

Development of a Ready to Cook Curry

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Abstract:- Ready to Cook (RTC) foods are considered to be one of the major advancement in the field of food technology. These are the foods that are processed and/or prepared to be ready to cook with very little additional effort. This research project was conducted to develop such a ready to cook product which fits the busy lifestyle of people as well as does not compromise on part of their health. The ready to cook curry was prepared by washing, cutting, blanching (4 min in 5% brine solution) and then drying five seasonal vegetables; carrot, cauliflower, green beans, peas and potato in a hot air dryer at 70°C for 10-12 hours. A comparison was made between 2 min and 4 min blanching, and 4 min blanching was found to have a higher rehydration ratio. Maggie bhuna masala (a ready mix of onion, tomato, Ginger and Garlic cooked in refined oil) was used to add flavour. The serving size for one person contained 50g dried vegetables (in which the amount of carrot, cauliflower and green beans was 8.64 g each and of potato and peas 12 g each). 32g Maggie bhuna masala and 320 ml water. The recipe was finalized after trials. The curry was ready in approx 7 min. in pressure cooker.

Keywords:- Blanching, Rehydration Ratio, RTC, Curry.

I. INTRODUCTION

Vegetables play a very important role in human nutrition. They are an important source of dietary nutrients such as vitamins, minerals and fiber. Since the moisture content of fresh vegetables is high they are highly perishable commodities. In fact, vegetables as well as fruits have high moisture content and high water activity (a_w). These lead them to be highly perishable since moisture content and water activity (a_w) are one of the important factors for the growth of different microorganisms. Indian cooking and lifestyle have undergone tremendous changes in the last few years. Rapid urbanization and changes in social and cultural practices have modified the food habits of the community. Due to busy lifestyle pressure, people prefer easy and short way of cooking rather spending too much time in cooking. Indian consumers are gradually shifting towards Ready To Cook food instead of traditional cooking options. Keeping the product fresh is the best way to maintain its nutritional value, but most storage techniques require low temperatures which are difficult to maintain throughout the distribution chain. Drying is a suitable alternative. It is seen that over twenty of the world perishable

products are dried to increase shelf life and promote food security (Grabowski, 2003) Vegetables are dried to improve storage stability, minimize packaging requirements and reduce the weight in transport.

Blanching is a method of pre-treating fruits and vegetables. Blanched vegetables rehydrate quickly, remain tender, since they are already slightly cooked require less cooking time (Barb Moody, 1985 and Vrac N, Gruner M, 1994).

II. MATERIALS AND METHODS

The fresh and tender vegetables were procured from the local market of Zirakpur, Punjab. Chemicals used were of analytical grade obtained from Hi-media, Mumbai, Central Drug House, New Delhi. Medium density polythene bags were used for the storage of dried vegetables throughout the experiment.

A. Preparation And Drying Of The Vegetables

Vegetables like carrots, beans, potato, cauliflower, peas were weighed, washed with plenty of clean water, peeled and cut into small cubical pieces and air dried. The vegetables were put in a blanching basket and dipped in vigorously boiling water. The temperature of the boiling water was constantly maintained at 100 °C. To evaluate the blanching efficiency the vegetables were blanched in 5% brine solution for 2 minutes and 4 minutes. As soon as blanching was complete, vegetables were quickly cooled in ice water to stop the cooking of vegetables.

The blanched vegetables were placed in Petri plates and dried in tray drier at a 70°C for 10- 12 hours. After drying to a safe level of moisture content of about ten percent the dried samples were cooled and packed in moisture proof polythene bags. The packed vegetables were kept at room temperature for further use. These vegetables can be stored at room temperature for different periods (15 days, 30 days, 45 days and 60 days). They were rehydrated and use after specified above intervals.

B. Rehydration

Rehydration is a process of refreshing the dried vegetable material in water. The dried vegetables were reconstituted by presoaking in boiled water for 45 minutes, before boiling. The free moisture was removed by keeping on filter paper for about 10-15 minutes at room temperature and weighed to calculate rehydration ratio.

C. Curry Preparation

Ready to Cook Curry was prepared by soaking blanched dried vegetables in hot water (80°C) for 10 minutes. Ten grams of Maggie bhuna masala was taken in a pressure cooker with small amount of refined oil and sautéed. The soaked vegetables were then transferred to cooker along with 320 ml of water and cooked till 3 whistles.

D. Food Formulation And Development

In formulating the curry, three different types of curry were prepared by using different ratios of bhuna curry masala. The quantity of other ingredients such as potatoes, carrots, green beans, peas and cauliflower was kept in same proportion.

