SALT JOURNAL OF SCIENTIFIC RESEARCH IN HEALTHCARE
January 2022, Vol 2, Issue 1, Page No. 01-07

www.saltjsrh.in
ISSN 2583-3936 (Online)
https://doi.org/10.56735/saltjsrh.ms2202010107

DEVELOPMENT OF IMMUNITY BOOSTING RELISH WITH ADDED HERBS

PAYAL TALESRA AND *VISHAKHA SINGH
Department of Food Science and Nutrition,
College of Community & Applied Sciences, Maharana Pratap University of Agriculture and Technology, Udaipur, Rajasthan, India

Article Type: Research Article

Article Citation: Talesra P, Singh V. Development of immunity boosting relish with added herbs. SALT J Sci Res Healthc. 2022 Jan 5; 2(1):01-07.

Received Date: December 12,2021
Accepted Date: January 04, 2022
Published Date: January 05, 2022

***Corresponding Author:**
Dr Vishakha Singh, Associate Professor, Department of Food Science and Nutrition, College of Community & Applied Sciences, MPUAT, Udaipur, Rajasthan, India.
ORCID ID: 0000-0002-0376-9312
Email:
vishakha.udaipur@gmail.com

ABSTRACT

The leading challenge across the globe currently is COVID 19 pandemic. In the current situation, the only approach to survive is to strengthen the immune system. Traditional spices and herbs have been used as immunity enhancers in Indian cuisine since the dawn of time. Herbs and spices like holy basil, ashwagandha, chamomile, Indian long pepper, *giloy*, ginger, garlic, thyme, thuja, and turmeric have a plethora of beneficial properties and have several health benefits. The use of these herbs helps cure symptoms, improve immunity, and reduce the risk of infections to a great extent. **Purpose:** In this context, a relish that included immunity boosters like lemon, ginger, and herbs like chamomile and Indian long pepper was developed with three variations using honey, sugar, and jaggery as sweetening agents, respectively. Vitamin C in lemon helps boost health and fight disease. Gingerol, the bioactive compound in ginger, has anti-inflammatory and antioxidant properties, helps in treating colds and soothing a sore throat. Piperine in long pepper helps fight infections. Chamomile is an ancient medicinal herb and has a quintessential role in treating the common cold, sore throat, cough, and flu symptoms because of bioactive compounds like chamazulene, quercetin, luteolin, and patuletin. **Method:** All three variations were standardized and tested for sensory evaluation on a nine-point Hedonic rating scale by a panel of ten judges. The products were stored in clean sterilized bottles for one month of study. The products developed are calorie dense and are rich in vitamin C content (17.69mg/100g). The recipe using honey and jaggery as a sweetening agent scored eight on the overall acceptability, while the product with sugar scored seven on the Hedonic rating scale. The same procedure was followed to prepare all except the fact that the recipe which had honey was not given the heat treatment before bottling. Probably, due to this reason, the presence of moisture was responsible for fungal growth on the sample with honey after 14 days. The other two variations (with jaggery and sugar) showed no spoilage signs and had the same acceptability even after one month. **Conclusion:** A wide variety of these medicinal herbs can be implemented in diet and supplementation to support the immune system. The products developed can be used for treating sore throat and dry cough. It can be enjoyed as a spread, chutney, or relish. A slight inclusion of these herbs and spices in the everyday diet in the form of these spreads will gradually improve immunity.

Keywords: lemon, ginger, chamomile, Indian long pepper, relish

1.0 INTRODUCTION

The leading challenge across the globe currently is COVID 19 pandemic. In the current situation, the only option to survive is to enhance the immune system. Herbal medicine has played an essential role in controlling infectious diseases in the past. Clinical evidence from a variety of herbal medicine trials in the treatment of SARS coronavirus (SARS-CoV) has demonstrated considerable outcomes and backed up the theory that herbal medicine can help treat and prevent epidemic diseases (Yang et al., 2020). Traditional spices and herbs were used as

immunity enhancers in Indian cuisine since the beginning of time. Herbs and spices like holy basil, *ashwagandha*, chamomile, Indian long pepper, *giloy*, ginger, garlic, thyme, thuja, and turmeric have a plethora of beneficial properties and have several health benefits. The use of these herbs helps cure symptoms, improve immunity, and reduce the risk of infections to a great extent. Ever since traditional medicines' safety and clinical characteristics have come out, their consumption has been gradually elevating after approval by scientific communities (Mohammadi & Shaghaghi, 2020). The recipe selected for the study is an immunity booster named ***Lemon Ginger Relish.***

The ingredients and their importance:

Lemons are high in vitamin C, which is a potent antioxidant. Inflammation in the body is also reduced by citrus flavonoids. Vitamin C is also necessary for immune system function (Anitra and Silvia, 2017), wound healing, and helping the body absorb iron from food.

