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**The Indonesian Association of Food Technologists Chapter KALTIM
Present**

PROCEEDING

INTERNATIONAL CONFERENCE ON
FOOD, AGRICULTURE AND CULINARY TOURISM



4 – 5 August 2015

Mesra International Hotel, Samarinda

PROCEEDING

**INTERNATIONAL CONFERENCE ON FOOD,
AGRICULTURE AND CULINARY TOURISM**

February 2015

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Preface

The greatest regards should be expressed only to God the Almighty, Allah SWT. We have finished the Proceeding of The 1st International Conference on Food, Agriculture and Culinary Tourism (ICFACT) in six months after the conference which was held on 4-6 August 2015. This conference is in coherence with a grand agenda of increasing national and local food security and also improving nutritional statuses of the people. The conference focused on food, agricultural products and culinary that support food security, safety, processing advancement and their aesthetical aspects.

This conference proceeding volume contains the written version of most of the contributions presented during the conference, as oral and poster presentation. During the conference there were 6 keynote speakers, 37 oral presenters and 15 poster presenters who gave their speech, presentations and posters of their recent research. This conference presented international speakers from Chulalongkorn University, Associate Professor Saiwarun Chaiwanichsiri, University Putera Malaysia, Associate Professor Azmawani AbdRahman, and a leading presenter, Prof. Dr. Dato Othman Yatim from University Brunei Darussalam. Also, this conference featured fellow professors and scientists from UMS, IPB, LIPI, Balitbang Pertanian, Unpad, Manado, Papua, Mataram, Denpasar, Samarinda, and other places.

All papers presented in this proceeding have been through a series of reviewing process by the Editorial Team. Some paper presented in ICFACT will be published as a special edition of a Scopus Indexed Journal and will be processed through a more in-depth scientific review.

We would like to thanks and appreciate all authors, The Samarinda city government, Food Security and Agricultural Executive Counseling Board of Samarinda, PT Pupuk Kaltim, Food Review Indonesia, and Kulinologi Indonesia, The Editorial Team, The Proceeding Team, The Head of IAFT Chapter Kaltim, and the entire committee member who have been contributed in ICFACT and the proceeding publication.

See you in the next ICFACT at Bumi Etam.

Samarinda, February 2016

Editor

Welcome Speech

Welcome Speech from The ICFAC 2015 Committee

Assalamu'alaikum Warrahmatullahi Wabarakatuh,

A very good morning to you,

Welcome to Samarinda. I, would like to express greatest regard to the Almighty God, Allahu SWT, and also to extend my warmest gratitude to all the audiences, that assist, help, and support this event.

In the light of strengthening Indonesia through development of proficient and professional human resources, food is a major factor transforming to more productive society. This conference is in coherence with a grand agenda of increasing national and local food security and also improving nutritional statuses of the people. Hitherto, the conference will be focussed on food, agricultural products and culinary that support food security, safety, processing advancement and their aesthetical aspects.

We would like to report that about seventy national and international participants are attending the conference. This number is frankly beyond our expectation when we were arranging this at the first time. This suggests Samarinda is attractive and therefore has a potential to be developed as a tourist destination city in Kalimantan. We understand, to access Samarinda requires more effort. In near future, travelling to Samarinda will be less complicated as the new airport is ready to operate.

This conference will present international speakers from Chulalongkorn University, Associate Professor Saiwarun Chaiwanichsiri, University Putera Malaysia, Associate Professor Azmawani AbdRahman, and a leading presenter, Prof. Dr. Dato Othman Yatim from University Brunei Darussalam. Also, this conference will feature fellow professors and scientists from UMS, IPB, LIPI, BATAN, UGM, Widya Mandala, Gorontalo, Papua, Hasanuddin, Mataram, Jember, and other places.

The morning session is designed for keynote speeches and the afternoon session is for parallel sessions. In this regard, the conference will be sectioned in four: (1) food safety as an important factor to food security, (2) functional food development, (3) development of new food products, and (4) natural food production.

The Indonesian Association of Food Technologists chapter East Kalimantan Timur, as an organisation, would like to thank The Samarinda city government, Food Security and Agricultural Executive Counseling Board of Samarinda, PT Pupuk Kaltim, Food Review Indonesia, and Kulinologi Indonesia for their strong support to this conference.