The composition of different formulations tried is given in

INGREDIENT	CURRY A	CURRY B	CURRY C
Maggie bhuna masala (g)	8	10	12
Beans(g)	2.16	2.16	2.16
Carrot(g)	2.16	2.16	2.16
Cauliflower(g)	2.16	2.16	2.16
Peas(g)	3.00	3.00	3.00
Potato(g)	3.00	3.00	3.00

Table 1. different formulations tried

E. Blanching

To determine the efficacy of blanching peroxidase test was carried out using procedure mentioned in (Ranganna,1986).To evaluate the blanching efficiency the vegetables were blanched for 2 minutes and 4 minutes. Table No. 2 shows the results of blanching. The result indicated that the blanching for 2 minutes showed negative results with regards to vegetables like beans, cauliflower and potatoes. Negative result indicates the formation of red color on addition of reagents, while no color formation indicates a

positive result. The result obtained during this study were in consistence with the results obtained by other workers (Mnkeni *etal.*,1999) and (Jayaraman,1990) .Two minute blanching was not efficient for beans, cauliflower and potatoes which indicates that peroxidase enzyme was not deactivated and required more than 2 minutes for blanching.

*Table-2 showing blanching efficiency of the five vegetables.

Vegetables	2 min. Blanching	4 min. Blanching
Beans	Negative	Positive
Carrot	Positive	Positive
Cauliflower	Negative	Positive
Peas	Positive	Positive
Potato	Negative	Positive

Table 2. blanching efficiency

F. Rehydration Ratio

*The rehydration ratio of vegetable blanched for 2 minutes as well 4 minutes were calculated and the results are given in

Vegetables	Rehydration ratio with 2 min. Blanching	Rehydration ratio with 4 min. Blanching
Beans	3.6:1	3.92:1
Carrot	2.24:1	3.84:1
Cauliflower	3.12:1	4.73:1
Peas	2.40:1	4.64:1
Potatoes	1.92:1	2.54:1

Table 3:Rehydration Ratio

It can be clearly observed from the above table that rehydration ratio increased with increase in blanching time. Thus blanching not only preserves the colour and taste but also increases the firmness, water absorbing capacity of vegetables after dehydration (Figure No 1). (Ramos and Bourne,1992) also observed increase in firmness after rehydration due to blanching in carrots. The dried vegetables retained the original colour (Bauman and Curi,2002).



Fig 1:- Raw vegetables

*Figure no.1- showing colour and texture of raw and rehydrated vegetables.



Fig 2:- Rehydrated vegetables

The pictorial depiction of all the three preparation was each shown in figure no.2

III. PROXIMATE ANALYSIS

The raw materials were analyzed for their proximate parameters like moisture, fat and total ash following the procedure given in (AOAC 2000)

The result of analysis of vegetables are found to be same as that of literature values such as (Ramos and Bourne,1992). Proximate analysis for samples contained 9% moisture, 0.09% fat and 1.4% ash. This data was in accordance with literature that after dehydration moisture content and ash decreased to 9.99% and 0.62%, respectively (Baloch *et.al* 2015)

IV. SENSORY ANALYSIS:

A sensory evaluation was done using Hedonic scale in order to know and choose one most suitable Curry. A selected panel of ten untrained panelists was asked to evaluate and grade the three formulations.

Sensory evaluation of the Ready To Cook Curry prepared is given in Table No 5 The results obtained indicated that appearance and colour was not affected when bhuna masala was increased from 8 to 10 gm but when the quantity was increased to 12 gm the both the parameters were drastically decreased. However the flavor and texture was not decreased either by increasing or decreasing the use of bhuna masala. On the whole the preparation which was made using 10 gm of bhuna masala was liked by almost all the members. Organoleptic characteristics show that rehydrated vegetables dried are of first quality with excellent

taste, and the closest possible to fresh ones Bauman and Curi ,2002

*Table No 4: Sensory analysis of cooked food

	SAMPLE-A (8)	SAMPLE-B(10)	SAMPLE-C (12)
Appearance	62	64	56
Colour	60	60	55
Flavour	59	63	51
Texture	57	65	55

Table 4: Sensory analysis

As you can see from the above table that sample- B is the most appreciated one with respect to all characteristics.

V. CONCLUSION

Blanching highly affects the reconstitution characteristics of the dried product. Rehydration ratio increases with increase in blanching time. This ready to cook curry is a quick and healthy option because it just takes 7 min. to prepare it. It not only reduces the cooking time but also reduces the hassle of peeling and grinding. The product had a shelf life of 6 months at room temperature.

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