LEMBAR
HASIL PENILAIAN SEJAWAT SEBIDANG ATAU *PEER REVIEW*
KARYA ILMIAH : JURNAL ILMIAH

Judul Jurnal Ilmiah (Artikel)	:	Application of foam-mat drying with egg white for carrageenan: drying rate and product quality aspects		
Jumlah Penulis	:	5 orang (M. Djaeni, A. Prasetyaningrum, **S. B. Sasongko**, W. Widayat & C. L. Hii)		
Status Pengusul	:	penulis ke-3		
Identitas Jurnal Ilmiah	:	a. Nama Jurnal	:	Journal of Food Science and Technology
		b. Nomor ISSN	:	0022-1155 (Print) 0975-8402 (Online)
		c. Vol, No., Bln Thn	:	Volume 52, Issue 2, February 2015
		d. Penerbit	:	Springer India
		e. DOI artikel (jika ada)	:	https://doi.org/10.1007/s13197-013-1081-0
		f. Alamat web jurnal	:	https://link.springer.com/article/10.1007/s13197-013-1081-0
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Prof. Ir. Didi Dwi Anggoro, M.Eng., Ph.D.
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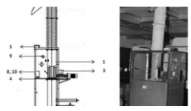

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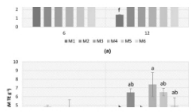

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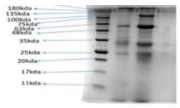

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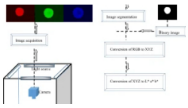

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12. **Kavalactone content and chemotype of kava beverages prepared from roots and rhizomes of Isa and Mahakea varieties and extraction efficiency of kavalactones using different solvents**

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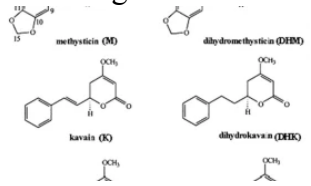

13. **Application of foam-mat drying with egg white for carrageenan: drying rate and product quality aspects**

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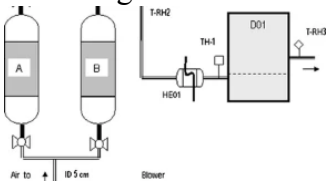

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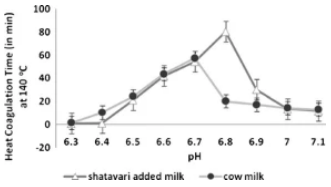

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- Content type: Original Article
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17. **Extraction and characterization of pectin methylesterase from Alyanak apricot (*Prunus armeniaca* L)**

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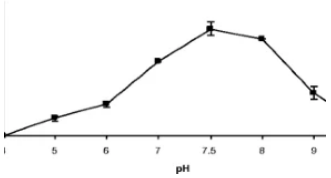

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- O. P. Chauhan
- C. Nanjappa

J Food Sci Technol
DOI 10.1007/s13197-013-1081-0

ORIGINAL ARTICLE

Application of foam-mat drying with egg white for carrageenan: drying rate and product quality aspects

M. Djaeni · A. Prasetyaningrum · S. B. Sasongko · W. Widayat · C. L. Hii

Revised: 6 May 2013 / Accepted: 24 June 2013
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Abstract Drying is a significant step in the production of carrageenan. However, current drying process still deals with too long drying time and carrageenan quality degradation. The foam mat drying is an option to speed up drying process as well as retaining carrageenan quality. In this case, the carrageenan was mixed with egg white (albumin) as foaming agent and methyl cellulose for foam stabilizer. The foam will break the carrageenan gels and creates the porous structure resulting higher surface area for water transfer. This research studied the effect of egg white and methyl cellulose on carrageenan drying at various air temperature, and thickness. As a response, the water content versus time was observed and the drying rate was estimated. Meanwhile, the carrageenan texture was verified by X-RD (X-Ray Diffraction) and TEM (Transmission Electron Microscopy). Results showed that the presence of egg white stablized by methyl cellulose can speed up drying rate as well as retaining the crystalline structure of carrageenan. The higher albumin content, the faster drying rate. However, the addition of albumin and methyl cellulose restricted not more than 30 % in the mixture for keeping carrageenan quality and purity. By adding egg white 20 % and methyl cellulose 10 %, the water diffusion and drying rate can be two fold compared with carrageenan drying without foam. The improvement can be higher at the higher temperature and thinner carrageenan sheets.

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Published online: 30 June 2013

Keyword Carrageenan · Drying rate · Egg white · Foam mat · Quality

Introduction

Carrageenan, a sulfated polysaccharide isolated from red seaweed, *Euchema cottoni*, is an important material used widely in the food industry. The material is normally used as a stabilizer and thickener for dairy, food and pharmaceutical products (MCPI Corporation 2009; Voragen 2002; Thommes et al. 2007). Several techniques can be used to produce carrageenan which involves extraction by alkali (NaOH or KOH), filtration, precipitation and drying (Hilliou 2006; Usov 2011; Falshaw et al. 2001). Drying plays an important role in this aspect as this would influence the quality of the dried product after processing (Thommes et al. 2007; Djaeni et al. 2012). Occasionally, carrageenan is dried in tray or spray dryer at air temperature of about 80 °C. Under this condition, the colour of carrageenan tends to turn brown and degradation of the protein content is observed. In addition to that, the gel strength of the product also decreases during application on food products (Thommes et al. 2007).

