



Effect of osmosis condition process on quality of dehydrated black grass jelly



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Abstract

The aim of this research was to study the effect of osmosis condition before drying (70 °C for 2.30 hr.) on qualities of dehydrated grass jelly. Osmosis condition in this research divided into three steps: (1) soaking in sugar concentrations (45, 50 and 60 °Brix) for 1-8 hr. (2) soaking with citric acid and (3) boiling. Increasing sugar concentration and soaking time decreased moisture content and led to changing of shape and volume of grass jelly. Dehydrated grass jelly had high water activity (0.85-0.88), although it was immersed in sugar solution at 50-60 °Brix for 7-8 hours. Boiling step increased elimination moisture. However, dehydrated grass jelly of this condition had water activity as same as dehydrated grass jelly from immersing in 0.2% citric acid alone ($p \geq 0.05$). From sensory evaluation, the best osmosis condition for preparation dehydrated grass jelly was immersing in 50 °Brix sugar solution for 7 hours, soaking in 0.2% (w/v) citric acid and boiling.

Introduction

Grass jelly (*Platostoma palustre*) is an Asia desert. Because of high moisture content, it is easily to microbial spoilage and spoiled within 2 weeks after production. Therefore, removing moisture from grass jelly is an importance. It is not only prolongs shelf life but also is developing new product that looks gummy jelly. Elimination moisture via immersing food product in sugar solution or so-called "osmosis" was interesting in this research. Generally, loss moisture content from food products depended on concentration of sugar solution, soaking time and temperature (Campos et al., 2012).