We hope that you will enjoy the tropical climate of East Kalimantan while staying in Samarinda. Without further due, we kindly ask the Rector of Mulawarman University and the Mayor of Samarinda to give speech and also to open this conference, officially.

Wassalamu'alaikum Warahmatullahi Wabarakatuh,

The ICFAC 2015 Committee,

Anton Rahmadi
Chairman.

Welcome Speech**The Head of Food Security and Agricultural Executive Counseling Board of Samarinda**

The honorary, the Mayor of Samarinda city,
Honorary Head of working units of Samarinda
Honorary Rector of Mulawarman University,
Honorary Professors, Academicians, Participants, Invited guests from Indonesia and neighboring countries,
And all the audience.

A very good morning,

In this morning, I would like to thank God for His guidance and blessing. I am also would like to extend my gratitude to my fellow staffs in Food Security and Agricultural Executive Counseling Board of the Samarinda City and our colleagues from all over Indonesia and neighboring countries to attend the first international conference on food, agriculture, and culinary tourism, here in Samarinda, East Kalimantan.

To develop food security is a joint responsibility of government, private sectors, and more importantly the people, themselves. The food security is a condition where sufficient food is provided to a country and individuals. This is reflected by adequate supply of staple food, both in quantity and quality, its safety, diversity, nutritional contents that are accessible and affordable to people. It is also equally important that the provided food supports all religions, believes, and cultures, so that it will produce healthy, active, and subsequently productive society.

The Food Security and Agricultural Executive Counseling Board of Samarinda has responsibility to actively support and assist the successfulness of the program of the Mayor of Samarinda, specifically in the field of food security and agricultural counseling.

The government established Food Security Council in Samarinda with the Mayor regulation number 21, year of 2002. To work towards food security in Samarinda, as an implementation of article 10 of Presidential decree number 18, year of 2006, about the Food Security Council, the function of Food Security Council is further expanded and aligned with the current development.

One highlighted activity of the food security council and agricultural executive counseling board is the International Conference on Food, Agriculture, and Culinary Tourism. This activity is held with an aim to disseminate information and to gather ideas of food security and nutrition practices in ASEAN and Indonesia for further Samarinda development.

Achieving food security and nutrition status is mandated by the Law number 18, year of 2013 and the presidential decree number 17, year of 2015. Of equal importance, it is a necessity to increase quality and quantity of public services to achieve minimum essential standard services as mandated by the Ministry of Agriculture regulation number 65/OT1040/12/2010, and the Interior Minister circular number 100/1023/SJ/2013 dated on 26 of March, 2012 about the acceleration of minimum essential standard services implementation in local governments.

Minimum essential standard services of food security in Samarinda city have achieved above 90 percent in four basic services and seven target indicators in 2015. To illustrate, the people consumption of energy is 1719.8 kilo calories per capita per day. This, however, is below the average daily intake of

2200 calories, as indicated by Widya Karya Pangan dan Gizi, year of 2004 and 2013. On the other hand, the protein consumption is above the national average, achieving fifty-two point four gram per capita per day. The general achievement for food pattern expectation is 81.9 points. In response to reduction of food insecurity region, the case of malnutrition is successfully reduce to less than 0.5 %. It is also noted that food reserves are increased in Samarinda.

This excellent moment of International Conference on Food, Agriculture, and Culinary Tourism is achieved as an excellent collaboration of the Food Security and Agricultural Executive Counseling Board of Samarinda with the Indonesian Association of Food Technologists chapter East Kalimantan, the Department of Agricultural Products Technology, Mulawarman University. We hope that this will produce a fruitful outcome to collect ideas and practices in developing food security and nutrition in Samarinda.

I, with all due respect to the Mayor of Samarinda, would like to ask Bapak Syaharie Jaang to officially open this conference.