Ginger has been used traditionally for its medicinal applications. It has anti-inflammatory and antioxidant properties, the main bioactive component being gingerol. It aids in the treatment of the flu and the common cold. Ginger is full of nutrients and bioactive compounds having good benefits for the human body.

Long pepper, commonly known as *pippali* in Hindi, is a herb that prominently features Ayurvedic medicine. It contains a chemical known as piperine, which helps fight parasites and other infectious agents. Some researchers suggest that long pepper may help improve major lung disorders, support skeletal function, improve bone strength, improve skin health, and slow down ageing. It is used to improve appetite and digestion and treat indigestion intestinal gas and used for lung problems, including asthma, bronchitis, and cough.

Chamomile, commonly known as *Akarkara* in Hindi, is an ancient medicinal herb and part of the traditional remedy for thousands of years. It is widely popular in Ayurveda, Homeopathy, and Chinese medicine; ancient Romans Egyptians have used this herb both medicinally and cosmetically. It has an array of natural compounds like flavonoids, sesquiterpenes, and antioxidants. Chamomile's primary ingredient, apigenin, is a natural tranquillizer. It is crucial in the treatment of common cold, sore throat, cough, and flu symptoms.

Jaggery (which was used for sweetening in the first variation) is a sweetener that is becoming popular as a healthy replacement for sugar. It's been termed a "superfood sweetener" by some'. The high calorie content of jaggery may assist raise energy levels in persons who are unable to eat due to illness.

Sugar (was used in the second variation as a sweetening agent). Although sugar is most commonly used for its sweet flavour, it also serves a variety of additional purposes in the food industry. The most essential of them is that sugar is used in food as a sweetener, preservative, texture modifier, flavouring agent, and colourant.

Honey (was used as a sweetening agent in the third variation). It's proved that honey did a better job easing nighttime coughs and improving sleep than both popular cough suppressants at dextromethorphan and the antihistamine diphenhydramine (Benadryl). They're also thought to be why raw honey has shown immune-boosting benefits. Heavy processing destroys these valuable nutrients. As per the National Centre for Biotechnology, cooking honey lowers its quality and loses essential enzymes and nutrients.

2. OBJECTIVES

Keeping in view the importance of these herbs in boosting immunity the study was aimed

2.1 To develop and evaluate the organoleptic attributes and nutritional profile of the relish with added herbs.

2.2 To assess the shelf life of the product for one month.

3. MATERIALS AND METHODS

The materials and methods adopted in the study for the attainment of the objectives are as follows:

3.1 Selection of the recipe: Considering the benefits of the ingredients the recipe selected for the study was Lemon Ginger Relish with added herbs. The recipe had ingredients like ginger, lemon with the added herbs like long pepper and chamomile. The recipe was made with three variations which used honey, sugar, and jaggery as sweetening agents respectively.

3.2 Standardization of the recipe

a. **Planning of the recipe:** All three recipes were standardized and were tested for sensory evaluation by a panel of ten judges on a nine-point hedonic rating scale.
b. **Procurement of the raw material:** The ingredients were made available by the Foods lab of the Department of Food Science and Nutrition, College of Community and Applied Sciences, MPUAT, Udaipur.
c. **Preparation of relish:** All the recipes were prepared using the same ingredients, except the sweetening agent.

Variation 1: With jaggery as a sweetening agent (Table 1, Figure 1)

Table 1: Ingredients of the relish with jiggery

Ingredients	Amount (g)
Lemon juice	30
Ginger	60
Jaggery	83
Long pepper	1
Chamomile	2
Back pepper	Pinch
Turmeric	Pinch
Black and white rock salt	To taste

Method: Wash, peel, and chop the ginger finely. Squeeze the lemon juice from the lemons. Use a mixer grinder to make a paste of chopped ginger by adding already squeezed lemon juice to it (Do not use water). After the paste is made, keep it aside. To a pan add a little water and melt the jaggery on a low flame. Add the lemon ginger paste to this melted jaggery. Now add chamomile powder, long pepper, black pepper, garam masala and turmeric. Add salt to taste. Cook the mixture for 3 – 4 minutes. Let it cool. Store in a clean, sterilized bottle for use/ observation.

