pickle" in the last three years, 2021, 2022 and 2023. The study aimed to formulate a rhizome turmeric-pickled product, in which mustard oil, vinegar, lemon, and salt were used as preservatives. The products have been evaluated for sensory attributes, i.e., color, flavor, texture, taste, and overall acceptability. The MOVS-formulated pickles were found to be excellent and received higher mean scores of 8.0, 9.0, and 8.4 for color, flavor, and overall acceptability.

Keywords: Turmeric, rhizome turmeric pickle, sensory attributes

Introduction

Turmeric is one of the well-known immunity enhancer's worldwide repeated recommendations of AYUSH to consume turmeric in different forms. Turmeric (*Curcuma longa*) is the rhizome or underground stem of ginger like plant. Turmeric is a rhizomatous herbaceous perennial plant of the ginger family, Zingiberaceae (Chan *et al.* 2009) [3]. It is a spice that originated in India. Turmeric has been used as a spice and medicinal agent in India, China and Indonesia since ancient times. The flavor of various spices and foods is enhanced by turmeric, which is a mild spice that is the primary ingredient in most Indian curries.

Nutritional analysis showed that 100 g of turmeric contains 390 kcal, 10 g total fat, 3 g saturated fat, 0 mg cholesterol, 0.2 g calcium, 0.26 g phosphorous, 10 mg sodium, 2500 mg potassium, 47.5 mg iron, 0.9 mg thiamine, 0.19 mg riboflavin, 4.8 mg niacin, 50 mg ascorbic acid, 69.9 g total carbohydrates, 21 g dietary fiber, 3 g sugars, and 8 g protein (Balakrishnan 2007) [2].

Turmeric or Haldi is used in Ayurvedic medicine to reduce mucus from the system (De Jager *et al.* 2010) [4]. In Ayurvedic medicine, turmeric is a well-documented treatment for various respiratory conditions (e.g., asthma, bronchial hyperactivity, and allergy), as well as for liver disorders, anorexia, rheumatism, diabetic wounds, runny nose, cough, and sinusitis (Araujo and Leon 2001) [1].

Turmeric has numerous health benefits, including anti-allergy, anti-cancer, anti-fungal, anti-inflammatory, anti-viral, quick wound healing, blood sugar regulation, immunity boosting, improved digestion, memory enhancement, prevention of tooth decay, reduction of arthritis symptoms, decreased risk of heart disease, reduction of depressive symptoms, aiding in aging, promoting a longer lifespan, natural painkiller and lung protection. Sensory evaluation concept is closely related to human response because sensory test method is usually done with the use of eyes, tongue, nose, ears and skin. Through these five senses, we are able to assess the sensory attributes of product color, appearance, size, taste and texture. Thus, it is only fair to use a tool to evaluate product characteristics and consumer acceptance *via* human senses. In the present study new product is introduced i.e., rhizome turmeric pickle. In this scenario, rhizome turmeric pickle has immense potential to be considered as a strong immunity booster along with its appetizing taste.

Materials and Methods

The study was carried out over three years (2021, 2022, and 2023) in the month of January. Rhizome turmeric pickles are prepared according to our method under On Farm Trail program. Data pertaining to the sensory evaluation of turmeric pickles with respect to appearance, color,

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flavor, and overall acceptability. Sensory evaluation has been given to 20 semi-trained panel members using a score card with a five-hedonic scale. In evaluation the qualities of the turmeric pickle were asked to be judged by 20 semi-trained panel members with respect to appearance, color, flavor, texture, taste, and overall acceptability. The individual mean sensory scores for turmeric pickles are noted every year in 2021, 2022, and 2023. The data was analyzed statistically by applying different suitable tests. The turmeric pickle-making process is given below:

Pre preparation

The collected turmeric rhizome was cleaned, and washed. For processing the rhizome grated in to thin slices.

Ingredients used

- Fresh turmeric rhizomes-1.5 kg.
- Mustard oil-300 ml.
- Mustard dal-100 gm.
- Lemon juice/ vinegar -100 ml.
- Salt-100g.m.
- Red chilli powder -20 gm.
- Hing (asafetida) -5 gm.
- Fenugreek seed-5 gm.
- Fennel seed-5 gm.

Flowchart for the preparation of turmeric pickle (M Chandel, *et al.*2020) ^[6].