Samarinda, 5 August 2015,

Food Security and Agricultural Executive Counseling Board of Samarinda,

Ary Yasir Pilipus

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The Effect of local and imported Soybean (*Glycine max* L.) and Blanching Time on the Chemical and Sensory Characteristics of Soymilk Powder

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Abstract

Soy milk is a healthy drinks which safe for consumption by infants because it contains no lactose as in animal milk. This research aimed to determine the effect of local and imported soybean (*Glycine max* L.) and blanching time on the physico-chemical and sensory evaluation of soy milk powder. The experimental design used in this research was completely randomized design (CRD) with a 2x3 factorial, the first factor was the type of soybean (Burangrang and US Soybean) and the second factor was blanching time (with an interval of 10 , 15, and 20 minutes) with four replications. Data obtained from this study were analyzed by analysis of variance with the F test, and for data that showed significantly different analysis continued with Least Significant Difference test (LSD) at α level of 5%. The results of the research showed that soybean types and blanching time had significant effect on the yield, protein content, fat content, and free fatty acid content, but had no significant effect on organoleptic properties. While for moisture content, soybean types had significant effect, but not for blanching time. Soybean types had no significant effect on the pH and total dissolved solids, while blanching time had significant effect.

Keywords: soybean, blanching time, soy milk

Introduction

Soybeans are the raw materials of vegetable protein -rich food industry, one type of processed soybeans which are rich with benefits is soy milk. In terms of nutritional content, soy milk has nutritional value similar to cow's milk protein, especially it's protein content which is 3.5-4 %, the main difference is the type of amino acid , namely that soy milk does not contain casein. Based on the characteristics and composition similaritiesof soy milk to cow's milk , the use of soy milk in the manufacture of dairy products such as yoghurt , cheese and others has been conducted (Smith dan Circle, 1972).

Soy milk produced in two forms, liquid and powder, with liquid form most commonly found in market. Liquid soy milk has limitation due to its perishable characteristic that can caused changes in nutrition and taste. In addition, liquid soy milk can be a perfect bacterial growth media because it contains a lot of nutrients that makes it become stale faster. Because of these weaknesses, one alternative to maintain the quality of the soy milk is by processing it into soy milk powder .

There are several factors that affected the outcome of the process of making soy milk, such as the type of soybean and blanching time used. Different types of soy can affect the color and soy milk protein content due to differences in physical and chemical properties of soy beans. This suggests that soy milk quality is influenced by the type /

soybean varieties (Ginting and Antarlina, 2002). While the process of blanching was done to inactivate lipoxygenase enzyme that cause off flavors in soy processing.

This study aims to determine the effect of the type of soy and time blanching on the physico-chemical and sensory properties of soy milk powder.

Methods

Materials

Materials used in this study were imported soybean (US Soybean), local soybean (Burangrang) , sugar , and baking soda (NaHCO_3) , petroleum benzene , H_2SO_4 , catalyst , distilled water , a mixture of $\text{NaOH} + \text{Na}_2\text{S}_2\text{O}_3$, granular zinc , HCl 0.1 N , phenolphthalein indicator , 0.1 N NaOH , alcohol and KOH .

Experimental design

This study used factorial analysis (2x3) arranged in a completely randomized design (CRD) with four replications . As the first factor was the type of soybean (V) consisting of two types: V1 = imported soybean (US Soybean) , V2 = local soybean (Burangrang) . While the second factor was the blanching time (T) , which consists of three levels ie : T1 = 10 min , T2 = 15 minutes , and T3 = 20 minutes . As a comparison (control) was the treatment of soybean without blanching.

Soy Milk Powder Processing

Soybean sorted beforehand to produce soybeans with good quality. After sorting, soybeans were washed with clean water, then blanching process was carried out in a solution of sodium bicarbonate 0.5% (w / v) with a ratio of water: soy (3: 1) (w / v) for 10, 15 and 20 minutes (in accordance with treatment) with the temperature of 80 ° C. Blanched soybeans was then washed and stripped. Soybeans that have been washed and peeled were then boiled for 30 minutes at a temperature of 80 ° C with a ratio of water: soy (5: 1) (w / v) and followed by draining. Soy was further blended by adding mineral water with a ratio of water and soybeans (5 : 1) (w / v) for 5 minutes, filtered by the filter cloth and the filtrate taken as soymilk. Sugar was added with concentration of 7% (w / w), and then cooked until dry with a frying pan. Cooking the mixture was done by using a small flame with a temperature of 80 ° C for 60 minutes or after the mixture dries, smoothing performed with blander then sieved using a 80 mesh sieve to obtain powdered soy milk.