Figure 1: Relish with jaggery

Variation 2: With sugar as a sweetening agent (Table 2 Figure 2 Figure 3)

Table 2: Ingredients of the relish with jiggery

Ingredients	Amount (g)
Lemon juice	30
Ginger	60
Sugar	40
Long pepper	1
Chamomile	2
Back pepper	Pinch
Turmeric	Pinch
Black and white rock salt	To taste

Method: Wash, peel, and chop the ginger finely. Squeeze the lemon juice from the lemons. Use a mixer grinder to make a paste of chopped ginger by adding already squeezed lemon juice to it (Do not use water). Keep adding sugar also while grinding. After the mixture is done, keep it aside. Now to a pan add this mixture and keep it on a low flame. Now add chamomile powder, long pepper, black pepper, garam masala, and turmeric. Add salt to taste. Cook the mixture for 3 – 4 minutes. Let it cool. Store in a clean, sterilized bottle for use/observation.

Figure 2: Relish with sugar

Figure 3: Relish with honey

Variation 3: With honey as a sweetening agent (Table 2 Figure 2 Figure 3)

Table 2: Ingredients of the relish with jiggery

Ingredients	Amount (g)
Lemon juice	30
Ginger	60
Sugar	85
Long pepper	1
Chamomile	2
Back pepper	Pinch
Turmeric	Pinch
Black and white rock salt	To taste

Method: Wash, peel and chop the ginger finely. Squeeze the lemon juice from the lemons. Use a mixer grinder to make a paste of chopped ginger by adding already squeezed lemon juice to it (Do not use water). After the paste is made, keep it aside. Now add chamomile powder, long pepper, black pepper, garam masala, and turmeric to the paste. Add salt to taste. Now keep adding honey to the mixture, while stirring it. Do not cook this mixture and keep it raw. Store in a clean, sterilized bottle for use/observation.

4.0 RESULTS

The developed relish (all three variations) were evaluated organoleptically on a nine-point hedonic rating scale by 10 panelists. For sensory evaluation, the organoleptic properties of the product were determined on the basis of 9 points Hedonic scale-rating, where 9 = like extremely, 8 = like very much, 7 = like moderately, 6 = like slightly, 5 = neither like nor a dislike, 4 = dislike slightly, 3 = dislike moderately, 2 =dislike very much, 1 = dislike extremely.

Nutritional profiling was done for all three variations using the Indian Food Composition Tables 2017. The calorie content of the honey and jaggery-based relish was found to be more than that of sugar as the quantity of sweetener in the quantity of sugar used was approximately half that of jaggery and honey. The protein contribution from all three types was too less. The vitamin C content of the three relishes ranged between 17 and 18 g per 100 g and the iron content of jaggery-based relish was highest 5.01mg/100g as evident from Table 5. Figure 7 graphically represents the nutrient profile of all three variations of relish.

Table 4: Mean score of organoleptic evaluation of three types of relish on zero-day

Type of relish	Colour	Consistency	Flavour	Taste	Overall acceptability
Jaggery based	8±0.63	8 ±0.63	8 ±0.63	8 ±0.63	8 ±0.63
Sugar based	7 ± 0.73	6 ±0.70	8 ±0.63	8 ±0.63	7 ± 0.73
Honey based	7 ± 0.73	7 ± 0.73	8 ±0.63	8 ±0.63	8 ±0.63

