

**ANTINUTRITIONAL FACTORS OF TEMPEH AND OVERRIPE TEMPEH
MADE WITH GLUCONO DELTA-LACTONE ACCELERATED
ACIDIFICATION**

By

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11405011

BACHELOR'S DEGREE
in

Food Technology
Faculty of Life Sciences and Technology

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August 2018

Revision after the Thesis Defense on 27th July 2018

STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

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ABSTRACT

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Tempeh-making process were known to reduce antinutritional factors in its original soybean. However, the effect of further fermentation in overripe tempeh as well as elimination of lactic acid fermentation step in GDL-accelerated acidification in the process are yet to be evaluated. In this study, the effect of both overripping process and GDL acidification was evaluated towards antinutritional factors, which include phytic acid, trypsin inhibitor, tannins and saponins.

Phytic acid and trypsin inhibitor analyses were done using enzymatic reactions. Tannins analysis was conducted with the aid of HPLC, while analysis of saponins was conducted with qualitative foam formation method. The absence of natural lactic acid fermentation and shorter mold fermentation in GDL acidified tempeh processing does not affect antinutritional factors reduction. The impacts of overripping process in the reduction of antinutritional factors were only observed in phytic acid and saponins. Overripping process was shown to reduce phytic acid content from 1.072 g/100g to 0.774 g/100g in the application of natural acidification, and from 1.253 g/100g to 0.850 g/100g in the application of GDL acidification. Although it was already found that fermentation was able to reduce saponin content proportionally to the length of fermentation, this is the first study to show that overripping process was able to eliminate saponin content.

Keywords: GDL acidification, Antinutritional factors, Overripe tempeh



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DEDICATION

I dedicate this work to all the people who have supported and guided me throughout
my thesis journey.

I could never thank you enough for believing in me.



ACKNOWLEDGEMENTS

First and foremost, I would like to thank God for the strength, guidance and blessings that He has given me throughout this thesis period. I would not have been able to do any of this without His blessings.

I would also like to thank my beloved parents for being my constant support system, for always believing in me and showering me with love. I wish to express my gratitude to my thesis advisor, Mrs. Maria D. P. T. Gunawan-Puteri, M.Sc, Ph.D, and my thesis co-advisor, Prof. Dr. Ir. Hanny Wijaya, M. Agr., for all the guidance, support, kindness and also for their time.

I wish to thank Ms. Purwanty Rara Azura, Mr. Gerald Justin, S. T., B. Eng, Ir. Abdullah Muzi Marpaung, M. P., Mr. M. Roziq and Ms. Silvy Yusri, not only for their support and help throughout my research, but also for the laughter in the midst of stressful days. To Ms. Fellicia Kristianti, S. T., B. Eng., for all her guidance, support and for listening to my problems.

Thank you, Dimas Prasetyo, for always being there for me. Thank you for being a shoulder to cry on and an ear to bend. Thank you for all the times you managed to make me laugh despite of my sobby eyes. I am grateful to have Amanda Celina with me throughout my thesis period, for all the stories and inside jokes we shared, also for her support and encouragement. I would also like to thank Gabriella Putri Gunawan, Jevon Ardy Santoso and Jennifer Sunardi for their help during my research.

Last but not least, I wish to thank the lecturers and staff of Life Sciences and Technology faculty who have taken part in helping me doing my thesis. I may not be able to mention your name one by one, but I am truly grateful for all your guidance and support.

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