The main problem in drying carrageenan is the formation of gel between polysaccharide and water which inhibits the diffusion of water to the surface. Furthermore, wet carrageen is sticky and has high water affinity that makes it easy to agglomerate. Studies showed that carrageenan drying at elevated temperature shortened drying time but resulted in poor product quality (Thommes et al. 2007; Falshaw et al. 2001; Djaeni et al. 2012). Tari and Pekcan (2008) reported that the drying time of carrageenan was about 5 h at 50 °C with shrinkage value ranging from 70 % to 80 % of their initial volume. (Moreira et al. 2011) found that the drying time for bio films made of starch and carrageenan could be speeded up by using high air flow rates and drying time was

J Food Sci Technol
DOI 10.1007/s13197-013-1047-2

ORIGINAL ARTICLE

Kavalactone content and chemotype of kava beverages prepared from roots and rhizomes of Isa and Mahakea varieties and extraction efficiency of kavalactones using different solvents

Jun Wang · Weiyue Qu · Harry C. Bittenbender · Qing X. Li

Revised: 1 May 2013 / Accepted: 4 June 2013
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Abstract The South Pacific islanders have consumed kava beverage for thousands of years. The quality of kava and kava beverage is evaluated through determination of the content of six major kavalactones including methysticin, dihydromethysticin, kavain, dihydrokavain, yangonin and desmethoxyyangonin. In this study, we determined contents of kavalactones in and chemotype of kava beverages prepared from roots and rhizomes of Isa and Mahakea varieties and extraction efficiency of five different solvents including hexane, acetone, methanol, ethanol and ethyl acetate. The six major kavalactones were detected in all kava beverages with these five solvents. Different solvents had different extraction efficiencies for kavalactones from the lyophilized kava preparations. The contents of kavalactones in the extracts with acetone, ethanol, and methanol did not differ significantly. Ethanol had the highest extraction efficiency for the six major kavalactones whereas hexane gave the lowest extraction efficiency.

Keywords *Piper methysticum* · Kava · Kavalactone · Chemotype · Extraction efficiency

Jun Wang and Weiyue Qu contributed equally to this work.

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Introduction

Kava is known as the common name of both a shrub plant, *Piper methysticum* and the beverage prepared from the plant materials (BHMA 1996). The South Pacific islanders have consumed kava beverages for thousands of years (Singh 1992). The kava beverage is traditionally prepared from macerated roots and/or stump with water or coconut water (BHMA 1996; Kilham 1996). It is reported that beneficial effects of the kava beverage include relaxation, euphoria, anti-convulsion, neuroprotection, analgesia and attenuation of menopausal symptoms (Lebot et al. 1992; Bilia et al. 2002; Lebot and Lévesque 1989; Baum et al. 1998; Whitton et al. 2003; Schulz et al. 2001). The safety of kava consumption has been a topic of debate in recent years (Anke and Ramzan 2004; Russmann et al. 2001; Anon 2001; Campo et al. 2002; Gow et al. 2003; Brauer et al. 2003). In general, the kava beverage and products made from rhizomes and roots have been considered being safe (Teschke and Lebot 2011).

Six major kavalactones are considered to be the main psychoactive components of kava. Some reports suggested

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ORIGINAL ARTICLE

Effect of processing on physicochemical composition, bioactive compounds and enzymatic activity of yellow mombin (*Spondias mombin* L.) tropical juice

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Abstract Yellow mombin (*Spondias mombin*, L.) is a tropical fruit that presents exotic taste and aroma, being source of carotenoids and phenolics compounds. It presents a good potential for processing, despite some restriction related with the presence of high amounts of peroxidase (POD) and pectinmethylesterase (PME) which can cause sensory changes in the product. This work addresses the evaluation of changes in POD and PME enzyme activity during the traditional industrial processing used to produce tropical juices in Brazil. The enzyme activity was determined after the main steps of the processing: fruit pulping, homogenization and pasteurization. Although both enzymes presented significant activity loss during processing, the final product showed residual activity for PME (25 %) and POD (2.5 %). PME showed to be more thermal resistant than POD in yellow mombin juice. Considering the compounds with antioxidant activity, yellow mombin presented high amounts of carotenoids and phenolics when compared to other tropical fruits such as passion fruit and pineapple. Although the processing of the fruit resulted in significative phenolic loss, the carotenoids content was not affected significantly by the processing.

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Keywords Yellow mombin fruit · Fruit processing · Peroxidase · Pectinmethylesterase · Antioxidants

Introduction

Yellow mombin (*Spondias mombin* L.) is a small fruit, elliptical in shape with 3–4 cm in length. The fruit is cultivated in the Northeast of Brazil mainly during the rainy season. Like most regional fruits, yellow mombin is available during a short period of the year. The consumption of commercial products of regional fruits has increased in the last few years in Brazil, due to their year-round availability, and easy preparation. Beyond its flavor characteristics the fruit is a good source of pro-vitamin A (Assis et al. 2006).

Despite the good potential for industrialization, the final product may present changes in the sensory characteristics such as color and flavor, due to changes in composition during the processing.

The action of some enzymes, such as PME, polygalacturonase and POD, might have a pronounced effect on the quality of fresh and processed fruit products (Assis et al. 2001). Cloud loss is a major quality defect occurring in cloudy fruit and vegetable juices. This undesired defect is induced by demethylation of pectin by endogenous pectinmethylesterase (pectinesterase, PME, EC 3.1.1.11) yielding acidic low methoxy pectin, which can cross-link with polyvalent cations such as Ca^{2+} to form insoluble pectate precipitates. To overcome this problem, thermal treatments such as heating (e.g. 1 min at 90 °C for citrus juices) or freezing can respectively be used to inactivate PME or slow down its activity. Unfortunately, these processing steps have a negative influence on the juice flavor (Guiavarc'h et al. 2005).

Consumption of fruit and vegetables is associated with a decreased risk of heart disease and cancer. The antioxidants in

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