Results and Discussion

Yield

Based on the results of analysis of variance, the treatment of different types of soybean (V) and blanching time (T) give real effect to the yield of soybean milk powder, but not on the interaction of both. Soybean imports have higher yield compared

to the type of local soybean. This difference was expected because different types of soy contained different chemicals composition thought to be caused by environmental conditions where the planting and maintenance of plants occurred for each soybeans. While the blanching time significantly affect the yield of soybean milk powder, the longer the blanching time the lower the yield generated. This was due to a decrease in nutrient content during the blanching process. During the process of blanching in sodium bicarbonate solution results in loss of water-soluble protein (Song, et. Al., 2003) and the ability of sodium bicarbonate (alkaline) to minimize the fat content in the materials (Nolsoe and Ingrid, 2009).

Water content

Results of analysis of variance showed that the types of soy (V) significantly affected the water content of soybean milk powder , while the blanching time (T) and its interaction not significant affected (Table 1). The water content of soybean milk powder from imported soybean was 4.44 % , and 4.56 % for local soybean . Although the results were significantly different between types of soy but according to SNI 01-2970-2006 , the water content in milk powder maximum of 5 % , so it can be said that the soy

milk powder produced has met the quality requirements specified . Blanching time did not give significant different results on water content of soybean milk powder (Table 1) . It was showed from the high percentage of water content for each of the blanching time ranging from 4.30 % to 4.57 % . This results caused by the drying time and temperature were the same in each treatment so that the water content of the material that comes out about the same.

Protein Content

The benefit of protein in soy milk is the protein does not cause allergies and has a composition of essential amino acids the most complete than the other type of nuts and similar to cow's milk, so it is best used as a substitute for cow's milk , especially for those who are allergic to cow's milk and people with lactose intolerance (Astawan 2004 in Pramitasari , 2010) .

Results of analysis of variance showed that different types of soy (V) and blanching time (T) significantly affected the protein content of soybean milk powder , but not for the interaction of both. The protein content in imported soybean (US Soybean) amounted to 3.66% , while the local soybean (Burangrang) of 4.20 %.

The amount of soy protein content of milk powder from a local soybean (Burangrang) was caused by the high protein content of soybean seeds before processing. Based on research done by Ginting et al., (2009), the protein content of local soybean varieties Burangrang ranged from 39 to 41.6%, while the protein content of imported soybean (US Soybean) only amounted to 35 to 36.8%. Referring to the Indonesian National Standard (SNI) 01-3830-1995, soy protein content of milk powder produced from each treatment has met the quality requirements of soy milk, which is higher than 2% (limit minimal soy milk protein content). The longer blanching time used, then the protein content will decrease. The control treatment, has the highest protein content of 5.84%, while the blanching treatment for 20 minutes showed the lowest protein content that was equal to 2.72%.

Decreased levels of protein during the process of blanching caused by most proteins dissolved in water, so that the longer blanching time used the more the proteins dissolved in water and lead to decreased levels of soy protein itself. The same thing was also shown in studies by Song et. al. (2003) which states that the longer the blanching time of soybeans caused more amino acids to dissolved in water resulting in lower levels of the protein.

Fat Content

Based on the results of analysis of variance it was known that the treatment of different types of

soybean (V) and blanching time (T) significantly affected the levels of fat soy milk powder. imported Soybean (US Soybean) has a fat content of 11.51%, while the local soybean (Burangrang) amounted to 11.10%. In the study by Ginting et al., (2010) imported soybean fat content ranged from 21.40 to 21.70%, while the fat content of local soybean varieties (Burangrang) was only 20%.

The longer blanching time used, the lower fat content resulted. The control has the highest fat content (11.80%), while the blanching treatment for 20 minutes showed the lowest fat content

(10.95%). This results was the effect of the ability of sodium bicarbonate (alkaline) to reduce and minimize the fat contained in soybeans (Nolsoe and Ingrid, 2009). According Rawdkuen et al., (2009), the reduction of fat more easily occurred in the process of alkaline or acidic than conventional processes (using only water). Referring to the Indonesian National Standard (SNI) 01-3830-1995, fat soy milk powder produced from each treatment has met the quality requirements of soy milk, which is higher than 1% (minimal limit fat soy milk).

