J Krishi Vigyan 2020, 8 (2) : 257-259 DOI : 10.5958/2349-4433.2020.00053.7

Shelf Life and Sensory Evaluation of Hill Lemon (*Citrus pseudolimon Tan.*) Juice using Organic and Inorganic Preservatives

Kavita Sharma, L K Sharma,S Rahi, D S Yadav and Pankaj Sood

Krishi Vigyan Kendra, Mandi (Himachal Pradesh)

ABSTRACT

Hill lemon (*Citrus pseudolimonTan.*) is a hardy plant and grown well in low and mid hills of Himachal Pradesh. Its juice is preserved and being used as souring agent in many food preparations, pickles and chutneys. The shelf life of Hill lemon juice was assessed by using organic and inorganic preservatives. Boiling of juice till the end of formation of foam/leather and adding organic source of preservative (Salt @ 20gm/L of juice + top dressing of mustard oil @ 20ml/L of juice) was found best and received highest rating on various sensory attributes especially colour and flavour under nine point hedonic scale. This treatment not only enhanced the shelf life of the juice up to 10 months but also retained original flavour and colour of juice . Under inorganic preservatives, Potassium meta bisulphite @0.7 gm/L of juice and Sodium benzoate @ 0.5gm/L of juice, six and five months shelf life was observed respectively. Hence use of organic method for preserving the juice can be a better substitute of inorganic preservatives in many food processing industries.

Key Words: Hill lemon, Organic , Inorganic, Preservatives, Shelf life.

INTRODUCTION

Hill lemon (*Citrus pseudolimon Tan.*) locally known *Galgal* is by default organically grown citrus fruit in low and mid hills of Himachal Pradesh (Mahajan and BB ,1991). It is very good source of vitamin C, mineral and salts (Bansal and Dhawan, 1993). Galgal is commercially used for making pickle as its fruit contains high acidity and more thickness of fruit peel. This improves the taste of the food as well as improves digestion. The uniqueness of galgal pickle is that it remains fresh for the long time. The fruit is found in abundance in some parts of Mandi district and used for making pickles and squashes in homes and in small scale factories (Mahajan and BB, 1991). Its juice is preserved and being used as souring agent in many food preparations, pickles and chutneys. Its juice is an excellent and economical acidulates to enhance taste and flavour of different fruit products (Attri and Maini ,1996). Farm women of district Mandi preserve its juice by simple method of extraction, boiling and filling in bottles resulting in low shelf life of about three months. Hence, the present study was conducted to assess the shelf life of galgal juice by using organic and inorganic preservatives

MATERIALS AND METHODS

In order to assess the shelf life of hill lemon juice, on farm trial (OFTs) was conducted by KVK, Mandi consecutively for three years (2015-2018) .The juice of the fruit was extracted and boiled till the formation of leather. After cooling the juice was preserved with Salt @ 20g/L of juice + top dressing of mustard oil @ 20ml/L of juice as organic source of preservation and potassium meta bisulphite @0.7 g/L of juice and sodium benzoate @ 0.5g/L of juice as source of inorganic preservative (Barwal & Shrera (2009). The juice under treatment one was preserved after boiling without using any preservative. Then the juice under four treatments was filled in sterilized bottles keeping 2cm head space, sealed and stored at room temperature for

Corresponding Author's Email: kskvk93@gmail.com

Table1. Effect of organic and inorganic preservatives on shelf life of hill lemon Juice.

Sr. No.	Treatment	Average Shelf life of Juice (Months)
1.	T_1 : Boiling of Galgal Juice (Farmers' Practice)	3
2.	T_2 : Boiling of Juice + Salt@20 g/L of juice + 20 ml oil/L of juice	10
3.	T_3 : Boiling of Juice + Sodium Benzoate@ 0.5g/L of juice	5
4.	T_4 : Boiling of Juice + Potassium metabisulphite@ 0.7 g/L of juice	6

one year. Farm women of adopted villages were trained in preservation of juice by using organic and inorganic preservatives. The juice of galgal fruit was preserved by 15 farm women of different villages (Five women in each year).Effect of organic and inorganic preservatives were evaluated on the basis of sensory evaluation and shelf life after a year of storage. The sensory evaluation of juice was carried out by the panel of judges for various sensory attributes like color, taste, flavor, appearance and overall acceptability on nine point hedonic scale.

RESULTS AND DISCUSSION

The study revealed that shelf life of juice preserved by using organic preservative(Salt @ 20g/L of juice + top dressing of mustard oil @ 20ml/L of juice) was found highest. This treatment enhanced the shelf life of the juice up to 10 months. Under inorganic preservatives, potassium meta bisulphite @0.7 g/L of juice and Sodium benzoate @ 0.5g/L of juice, six and five months shelf life was observed, respectively. Shelf life of juice preserved by only boiling was found to be lowest *i.e.,* only three months.

The data (Table 2) indicated that treatment 2 *i.e.*, boiling of juice till the end of formation of foam/ leather and adding organic source of preservative (Salt @ 20g/L of juice + top dressing of mustard oil @ 20ml/L of juice) was found best and received highest rating on various sensory attributes especially taste, colour ,flavour , appearance and overall acceptability under nine point hedonic scale followed by treatment 4 and treatment 3. Treatment 1 *i.e.,* preserving juice only by boiling without adding any preservative has received lowest rating on all sensory attributes.

CONCLUSION

The findings of the study reinforce that hill lemon juice preserved with inorganic preservatives received less score on sensory attributes as compared to juice preserved with organic preservatives. Hence, it is suggested to use the organic method for preserving the juice of this abundantly found citrus

Table 2. Effect of organic and inorganic preservatives on sensory attributes.

Treatments	Taste	Colour	Flavour	Appearance	Overall acceptability
T_1 : Boiling of Galgal Juice	6.0	7.0	6.5	7.0	6.5
T_2 : Boiling of Juice + Salt@20 g/L of juice + 20 ml oil/L of juice	9.0	9.0	8.5	8.5	9.5
T_3 : Boiling of Juice + Sodium Benzoate@ 0.5g/L of juice	7.5	7.0	7.25	7.5	7.0
T_4 : Boiling of Juice + Potassium metabisulphite@ 0.7 g/L of juice	8.0	8.25	8.0	8.5	8.0

fruit which can be a better substitute of inorganic preservatives in many food processing industries.

REFERENCES

Attri BL and Maini SB (1996). Processing Galgal into nutritious delicacies. Indian Hort.36 : 10-14

Bansal M and Dhawan SS (1993) Preservation and keeping quality quality of Bhadri Lemon(Citrus limon L Burm) juice. *Haryana J Horti Sci* **22** (3)188-194

Barwal V and Shrera SK(2009). Standardization of extraction methods and preservation techniques of hill lemon juice. *Scientific and Industrial Res* **68**(07): 608-610

Mahajan RK and Lal BB (1991). Evaluation studies on Himachal Galgal for processing industry. *J Food Sci, Technol* **28**: 378-380

Received on 14/05/2020 *Accepted on 31/05/2020*