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Formulation and sensory attributes of the pickle made from bitter gourd lemon and green chilli

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Abstract

Bitter gourd (*Momordica charantia*) is one of the major vegetable crops, which belongs to the family Cucurbitaceae. It is used not only as a food but also as medicine. Bitter gourd is rich in many valuable compounds and nutrients. It is useful for diabetics' patients. The present study aimed to develop special pickle for diabetic patient. The bitter gourd pickle were prepared by three different sample proportion A (100% bitter gourd) B (bitter gourd 100%+25% lemon+20% green chilly 10%) C (bitter gourd 100%+lemon30%) D (bitter gourd 100%+10% lemon and 5% green chilly). The developed pickle were sensory evaluated by using nine point hedonic scale. The result indicated that pickle B were most acceptable than other sample. Depending upon sensory evaluation we conclude that sample B was most acceptable for commercial production.

Keywords: Bitter gourd, antidiabetics, antioxidant, pickling, sensory attributes

1. Introduction

Bitter gourd (*Momordica charantia*) belongs to family cucurbitaceae and commonly known as Karela in India. It is tropical and subtropical vine of family cucurbitaceae widely grown for edible fruit which among the bitter of fruit name for the plant and its fruit include bitter melon bitter gourd. It native of tropics it is widely grown in India and other part of Indian subcontinent southeast Asia china Africa and Caribbean climate and soil requirement. Metabolic and hypoglycemic effects of bitter gourd extracts have been demonstrated in cell culture, animal, and human studies (Michael B. *et al.*, 2006) [8].

Varieties of Bitter Gourd

1. Pusa Do Mausmi

This variety is developed by IARI, New Delhi. It is suitable for spring summer and rainy they are edible in 55 days from sowing 8-10 fruits weigh one kg.

2. Coimbatore long

This variety is developed by National Seeds Corporation. The fruits are long, tender, white in colour and suitable as a rainy season crop, average yield 25-30t/ha.

3. VK-1-Priya

This variety is developed by SAU Vellanikkara, karela; the fruits are white and 35-40 cm long, heavy bearing with first picking in 60 days. Average yield is 50 fruits/ plant.

4. Phule Priyanka

This variety is developed by MPKV, Rahuri (MS). The hybrid variety with dark green fruits. Fruits are 20-25 cm long with tubercles. Average yield 35-40t/ha

5. Phule Green Gold

This variety is developed by MPKV, Rahuri (MS). The fruits are 25-30 cm long, dark green color with tubercles. Suitable for exports.

6. Phule Ujwala

This variety is developed by MPKV, Rahuri 9(MS). The fruits 18-20 cm long, dark green in colour with tubercles, average yield 30-35t/ha suitable for exports

7. Arka Harit

This variety is developed by IHR Bangalore. Regular robs. Crop duration 100-110 day, average yield 12t/ha.

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Vitamin C deficiency-the cause of scurvy (Aronson, 2001) [2] lemon is an important Medicinal crop of family Rutaceae. Chilli (*Capsicum annuum L*) belongs to the family Solanaceae, are herbaceous or semi-woody annuals or perennials. Fresh chilli is good source of vitamin A, vitamin B and vitamin C (Howard *et al.*, 2000) [6]. The high content of carotenoids is the reason for chili's nutritional value because it acts as pro vitamin A which after digestion is converted into vitamin A. Chilli is highly in demand throughout the year whether in household or as spices in commercial market. The reason for high demand is its varied uses in fresh as well as in cooked and dried form. Chilli is highly perishable in nature having low shelf life and is susceptible to postharvest losses like shriveling, wilting and is also susceptible to fungal infections (Barkai Golan 1981) [3]. The reduction in quality causes huge loss to farmers, wholesaler, retailer and consumer. Thus, there is need for reduction of postharvest losses and processing into value added products appears to be an important goal for sustainable development.

Pickling

The term pickling is derived from the Dutch word pickle, meaning brine. Pickling also known as brining is the process of preserving the food by Anaerobic fermentation in brine (a solution of salt in water) to produce lactic acid, or marinating and adding it in an acid solution, usually vinegar (acetic acid). The resulting food is called a pickling. This gives the food a salty or sour taste. In South Asia Edible oils are used as the pickling medium instead of vinegar (Thomas and Holly Berry 1999)

Also the distinguishing feature is a pH less than 4.6, which is sufficient to kill most bacteria. Pickling can preserve perishable food for months. Adding in pickling process antimicrobial herbs & spices, such as mustard seed, garlic, cinnamon or cloves, pickling brine may be produced simply by adding dry salt for example: sauerkraut & Korean fermentation at room temperature, by lactic bacteria, produces the required acidity. Other pickling is made by placing the vegetables in vinegar. (Bredit *et al.*, 2004)

Salt (NaCl) is one of the most important adjuncts in food preservation for centuries it is employed on large scale especially of Meat fish and vegetable pickle.