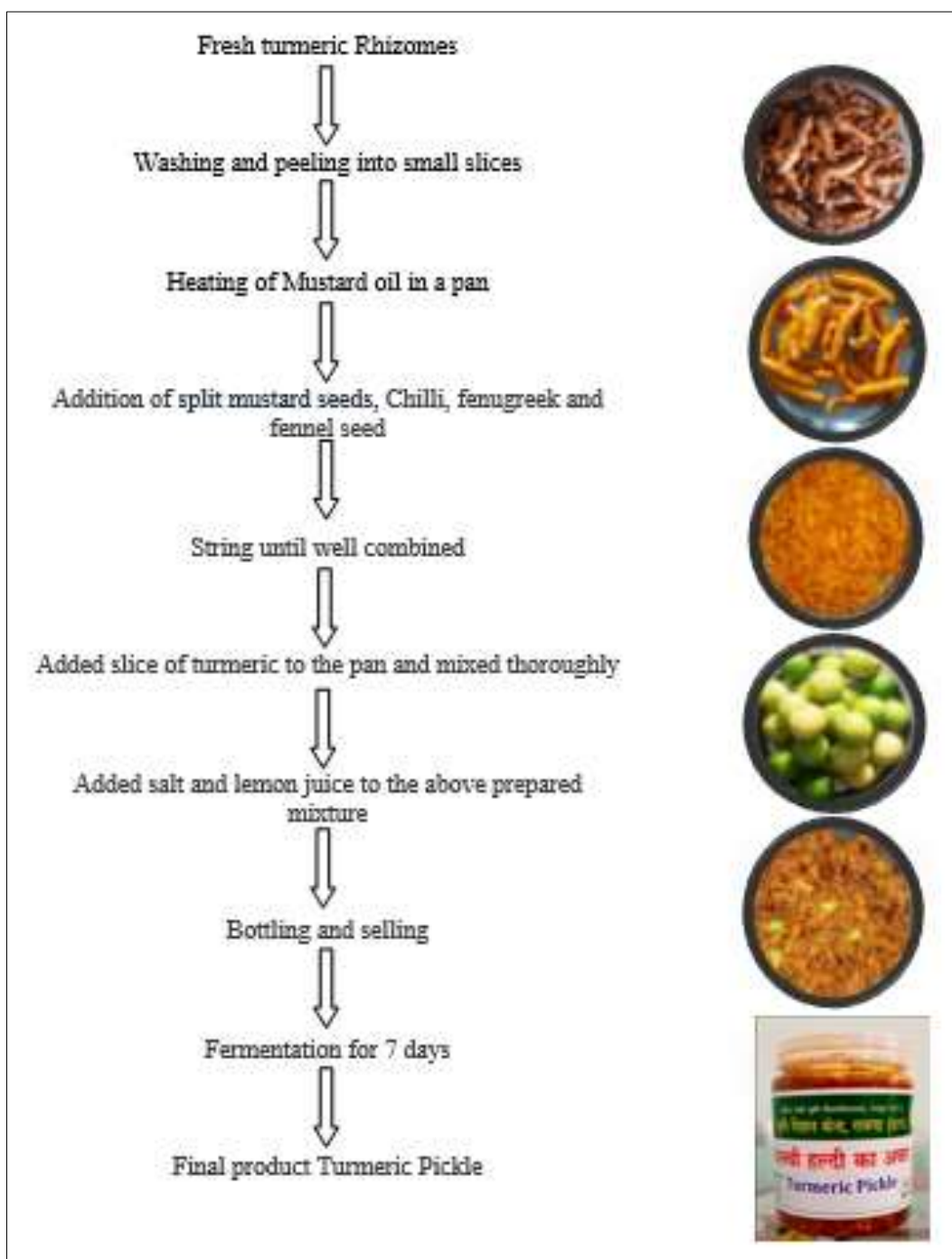


Fig 1: Process flowchart for preparation of turmeric pickle

Results and Discussion

Pickling, also called brining is the process of preserving food in an acidic solution, typically vinegar or lemon in salt solution (brine). The processed foods are called pickles. Pickling is one of the ancient techniques used by Indians to preserve fruits and vegetables. Method of preparing rhizome turmeric pickle is first washing raw turmeric and peeling (The easiest way to peel turmeric is, using a paring knife, scrape the blade against the skin of the turmeric) into small slices or grate the pieces. Add the split mustard, fenugreek, fennel, and chili seeds to heated mustard oil and toast for ten seconds or so. A slice of turmeric was added to the pan and thoroughly mixed. Stir until well combined. At this point, turmeric was added to the pan and well combined. Lemon juice and salt were added and mixed well. The pickle is ready to be bottled

and sealed. It is recommended to wait for the flavors to meld for at least an hour, but it works best after fermentation has occurred within seven days.

Sensory evaluation of turmeric pickle

After seven days data pertaining to sensory evaluation of turmeric pickle with respect to appearance, colour, flavor, overall acceptability. In evaluation, the qualities of the turmeric pickle were asked to judge by 20 semi-trained panel members with respect to appearance, colour, Flavor, texture, taste and overall acceptability. The individual mean sensory scores for turmeric pickle in noted. We were found to be excellent and received higher scores of 9.0, 8.5, 8.0 and 8.4 for flavor, appearance & Taste, colour and Overall acceptability. The marking scale was set from 1 to 10.

Table 1: Mean Sensory score values for the turmeric pickle

Years	Appearance	Colour	Flavor	Texture	Taste	Overall Acceptability
2021	8.3	7.8	8.6	7.6	8.4	8.14
2022	8.4	7.6	8.9	8.6	8.7	8.44
2023	8.7	8.6	9.5	7.8	8.5	8.62
Mean Score	8.5	8.0	9.0	8.0	8.5	8.4

Conclusion

The results of this study made it abundantly evident, that the new product, rhizome turmeric pickle is a very good product. Its sensory evaluation scores are 8.4 for overall acceptability, 9.0 for flavor, and 8.5 points for appearance and taste. The nutritional composition of the turmeric rhizome pickle, which included protein, fat, calcium, iron, phosphorus, vitamin C, sodium, and potassium, was good. As a result, the turmeric pickle was intended to improve the health status of all age group and is advantageous to the industry. Turmeric pickle can be consumed by all age group and children above 6 years old. Over eating of pickle is not advisable and avoided by the person those who suffer from allergic conditions.

Acknowledgement

The authors would like to thank Krishi Vigyan Kendra, Raigarh staff all panel members of jury for their cooperation.

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