

Effect of NaCl on Drying of Bitter Gourd

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Abstract- *Momordica charanti* could be a tropical and semitropical vine of the gourd family, wide fully grown in Asia, Africa, and also the Caribbean for its produce. As an expensive supply of antioxidants, flavonoids, and different polyphenol compounds, bitter gourd could facilitate to cut back your risks for variety of health issues. Bitter gourd is filled with polyphenols. The a lot of of them there area unit, the larger the medicine effects can be Bitter gourd contains bioactive compounds referred to as saponins and terpenoids .. Despite of the many advantages, it's not been explored to its potential due to its bitter taste. Proper processing and value addition options of this vegetable is important. Rapid drying of bitter gourd slices is crucial to its internal control and pharmaceutical effect. Drying with appropriate pre-treatments can extend the time period and availability of the merchandise for consumption throughout the year. Chemical treatment has been wanted to improve drying characteristics of the many vegetables.

Keywords- Bitter Gourd Pretreatment Sodium Chloride Microwave Blanching

I. INTRODUCTION

The bitter gourd samples were treated with NaCl and subsequently blanched under microwave and tray dried. The drying time might be decreased from 150 to 110min by NaCl treatment and microwave blanching. The rehydration ratio also improved from 48.8 to 52.1%. It also decreased the shrinkage ratio while drying. NaCl treatment followed by microwave blanching can improve the drying characteristics and quality of bitter gourd for better consumer acceptance and storability

II. MATERIALS AND METHODS

SAMPLE PREPARATION

The Bitter gourd obtained from the local vegetable market Selection of bitter gourds are nessary and they were hand picked bright green and firm, excluding bitter gourds with blemish or mold. These were washed, cleaned, and should be free of surface moisture. Then these were sliced into 3.5 and 0.1mm thickness with knife. these samples used for pretreatments and drying

PRETREATMENTS AND DRYING

The sliced bitter gourds without any pretreatment were denoted as a Non-Pretreated sample The remaining samples were split into three sections and introduced to a number of pretreatments.

the sliced samples were tray dried at 50,60 and 70 temperature. Every 30 minutes, the sample weight was taken until it approached equilibrium moisture content. Potassium Carbonate was used to regulate acid flavors and stabilize the food color, while Sodium Chloride was used to minimize bitterness.

Pretreatments	Methodology
Not Pretreated (NOP)	3.5mm Sliced Bittergourds were tray dried without any Pretreatment
NaCl Dipping (NaCl)	3.5mm Sliced Bittergourds were dipped in NaCl Solution 2% and K2CO3 4% for 1 minute in room temperature
Microwave Blanching(MB)	3.5mm Sliced Bittergourds were microwave blanched for 700W for 135 seconds
NaCl dipping and Microwave Blanching (NaCl&MB)	3.5mm Bitter gourd slices were immersed i n NaCl solution and blanched for 135 seconds in a microwave at 700W.

III. FORMULA AND CALCULATION

- Moisture Ratio = $\frac{M_c}{M_t}$
 - Rehydration Ratio = $\frac{V_f - V_i}{V_i} \times 100$
 - Shrinkage ratio = $\frac{R_f}{R_i} \times 100$
- M_t = Moisture content at any time
 M_o = Initial Moisture Content
 V_i = Initial Volume
 V_f = Final Volume
 R_f = Weight of sample after drying
 R_i = Weight of sample before Drying

Shrinkage ratio was determined using by measuring the sample volume before (V_i) and after drying (V_f).

The rehydration ratio was determined using a standard technique. The dried sample (5g) was put in a 20ml beaker and placed in a hot water bath at 80 °C temperature for 10 minutes. Surface moisture was stripped from the samples until they were measured. The rehydration ratio is calculated as the ratio of gained weight after rehydration (R_f) to initial weight (R_i).

