

ABSTRACT

HALAL CAPSULE SHELL FORMULATION A COMBINATION OF CASSAVA PEEL STARCH (*Manihot esculenta*) AND CARRAGEENAN *Eucheuma cottoni*

Arika Putri Pratiwi

NIM 432022718009

This study examines the challenges and opportunities in the halal industry in Indonesia, particularly regarding the halal status of pharmaceutical products that use capsules as drug formulations. Indonesia faces significant issues related to the halal status of capsule ingredients, especially gelatin, which is typically derived from pig skin and poses concerns for Muslim consumers due to its haram status. Therefore, the researchers highlight the need for the development of alternative halal capsule materials derived from plants, namely cassava peel starch and carrageenan, as raw materials for capsule shells to replace gelatin. This study was conducted at the Integrated Laboratory of the Faculty of Health Sciences, University Darussalam Gontor, over three months. The capsule shells were made from a combination of cassava peel starch and carrageenan in five different ratios: 0.5:3 (F1), 1:3 (F2), 1.5:3 (F3), 0:3 (F4), and 3:0 (F5). Before the capsules were made, the cassava peel starch underwent organoleptic testing, amylopectin testing, cyanide acid testing, ash content testing, and water content testing. The characteristics tested included capsule shell specifications test, and capsule shell moisture content test, capsule shell ash content test, capsule shell disintegration time test. Data analysis using the One-Way ANOVA SPSS 16.0 program with a significance level of 95% and a post-hoc LSD test to determine the effect of different combinations of cassava peel starch and carrageenan on capsule shell evaluation. The results of the capsule shell specification tests were within the standards of PT. Kapsulindo and the Indonesian Pharmacopoeia, indicating that the moisture content, ash content, and disintegration time met the standards for all formulations. Meanwhile, the specifications for capsule body diameter, cap diameter, and length did not meet the standards; however, formulation 3 showed good potential as it was close to the established standard values, which was attributed to the manual printing process.

Keywords: amylopectin, capsule shell, carrageenan, cassava peel

ACKNOWLEDGEMENT

All praise and gratitude we offer to Allah SWT for His abundant mercy, blessings, and love, so that the author was able to complete this thesis entitled “**Halal Capsule Shells Formulation of Combining Cassava Peel Starch (*Manihot esculenta*) and Carrageenan *Eucheuma Cottoni***”. May blessings and peace be upon Prophet Muhammad SAW, for through his teachings, he has opened the way for us to enjoy a life filled with knowledge and technology as we do today.

The author is aware that the preparation of this thesis would not have been possible without the support, guidance, and assistance from various parties, both in moral and material form. Therefore, with humility, the author would like to express his deepest gratitude and appreciation to:

1. Al-Ustadz Apt. Amal Fadhollah, M.Si, as Dean of the Faculty of Health Sciences, Health Sciences, Darussalam Gontor University, and Academic Advisor (DPA)
2. Al-Ustadzah Apt. Nadia Iha Fatihah, M.Clin.Pharm, Head of the Pharmacy Program, who provided support and input during my studies.
3. Al-Ustadzah Nurul Marfu'ah, M.Si, as the first academic advisor and Al-Ustadz apt. Kurniawan, M. Farm, as the second academic advisor, has provided extensive guidance, support, and motivation in completing this thesis.
4. All lecturers and staff of the Pharmacy Program at Darussalam Gontor University who have imparted their knowledge and experience to the author during his studies, and may this be considered as acts of worship before Allah SWT and become a source of ongoing blessings for all, *Aamiin*.
5. My beloved parents, mother and father, and my beloved younger sibling, who have prayed for and provided support and encouragement to complete this thesis through a process that has taught me to continue learning and growing into a better person.

6. My friends in the Pharmacy Program at UNIDA Gontor, and friends who cannot be mentioned one by one, thank you for being my support system during the writing of this thesis. May you always be successful.

7. All parties who have helped and cannot be mentioned one by one.

The researcher hopes that this thesis will be beneficial to readers and can serve as a reference for the advancement of knowledge toward a better future.

Wassalamu'alaikum Wr. Wb.

Ponorogo,, 24 Oktober 2025

The Author



Arika Putri Pratiwi

NIM: 432022718009