Figure 4: Relish with jaggery bottled on zero-day

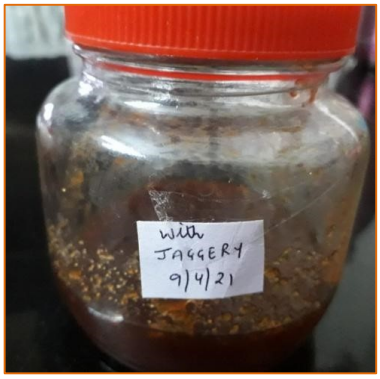

Figure 5: Relish with sugar bottled on zero-day

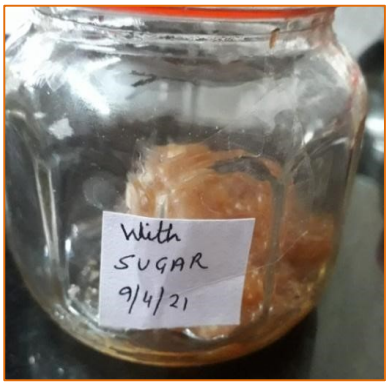

Figure 7: Nutrient profile of the three types of relish

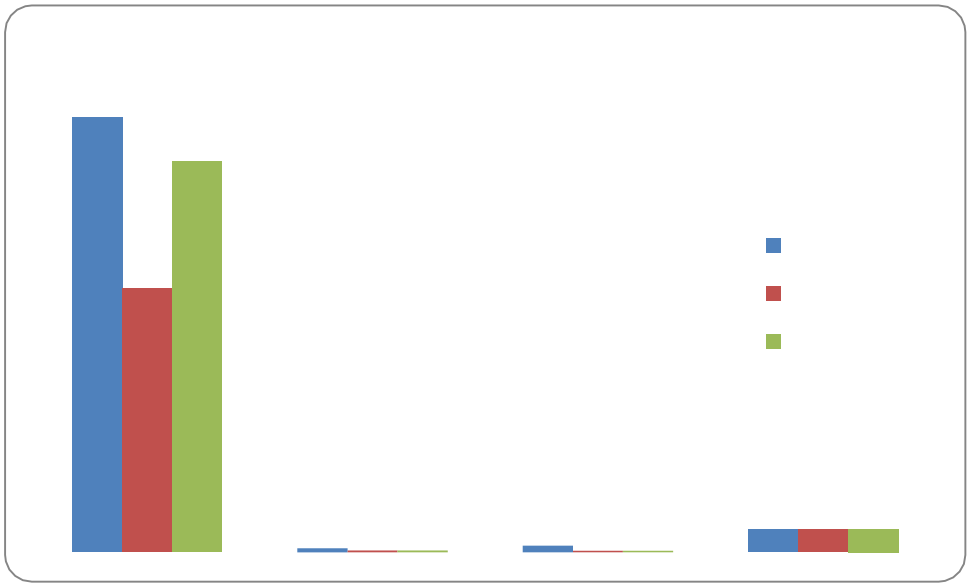

Table 6: Mean score of organoleptic evaluation of three types of relish on 15th and 30th day of the study period

Type of relish		Colour	Consistency	Flavour	Taste	Overall acceptability
Jaggery based	Day 15	8±0.44	8 ±0.7	8 ±0.73	8 ±0.83	8 ±0.53
	Day 30	8 ±0.44	8 ±0. 78	8 ±0.66	8 ±0.87	8 ±0.56
Sugar based	Day 15	7 ± 0.88	6 ±0.70	8 ±0.56	8 ±0.63	7 ± 1.01
	Day 30	7 ± 0.63	6 ±0.72	8 ±0.67	8 ±0.53	7 ± 0.83

Figure 8: Fungal growth on the sample with honey on 15 days of storage

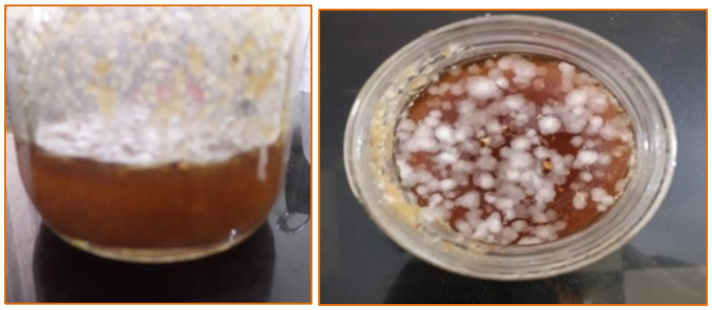

Figure 9 Sample with jaggery on 30 days of storage

Figure 10 Sample with sugar on 30 days of storage

DISCUSSION

The relish was tested by a panel of 10 judges on a nine-point hedonic rating scale for attributes that included colour, consistency, flavour, taste, and overall acceptability. Table 4 depicts that all three types of relishes were liked very much by the judges. The relishes after their testing were bottled in clean, dry, and sterilized air-tight containers and stored at ambient temperature for a period of 30 days, and observed regularly for their shelf life (Figures 4, 5, and 6).

All three recipes were stored together in different bottles to be observed. As a routine, authors observed them almost every day visually. There was no change in any of the attributes of all three recipes till 14 days of storage. On the 15th day, the recipe with honey showed white fungal spots on it. The other two were still the same. The one with the honey was discarded. If any discolorations, brown or black pieces, or mold developments are noticed, it clearly shows that the relish has gone bad and it should be immediately discarded (Eatdelights.com, 2021).