Table 1. The Analysis Results of Yield , Chemical Properties and Physical Properties of Soy Milk Powder

Criteria	Blanching (minute)	Time	Soybean Type		Average
			US Soybean	Burangrang	
Yield	10		37,72	35,54	36,63 a
	15		35,66	35,02	35,34 b
	20		35,02	33,16	34,09 c
	Average		36,14 a	34,57 b	
Water Content (%)	10		4,39	4,47	4,43
	15		4,40	4,58	4,49
	20		4,53	4,64	4,59
	Average		4,44 b	4,56 a	
Protein content (%)	10		5,03	5,33	5,18 a
	15		3,62	4,12	3,88 b
	20		2,32	3,12	2,72 c
	Average		3,66 b	4,20 a	
Fat content (%)	10		11,62	11,49	11,56 a
	15		11,52	11,30	11,41 ab
	20		11,39	10,51	10,95 b
	Average		11,51 a	11,10 b	
Free Fatty Acid (%)	10		2,9190	2,64	2,78 a
	15		2,3630	2,22	2,29 b
	20		1,9460	1,88	1,91 c
	Average		2,41 a	2,24 b	
pH	10		6,80	6,84	6,82 c
	15		6,91	6,91	6,91 b
	20		7,02	6,97	6,99 a
	Average		6,9103	6,91	
Total Solids (%)	10	Dissolved	81,20	81,45	81,33 a
	15		79,70	78,70	79,20 b
	20		77,19	77,19	77,19 c
	Average		79,37	79,11	
Dissolved speed (s g ⁻¹ 100 mL ⁻¹)	10		9,49	9,79	9,64
	15		9,52	9,82	9,67
	20		9,53	9,88	9,71
	Average		9,51	9,83	

Free Fatty Acid Content

Free fatty acids formed in the oxidation and hydrolysis of fats by enzymes during processing and storage of foodstuffs which may result in undesirable flavor and can be toxic.

Based on the results of analysis of variance it was known that the treatment of different types of soybean (V) and blanching time (T) significantly affected the free fatty acid content of soybean milk powder. Milk powder of imported soybean (US

Soybean) has a higher free fatty acid (2.41%) than soy milk powder from local (Burangrang) (2.25%). When treated with the same treatment, the high fat content in the enzymatic hydrolysis process allows fat is also higher. The same results also showed by Sukasih et al., (2009), which explained that the value of free fatty acids in coconut milk was not significantly different during the heating due to the fat content was not significantly different. Thus, the amount of fat that break down into free fatty acids was very little difference.

The longer blanching time used the free fatty acid also decreases. Control has the highest free fatty acid value of 3.03%, while the blanching treatment for 20 minutes had a low free fatty acid value of 1.91% due to the decline in the activity of the lipoxigenase enzyme which caused the hydrolysis of fats during blanching process. Based on research by Arifin (2005), the longer the blanching time, causing a decrease in free fatty acids in the material. Blanching treatment can reduce or eliminate the causes of damage and microbial oils for example enzymes, which can hydrolyze the oil into free fatty acids and glycerol-free.

pH value

According to Ressang and Nasution (1982) in Yudihapsari (2009), the potential of hydrogen (pH) is defined as the measurement of the concentration of free hydrogen ions that states measure of acidity or alkalinity of a solution by using a pH meter. Based on the results of analysis of variance it was known that the treatment of different types of soybean (V) and the interaction did not give significant effect on the pH value of soybean milk powder, but blanching time give real influence on the pH value of soy milk powder. Type of soy significantly affected the pH value of soy milk powder. The pH value of soy milk powder of imported soybean (US Soybean) and local soybean (Burangrang) were 6.91. The pH value of the two types of soybean cultivars used in this study meets the ISO requirement which is about 6.5 to 7.0.

The longer blanching time used then the pH value will increase as well. Lowest pH value (6.64) indicated by the control treatment in which soybean was not blanched in 0.5% sodium bicarbonate solution, while the highest pH value (7.00) was shown from the blanching treatment for 20 minutes.

