IMPACT OF RED BEET POWDER ON THE PHYSICOCHEMICAL CHARACTERISTICS OF MOCAF COOKIE AND ITS RANCIDITY DURING STORAGE

PENGARUH SERBUK BIT MERAH PADA KARAKTERISTIK FISIKOKIMIA COOKIE MOCAF DAN KETENGIKANNYA SELAMA PENYIMPANAN

THESIS

Submitted to The Faculty of Agricultural Technology in partial fulfillment of the requirements for obtaining the Bachelor Degree

By:
IVANA APRILIA PRATIWI
12.70.0145

DEPARTMENT OF FOOD TECHNOLOGY FACULTY OF AGRICULTURAL TECHNOLOGY SOEGIJAPRANATA CATHOLIC UNIVERSITY SEMARANG

2015
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This thesis has been approved and defended in front of the examination committee on 28 October 2015

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THE AUTHENTICITY OF A THESIS STATEMENT

I hereby declare that the thesis entitled “IMPACT OF RED BEET POWDER ON THE PHYSICOCHEMICAL CHARACTERISTICS OF MOCAF COOKIE AND ITS RANCIDITY DURING STORAGE” contains no work that ever proposed to acquire a bachelorship title in a University, and along to my knowledge, there is no work ever written or published by others, except the ones used as references in this thesis and mentioned in the list of references.

If it is proven in the future that partially or whole thesis is the result of plagiarism, therefore I will be willing to be revoked with all the consequences in accordance with the law and regulations applied at Seogijapranata Catholic University and/or valid law and regulations.

Semarang, 28 October 2015

Ivana Aprilia Pratiwi

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SUMMARY

Nowadays, people is being concerned about the risk of using synthetic colorants, thus the needs of natural colorants is increasing. Red beet is one of the foodstuffs that began widely used as natural colorant. Red beets as a natural colorant also provide health benefits. As natural colorant, red beet could be applied in the form of extract or powder. Red beet powder has more advantages than red beet extract because it has higher stability. Natural colorant could be applied in bakery product, such as cookies to give colour and make it as functional food. However, the ongoing heating process (baking process) could affect the changes of the cookies’ texture, and betalains content that contribute to the changes of the color intensity and antioxidant activity. The aim of this research was to determine the impact of red beet powder on the physicochemical characteristics such as color, texture, betalain content, and antioxidant activity of mocaf cookie and its rancidity during storage. Red beet powder with the concentration of 0%; 10%; and 20% were added. Cookies were analyzed at the time 0; 10; 20; 30 minutes during baking. Baking would decrease the intensity value of a*, antioxidant activity, and betalain content. At the first 10 minutes of baking, cookies with addition of 20% red beet powder produced the highest reduction of % discoloration which was 28.14%. Besides, at the first 10 minutes of baking, addition of 20% red beet powder resulted in the reduction of betacyanin and betaxanthin content of cookies which were 23.38% and 13.37% respectively. However, baking would increase the hardness value of cookies because of gelatinization. Furthermore, the addition of red beet powder in the cookies could decrease TBA value that resulted in the delay of rancidity level.
RINGKASAN

PREFACE

First of all, I want to dedicate my greatest gratitude to Jesus Christ, who has blessed me and gave His grace, wisdom and guidance in the long journey to finish this experiment and thesis. Over a period of practicing the experiment and writing this thesis, author had been searching and obtaining multiple kind of knowledge, information and views that were very useful in compiling this thesis, which the process is very valuable and memorable experience for the author in the journey of stepping the next level in life.

This research titled “THE STABILITY EVALUATION AND RANCIDITY OF RED BEET (Beta vulgaris L) POWDER AS A NATURAL COLORANT OF COOKIES”. This modest and imperfect thesis can nicely be done with the help, supports, prayer and advice from several individuals that the author very honored and grateful for. In every phase and every challenge in the way, there will always persons who generously lend their heart, mind and time. The author would like to gratefully acknowledge those wonderful persons:

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Personally, I am very thankful to all food scientists as the authors of the journals, articles and books that I’ve been cited for compiling this thesis. They have shared their knowledge by made their research and information available to me, therefore it is for them and future scholars that I am attempting to make this thesis more readily available. I hope it is useful and become a meaningful contribution to food science education.

Semarang, October 2015
Author,

Ivana Aprilia Pratiwi
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