

**DEMONSTRATION OF PHYSICAL PHENOMENAS AND SCAVENGING
ACTIVITY FROM D-PSICOSE AND METHIONINE
MAILLARD REACTION PRODUCTS**

BACHELOR THESIS

Composed by

ARUM TIYAS SUMINAR



**FOOD TECHNOLOGY STUDY PROGRAM
DEPARTMENT OF AGRICULTURAL SCIENCES
FACULTY OF ANIMAL AND AGRICULTURAL SCIENCES
DIPONEGORO UNIVERSITY
SEMARANG, INDONESIA
2017**

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**As One of Requirements for Bachelor Degree in Food Technology
Study Program Faculty of Animal and Agricultural Sciences
Diponegoro University**

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2017**

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Hereby declare as follows:

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Demonstration of Physical Phenomenas and Scavenging Activity from D-Psicose and Methionine Maillard Reaction Products, and the research related to this scientific work is the result of my own work.
2. Each core or citation from other people in the form of publications in this scientific work has been recognized in accordance with standard procedures.
3. I also recognize that this scientific work has been done under supervision of: **Ahmad N. Al-Baarri, S.Pt., M.P., Ph.D and Prof. Dr. Ir. Anang M. Legowo, M.Sc.**

Semarang, March 2017



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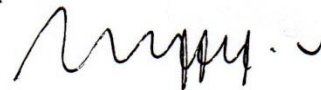
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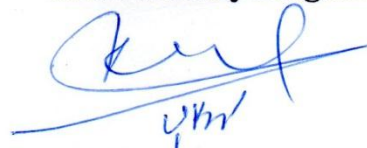
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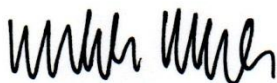
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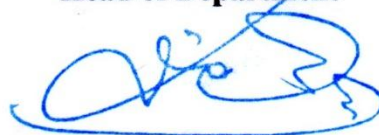
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SUMMARY

ARUM TIYAS SUMINAR. 23020113140055. Demonstration of Physical Phenomenas and Scavenging Activity from D-Psicose and Methionine Maillard Reaction Products. (Supervisor : Ahmad N. Al-Baarri, S.Pt., M.P., Ph.D and Prof. Dr. Ir. Anang M. Legowo, M.Sc.)

Maillard reaction has been well understood as a non-enzymatic reaction between reducing sugars and amino acids to generate the Maillard reaction products (MRPs). This study is aimed to demonstrate the browning intensity, color development, spectra measurements, scavenging activity, and the correlation between browning intensity and scavenging activity of the MRPs generated from D-Psicose and Methionine (Psi-Met) at 50°C. This finding may provide beneficial information of D-psicose and MRPs for the next scientific research, and may provide beneficial information of D-psicose to the food industries which applies MRPs in their products.

The materials on this present study are D-psicose, D-fructose, Methionine, ABTS or 2,2'-azino-bis (3-ethylbenzthiazoline-6-sulfonic acid). Unless otherwise specified, all other chemicals were reagent grade. The method on this present study is consist of MRPs model preparation, physical and chemical analysis, which are browning intensity, color development, spectroscopic measurements, and ABTS radical scavenging activity. The browning intensity of MRPs was investigated based on the absorbance using spectrophotometer at 420 nm, the color development was observed using digital colorimeter to gained browning index value, the spectra was analyzed using spectrophotometer at 190 - 750 nm, and the scavenging activity was determined with ABTS method using spectrophotometer at 734 nm. Then, the correlation between browning intensity and scavenging activity was analyzed using GraphPad Prism to know the significance.

During the Maillard reaction process to generate MRPs, Psi-Met were showing better performance than Psi. The browning intensity, color development, and scavenging activity were improved according to the heating process increased. The MRPs product derived from Psi-Met was able to produce at 21 proven by spectrum measurements. The correlation between browning intensity and scavenging activity were assigned positive non-linear correlation and significant correlation. Essentially, the MRPs derived from Psi-Met have better scavenging activity and physical phenomenas than the heated product of Psi.

PREFACE

Praise and great gratitude to Almighty God, Allah s.w.t., who always gives His gracious mercy and tremendous blessing that has helped the author to successfully finish this bachelor thesis with the title, “Demonstration of Physical Phenomenas and Scavenging Activity from D-Psicose and Methionine Maillard Reaction Products”. This bachelor thesis is as a requirement in accomplishing the Bachelor Degree of Agricultural Technology at Food Technology Study Program, Department of Agricultural Sciences, Faculty of Animal and Agricultural Sciences, Diponegoro University.

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Semarang, Indonesia, March, 2017

Author,

Arum Tiyas Suminar

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