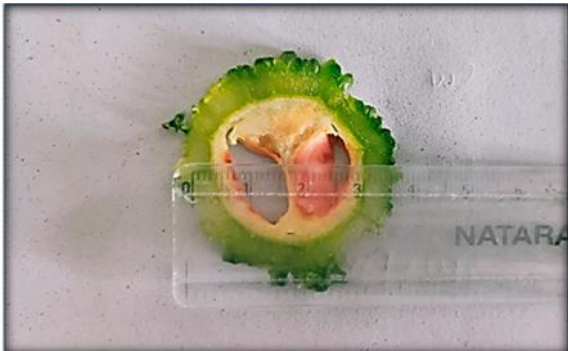


Figure 1 Sliced Bittergourd of 3.5cm Diameter

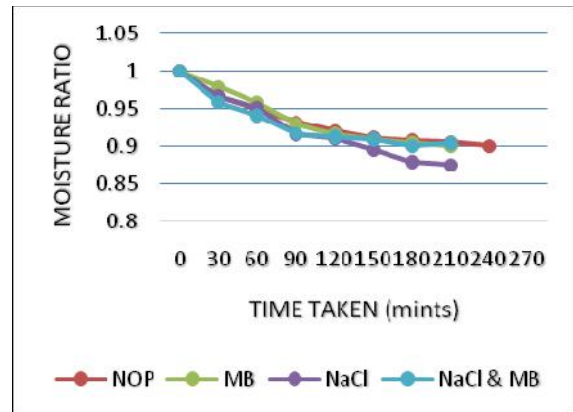


Figure 2 Microwave Blanching of Bitter gourds

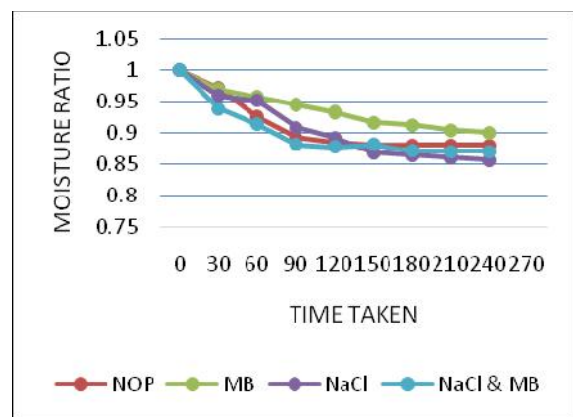
IV. RESULT AND DICUSSION

Effects of pretreatments on bitter gourd moisture ratio at,

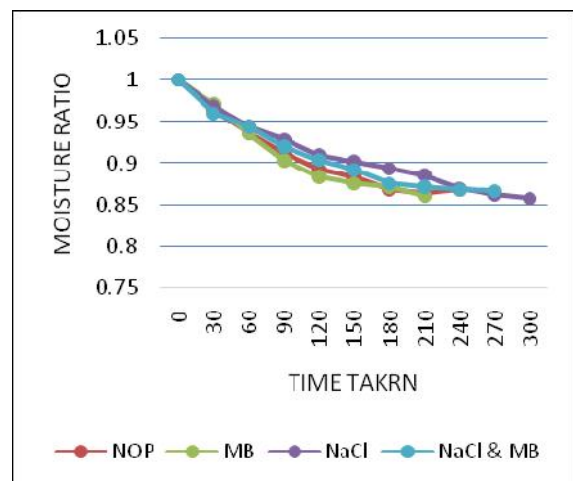
50



60



70



Effects of pretreatments on bitter gourd moisture ratio The moisture ratio of the pretreated and control bitter gourd samples dried at three different temperatures is shown in. As the drying temperature rose, the drying time was lowered. Non -Pretreated (NOP) Bitter gourd dried at 50, 60, and 70 degrees Celsius took 270, 210, and 170 minutes, respectively. The drying time of bitter gourd was reduced by microwave blanching (MB).

Pretreatments' effects on Bittergourd Shrinkage and Rehydration ratio

The two most significant drying characteristics are shrinkage and rehydration ratio. The consistency, appearance, and customer acceptance of dried samples are all influenced by these two factors. Bitter gourd samples were dried at different temperatures and their shrinkage and rehydration ratios were calculated. The shrinkage ratio was lowest at 50 degrees Celsius and highest at 70 ° C. At 70 ° c, the NOP samples had the highest shrinkage ratio (80%).

Finally, The combined effect of NaCl and microwave blanching resulted in a noticeable improvement. This is useful for planning any large-scale value-added manufacturing operations involving this vegetable. The shrinkage and rehydration properties of the bitter gourd samples treated with NaCl and MB were also good. Bitter gourd may benefit from a NaCl treatment followed by microwave blanching to improve the drying characteristics and consistency.

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