The increase in pH was caused by the presence of sodium bicarbonate 0.5% alkaline. Based on research by Monica and Prasad (2004), the use of sodium bicarbonate alkaline can increase the pH value of soy milk. The same thing was also shown in studies by Onuorah et al., (2007) which states that the blanching process of soybean seeds with 0.5% solution of sodium bicarbonate can increase the pH value of soy milk.

Total Dissolved Solids

A total dissolved solids showed the total content of the water-soluble material, i.e. carbohydrates (sugar), as well as water-soluble protein. Results of analysis of variance showed that the type of soy and treatment interaction was not significantly affected while the blanching time in a solution of sodium bicarbonate significantly affected the total dissolved solids of soy milk powder.

Total dissolved solids of soy milk powder from imported soybean (US Soybean) was higher than the local (Burangrang), although it did not produce a noticeable difference. The high total dissolved solids in this study due to the addition of sugar in the processing of as many as 7%. Total dissolved solids of the soy milk powder prepared from the two types of soybeans has met the quality requirements of soy milk on SNI 01-3830-1995, i.e. a minimum of 11.5%.

The longer blanching time, the total dissolved solids of soy milk powder will also decrease. Control treatment had the highest total dissolved solids in the amount of 85.96%, while the blanching treatment for 20 minutes showed the lowest total dissolved solids in the amount of 77.19%. The same result was shown by Onuorah et al., (2007) in which soybean blanching treatment in 0.5% sodium bicarbonate solution for 30 minutes resulted in the lower value of total dissolved solids than the untreated soybean blanching. Decrease in total dissolved solids was due to the dissolution of water-soluble components such as water-soluble vitamins, carbohydrates, water-soluble proteins, pigments and minerals contained in soy.

Sensory properties

Taste

The different types of soybeans used was not significantly affected hedonic score of taste. However, the treatment of blanching time in sodium bicarbonate solution showed that the longer the time blanching, the higher the scores on the taste of soy milk powder. Based on the value of the mode, it appears that blanching time for 10 minutes resulted the score of three (neutral), either for imported soybean (US Soybean) as well as local soybean (Burangrang), but increased of blanching time of 15 and 20 minutes, give a rise in the value of the mode (4, like). Allegedly decline saponin compounds during blanching process takes place. According to Iyer in Ginting and Antarlina et al. (2002), saponins give a bitter taste and are relatively resistant to heat. In the treatment of blanching time for 10 minutes, the panelists describe that soy milk powder produced was bland. It was due to the addition of sugar as much as 7% to minimize the bitter taste of saponins contained in soybean milk powder, but the treatment of blanching time for 15 and 20 minutes, based on the description of the panelists showed that soy milk

powder produced was sweet, this was due the ability of heating process to decreased saponin compound so with the addition of 7% sugar will be more dominant sweet.

Flavor

The panelist judgement for flavor resulting in a similar results for the treatment of types of soy and blanching time. This was presumably because the soy used in the manufacture of powdered soy milk has a very strong flavor, so that the treatment did not significantly affected to reduce the distinctive aroma of the soy. Based on the value of the mode, the control treatment was scored 3 (neutral) by the panelist while the blanching time for 10, 15 and 20 minutes scored 4 (like).

One of the goals of blanching treatment on this study was to eliminate the unpleasant flavor in soybean. Based on the description of the panelists, the panel stated that soy milk powder produced has a distinctive flavor of soy without the unpleasant aroma.

Color

The types of soy and time of blanching in sodium bicarbonate solution did not have a significant influence on soy milk color, with the score of 4 with criteria like. Based on the description of the panelists, soy milk produced has a yellowish white color which was still preferred by the panelists. This was due the color of soy bean itself, so the treatment of types of soy and blanching time was not very influential.

Conclusion

Type of soy and blanching time in sodium bicarbonate solution in the manufacture of soy milk powder significantly affected the yield, protein content, fat content, and free fatty acids but not for the dissolved speed. For moisture content, type of soybean showed significant effect, but not for blanching time. For pH and total dissolved solids, blanching time showed significant effect, but not for the type of soybean.