Results & Discussion

Part I, Sugar concentration and time

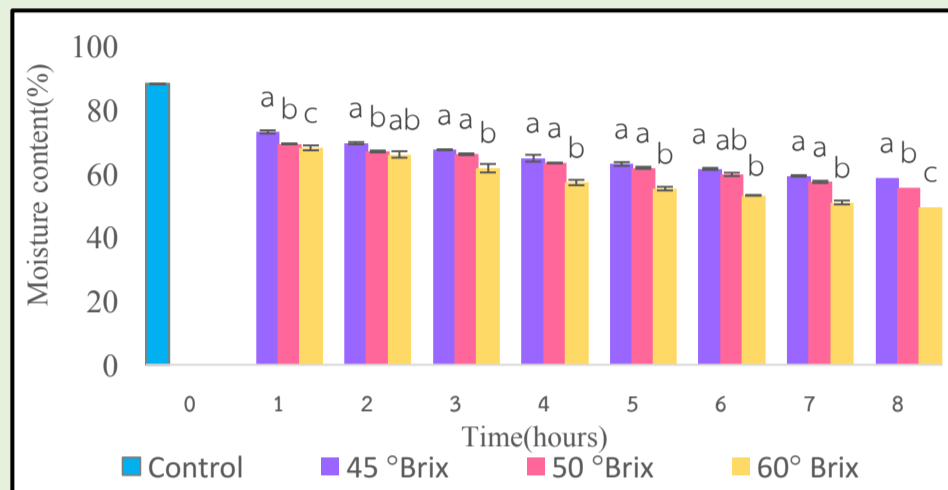


Fig1. Moisture content of Grass jelly during 8 hours

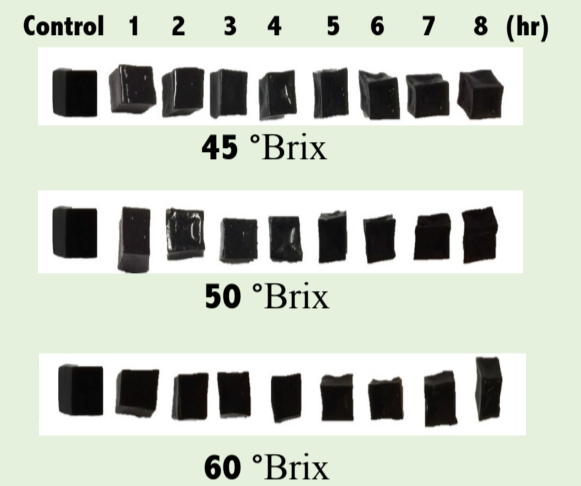


Fig2. Grass jelly after soaking sugar solutions during 8 hours

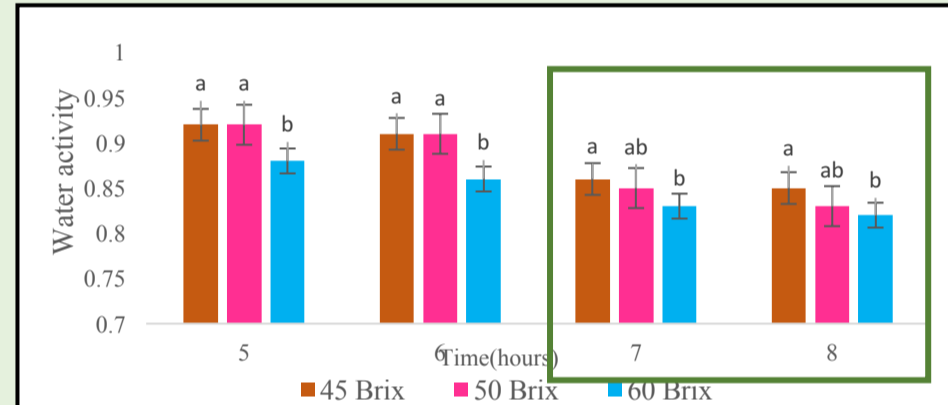


Fig3. Water activity of dehydrated Grass jelly

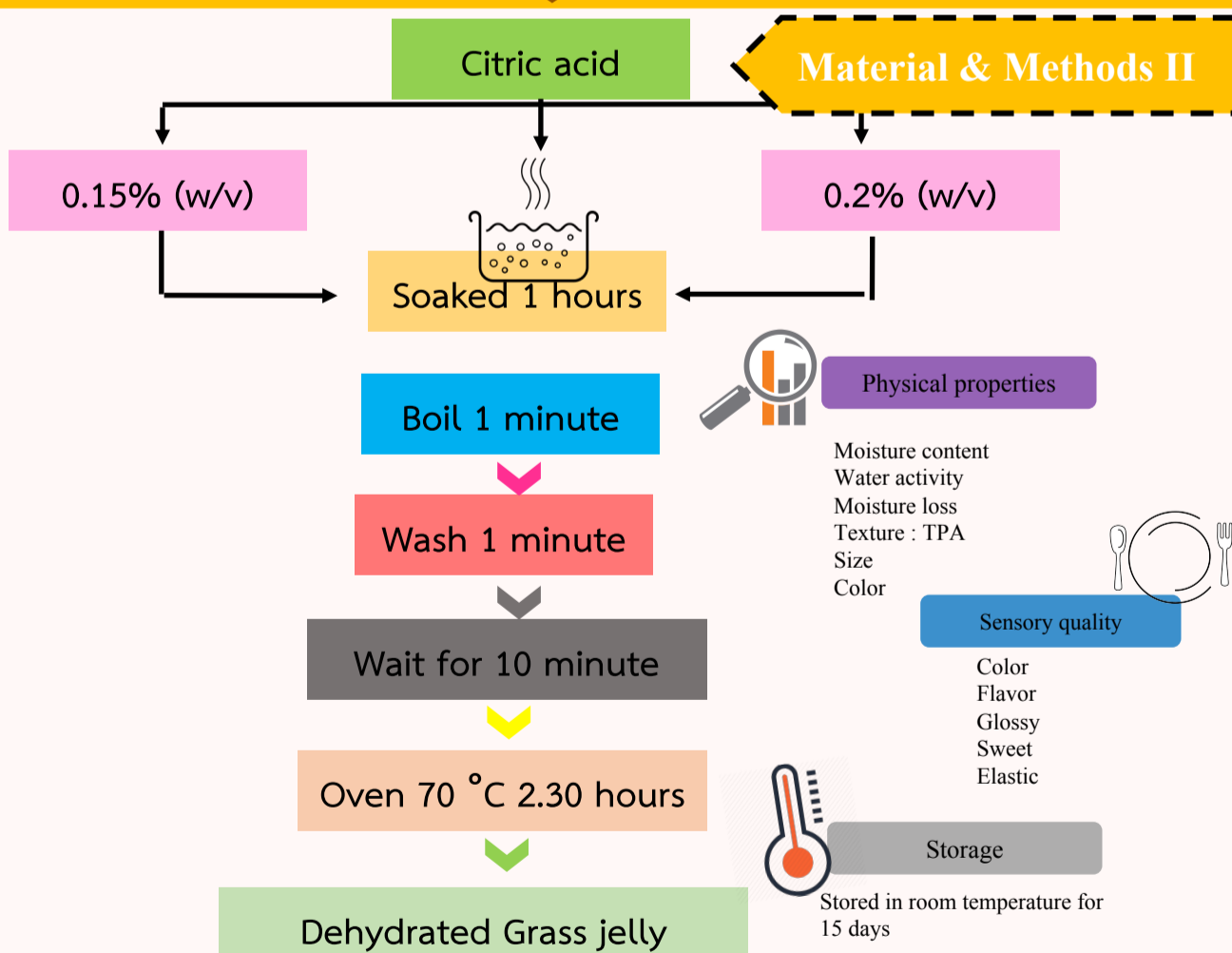
The sugar concentration and soaking time affected moisture content, shape and volume of dehydrated grass jelly ($p < 0.05$). The volume of dehydrated grass jelly was about 0.64-1.01 cm³ (data not shown). Although, all samples was no significant differences in the overall acceptance. However, dehydrated grass jelly immersing in 50°Brix sugar solution was more accept in sweet taste (7.52) more than the others. So it was selected for study in the next step.