2. Materials and methods

2.1 Pretreatment of bitter

Good quality bitter gourd, lemon, and green chilly were procured from local vegetable market of Beed, Maharashtra. Bitter gourd, lemon, chilly were washed with clean water to remove soil portion. Stem portion cut down and cut into lengthwise and sprinkle salt on bitter gourd pieces and kept for two hours. Lemon and chilly cut removed seed from lemon and after two hours pressing bitter gourd pieces and removed excess salt water.

2.2 Preparation of spice mix

Good quality different spices like mustard seed, fenugreek seed, asafetida, turmeric, red chili powder, were selected from market. These spices were clean and shallow fried one by one then spices fine grounded by mixer.

2.3 Preparation of pickle formulation

Pretreated raw material mixed in different proportion order to know the acceptability of from this combination. Various proportion are given in the 1Table

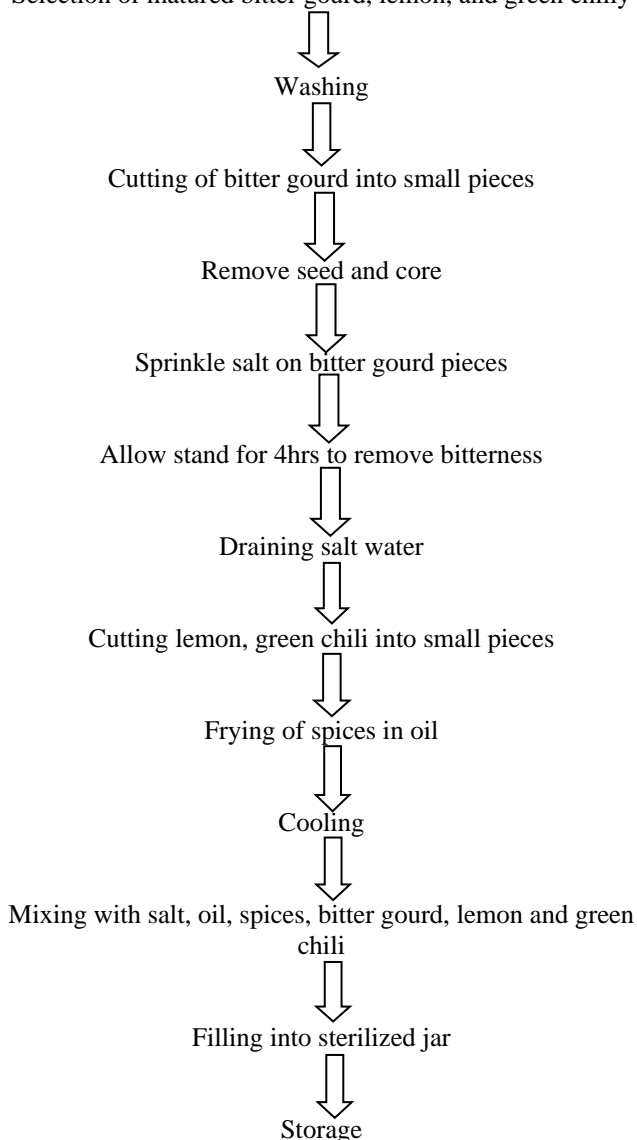
Table 2.1: Formulation of bitter gourd pickle

Sample	Bitter gourd	Lemon	Green Chilly
A(Control)	100	00	00
B	100	25	20
C	100	30	10
D	100	15	05

Bitter gourd, Lemon, Green chilly pieces were mixed in various proportion then shallow fried spices ground powder were added to pretreated bitter gourd, lemon, green chilly pieces. Then 20% salt was added to above mixture and uniformly mixed. Finally oil was added to the mixture till all pieces deeped in oil. The prepared pickle is stored in sterilized glass jar and kept in aseptic condition for 2 weeks.

2.1 Flow sheet for preparation of bitter gourd mixed vegetable pickle

Selection of matured bitter gourd, lemon, and green chilly



3. Result and discussion

The bitter gourd, lemon and green chilly mixed in various proportions as stated in table1. The spices mix oil and then physicochemical parameter studied final pickle prepared and then served 10 semi trained panelist to judge the different sensory attributes the sample were scored from the different attributes like color, flavor, taste, appearance and overall

acceptability by using hedonic scale and its mean was calculated.

The mean score obtained for the different attributes are given table no. 3

Table 3.1: sensory analysis

Attributes	Sample			
	A(Control)	B	C	D
color	6.0	9.0	5.0	6.0
Appearance	5.0	8.0	6.0	5.0
flavor	6.0	9.0	7.0	7.0
taste	7.0	9.0	6.0	6.0
Overall acceptable	6.0	9.0	6.0	5.0

4. Conclusion

From the sensory evaluation results we conclude that “B” sample was the most acceptable sample for chemical analysis and commercial production and bitter gourds, lemon and green chilli are good option for the preparation of pickle when used together.

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