The other two variations were tested again for sensory evaluation on the 15th day (Table 6). The other two maintained the same scores on an average even after one month (30 days) of the study period (Table 6). Khinswe and SoeSoe, 2019 investigated that good quality pineapple-mango mixed fruits jam could be prepared and stored at ambient temperature for 90 days with a minimal decrease in quality. However, maintenance of proper hygienic conditions are required during processing and storage.

The overall acceptability of the recipe with jaggery and honey was the same. The one with the sugar scored the least. But, the shelf life of the one with honey was not as good as the one with jaggery and sugar. So overall it can be stated that the recipe with jaggery was the best in terms of overall acceptability and shelf-life followed by sugar and honey with the least shelf life.

CONCLUSION

The relish with honey was kept raw and showed fungal growth on it after almost 15 days. The probable reason for its spoilage looks like the moisture content of ginger and the absence of the heat treatment. Saghir & Nanda (2015) investigated that in the fresh sample, the moisture content of aonla preserve was found to decrease a little with honey incorporation. However, during ambient storage of 90 days, the trend was found to reverse and the honey incorporated samples of aonla preserve had higher moisture contents. Similar findings were reported by Durrani and Verma (2011). The other two variations did not show any signs of spoilage, since they were given the heat treatment that helped them preserve for a longer period of time. It can be used for treating sore throat and dry cough. It soothes the throat from discomfort instantly. It can be used as a spread on bread, can be eaten as a chutney with parantha's, or could be enjoyed as a relish simply. A little inclusion of these herbs and spices in the everyday diet in the form of these spreads will gradually improve immunity.

REFERENCES

1. Anitra C, Silvia M. Vitamin C and Immune function. Nutrients. 2017; 9(11): 1211.
2. Carr AC, Maggini S. Vitamin C and Immune Function. Nutrients. 2017 Nov 3;9(11):1211. https://doi.org/10.3390/nu9111211. PMID: 29099763; PMCID: PMC5707683.
3. Durrani AM, Verma S. Preparation and quality evaluation of honey amla murabba. J Ind Res Technol. 2011; 1: 40–45.
4. Food Preservation, Shelf Life. 2021; https://eatdelights.com/

5. Longvah T, Ananthan R, Bhaskarachary K, Venkalah K. Indian Food Composition Table. Hyderabad: National Institute of Nutrition; 2017.
6. Khinswe O, Soesoe T. Study on physio - chemical properties and shelf life of mixed Pineapple and MangoJam under ambient storage. Int J Adv Res Publ. 2019; 3: 2456 -2462.
7. Mohammadi N, Shaghaghi N. Inhibitory effect of eight metabolites from conventional plants on COVID _19 virus protease by molecular docking analysis. Chem Rxiv. 2020; 1: 11987475.
8. Saghir A, Nanda K. Studies on the effect of honey incorporation on quality and shelf life of aonla preserve. Cogent Food Agric. 2015; 1: 1009334. https://doi.org/10.1080/23311932.2015.1009334
8. Yang Y, Islam MS, Wang J, Li Y, Chen X. Traditional Chinese Medicine in the Treatment of Patients Infected with 2019-New Coronavirus (SARS-CoV-2): A Review and Perspective. Int J Biol Sci. 2020 Mar 15;16(10):1708-1717. https://doi.org/10.7150/ijbs.45538. PMID: 32226288; PMCID: PMC7098036.

ARTICLE TYPE: Research Article; **ORCID ID**: Open Researcher and Contributor Identifier (ORCID) ID of corresponding author: https://orcid.org/0000-0002-0376-9312; **ETHICAL:** NA; **ACKNOWLEDGEMENT:** None ; **FINANCIAL DISCLOSURE:** The authors declare that there was no financial aid received.; **CONFLICT OF INTEREST:** No conflict of interest associated with this research work.; **AUTHORS CONTRIBUTION:** P.T., performed the experiments and wrote the paper, V.S., designed research and supervised the findings of the work.; **CORRESPONDING AUTHOR AFFILIATIONS:** Dr Vishakha Singh, Associate Professor, Department of Food Science and Nutrition, College of Community & Applied Sciences, Maharana Pratap University of Agriculture and Technology (MPUAT), Udaipur, Rajasthan, India.; **CORRESPONDING AUTHOR EMAIL:** vishakha.udaipur@gmail.com; **ARTICLE CITATION:** Talesra P, Singh V. Development of immunity boosting relish with added herbs, SALT J Sci Res Healthc. 2022 January 5; 2(1):01-07.