Material & Methods I



Soaked for 1,2,3,4,5,6,7 and 8 hours

Material & Methods II



Dehydrated Grass jelly

Conclusion

The best osmosis condition for preparation dehydrated grass jelly was immersing in 50 °Brix sugar solution for 7 hours, soaking in 0.2% (w/v) citric acid and boiling.

Part II, Citric acid and boiling

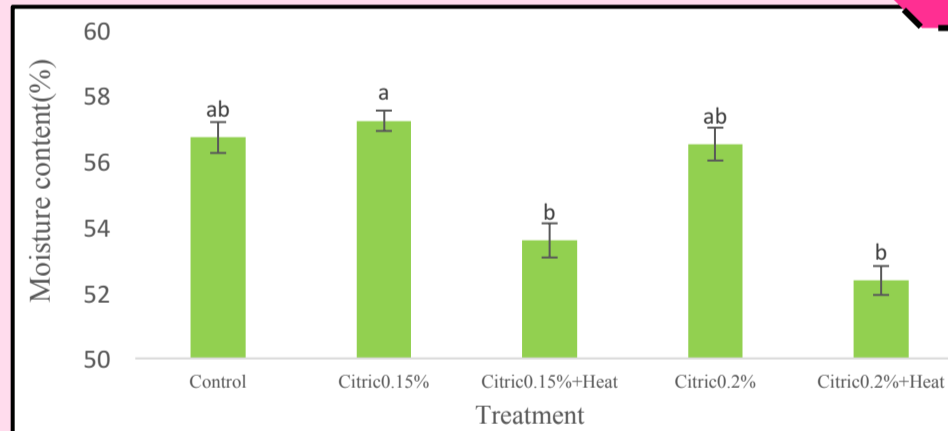


Fig4. Moisture content of Grass jelly in boiling and acid treatment



Table2. Texture analysis of dehydrate Grass jelly

50° Brix	Texture analysis	
	Hardness(g) ^{ns}	Springiness(%) ^{ns}
Control	163.19±15.22	44.71±1.37
0.15%citric acid	179.25±12.26	42.27±2.34
0.15%citric acid+Heat	186.12±12.33	43.47±2.50
0.2%citric acid	182.32±8.86	46.7±1.91
0.2%citric acid+Heat	180.98±15.83	45.35±4.44

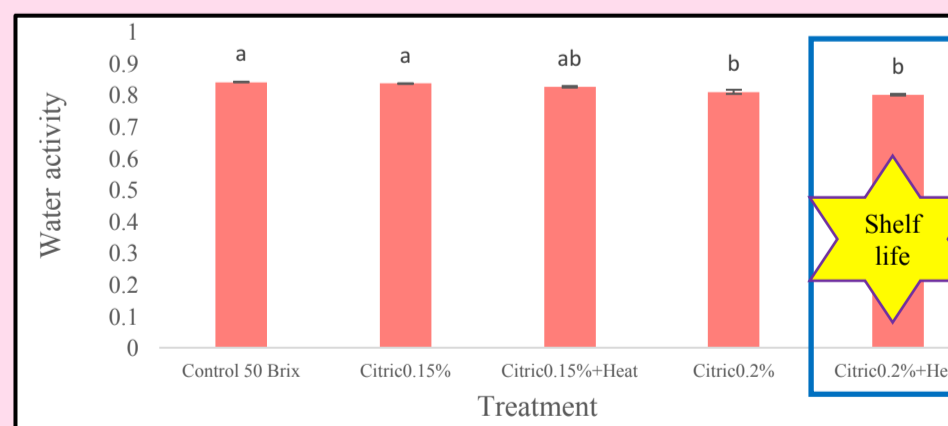


Fig5. Water activity of dehydrated Grass jelly in boiling and acid treatment

Table4. Sensory test of dehydrated Grass jelly

Treatment	Apperance					
	Color	Flavor	Glossy	Sweet	Elastic	Overall
Control(50°Brix)	6.8±1.32 ^a	6.1±1.37 ^{ab}	6.8±1.24 ^a	6.2±1.37 ^a	6.07±1.8 ^a	6.6±1.1 ^{ab}
0.15%	6.76±1.47 ^a	6.27±1.31 ^a	6.63±1.27 ^{ab}	6.6±1.5 ^a	6.33±2 ^a	6.87±1.57 ^a
0.15%+heat	6.23±1.61 ^b	6±1.31 ^{ab}	6.1±1.42 ^c	6.3±1.4 ^a	5.77±1.9 ^a	6.23±1.48 ^c
0.2%	6.23±1.47 ^b	5.5±1.14 ^c	6.07±1.38 ^c	6.13±1.46 ^a	6.03±1.66 ^a	6.23±1.26 ^c
0.2%+heat	6.33±1.53 ^b	5.73±1.17 ^{bc}	6.3±1.47 ^{bc}	6.1±1.54 ^a	6.13±1.5 ^a	6.33±1.24 ^{ab}