References

- Arifin, M. 2005. Pengaruh *Blanching* Terhadap Laju Pengeringan dan Kadar Asam Lemak Bebas Kopra. *Jurnal Ilmu-ilmu Pertanian* Vol 1(1):71-83.
- Badan Standarisasi Nasional. 1995. Standar Nasional Indonesia (SNI) tentang Susu Kedelai No. 01-3830-1995. Badan Standarisasi Nasional, Jakarta.
- Badan Standarisasi Nasional. 2006. Standar Nasional Indonesia (SNI) tentang Susu Bubuk No. 01-2970-2006. Badan Standarisasi Nasional, Jakarta.
- Ginting, E., dan S. Antarlina. 2002. Pengaruh Varietas dan Cara Pengolahan Terhadap Mutu Susu Kedelai. *Jurnal Penelitian Pertanian Tanaman Pangan* Vol. 21(2):48-57.
- Ginting, E., S. Antarlina, dan S. Widowati. 2009. Varietas Kedelai Untuk Bahan Baku Industri Pangan. *Jurnal Litbang Pertanian* Vol 28(3):79-87.
- Nolsoe, H. and U. Ingrid. 2009. The Acid and Alkaline Solubilization Process for The Isolation of Muscle Proteins: State of The Art. *J. Food Bioprocess Techno.* 21-27.
- Onuorah, C.E., O.A. Adejare, and N.S. Uhiara. 2007. Comparative Physico-chemical Evaluation of Soymilk and Soya Cake Produced By Three Different Methods. *Nigerian Food Journal* Vol. 25(2):28-38.
- Pramitasari, D. 2010. Penambahan Ekstrak Jahe (*Zingiber officinale* Rosc.) dalam Pembuatan Susu Kedelai Bubuk Instan dengan Metode *Spray Drying*: Komposisi Kimia, Sifat Sensoris dan Aktivitas Antioksidan. Skripsi. Universitas Sebelas Maret, Surakarta.
- Prasetyo, S. dan F. Monica. 2004. Pengaruh Perlakuan Pada Proses *Blanching* dan Konsentrasi Natrium Bikarbonat Terhadap Mutu Susu Kedelai. *Prosiding Seminar Nasional Rekayasa Kimia dan Proses*. 2004. ISSN : 1411-4216.
- Rawdkuen, S., S. Sai-Ut, S. Khamsorn, M. Chaijan, and S. Benjakul. 2009. Biochemical and Gelling Properties of Tilapia Surimi and Protein Recovered Using An Acid-Alkaline Process. *J. Food Chem.* 112-119.
- Siddaut, Y. 2013. Studi Pembuatan Minuman Instan dari Nira Aren Segar Dengan Kombinasi Daun Kopi dan Bawang Tiwai (*Eluetherine america* Merr). Skripsi. Universitas Mulawarman, Samarinda.
- Smith, A.K. and Circle. 1972. Soybean: Chemistry and Technology. The Avi Publishing Co Connecticut. New York.
- Sofyanti, S. 2007. Pengaruh Konsentrasi Penstabil dan Konsentrasi *Flavour* (Bubuk Cokelat) Terhadap Mikrokrystal Sari Kedelai. Skripsi. Universitas Pasundan, Bandung.
- Song, J. Y., G. H. An, and C. J. Kim. 2003. Color, Texture, Nutrient Contents, and Sensory Values of Vegetable Soybean [*Glycine max* (L.) Merrill] as Affected by Blanching. www.linkinghub.elsevier.com/retrieve/pii/S0308814603000499. Diakses 26 Oktober 2014.
- Sukasih E., S. Prabawati, dan T. Hidayat. 2009. Optimasi Kecukupan Panas Pada Pasteurisasi Santan dan Pengaruhnya Terhadap Mutu Santan Yang Dihasilkan. *Jurnal Pascapanen* Vol 6(1):34-42.
- Yudihapsari, E. 2009. Kajian Kadar Protein, pH, Viskositas dan Rendemen Kecap *Whey* dari Berbagai Tingkat Penggunaan Tepung Kedelai. Skripsi. Universitas Brawijaya, Malang.



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