

THESIS
FORMULATION OF GUMMY CANDY FROM PEGAGAN LEAF
EXTRACT (*Cantele asiatica* (L) Urb.) WITH VARIATIONS OF *Eucheuma*
***cottonii* CARRAGEENAN AS A HALAL GELLING AGENT**



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PHARMACY STUDY PROGRAM
FACULTY OF HEALTH SCIENCES
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PONOROGO

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It is hereby stated that the thesis with the title:

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I sincerely declare that the research contained in this thesis is my own work and does not belong to anyone else. This thesis has never been published before, except for some parts with original references.

If in the future it is found that this work is plagiarism, I am ready to be given administrative and academic sanctions.

Ponorogo, 04th March 2025

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ABSTRACT

FORMULATION OF GUMMY CANDY FROM PEGAGAN LEAF EXTRACT (*Centella asiatica* (L.) Urb.) WITH VARIATIONS OF *Eucheuma cottonii* CARRAGEENAN AS A HALAL GELLING AGENT

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Gummy candy is a type of soft candy with a chewy texture, usually derived from various types of gelatine, known for its delicious taste and popularity among both children and adults. However, for Muslim consumers, gelatine poses a concern as it is often sourced from pork bones. To address this issue, *Eucheuma cottonii* carrageenan, a halal alternative, is used as a gelling agent. The active ingredient used is pegagan (*Centella asiatica*), which contains triterpenoid compounds that serve as cognitive function stimulants in the brain. This study aims to formulate and evaluate the quality of gummy candy containing pegagan extract with variations in *Eucheuma cottonii* carrageenan concentrations. The research is experimental, involving the preparation of three gummy candy formulations with a fixed pegagan leaf extract concentration of 1% and varying carrageenan concentrations: 4% (F1), 5% (F2), and 6% (F3). The evaluations conducted include organoleptic testing, chewiness testing, moisture content analysis, weight uniformity testing, pH measurement, and stability testing. The data were analysed using One-Way ANOVA, chewiness was assessed using the Kruskal-Wallis test, and stability was analysed using the Paired T-Test. The statistical program used was SPSS 26.00 with a 95% significance level. The results showed that the gummy candy had a greenish-white color, a distinctive pegagan aroma, a slightly bitter-sweet taste, and a chewy texture. The chewiness values ranged from 1.67 to 1.97, moisture content from 12.46% to 13.82%, and pH values from 5.58 to 5.8. Weight uniformity was within the acceptable range of column A (5%) and column B (10%). The moisture content and pH of all gummy candy formulations were stable ($p > 0.05$), except for the pH of F1 ($p < 0.05$). The variation in *Eucheuma cottonii* carrageenan concentrations did not have a significant effect on the chewiness of the gummy candy ($p > 0.05$).

Keywords: *Eucheuma cottonii*, gelling agent, gummy candy, carrageenan, pegagan

ABSTRAK

FORMULASI SEDIAAN GUMMY CANDY DARI EKSTRAK DAUN PEGAGAN (*Centella asiatica* (L) Urb.) DENGAN VARIASI KARAGENAN *Eucheuma cottonii* SEBAGAI GELLING AGENT HALAL

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Gummy candy merupakan jenis permen lunak yang memiliki Texture kenyal yang dihasilkan dari gelatin yang bervariasi, memiliki Taste enak dan disukai oleh anak hingga dewasa. Namun bagi masyarakat Muslim, gelatin memiliki permasalahan dikarenakan gelatin tersebut dihasilkan kebanyakan dari tulang babi. Oleh karena itu digunakan bahan pengganti yang halal yaitu karagenan *Eucheuma cottonii* sebagai gelling agent. Sedangkan zat aktif yang digunakan adalah pegagan karena memiliki senyawa triterpenoid sebagai stimulus fungsi kognitif pada otak. Penelitian ini bertujuan untuk membuat dan melakukan evaluasi sediaan mutu *gummy candy* dengan ekstrak pegagan dengan variasi karagenan *Eucheuma cottonii*. Penelitian ini adalah eksperimen dengan membuat 3 formula *gummy candy* dengan konsentrasi ekstrak daun pegagan 1% dan variasi konsentrasi karagenan *Eucheuma cottonii* yaitu 4% (F1), 5% (F2), dan 6% (F3). Evaluasi sediaan meliputi uji organoleptis, uji kekenyalan, uji kadar air, uji Weight Uniformity, uji pH dan uji Stability sediaan. Hasil sediaan di analisis menggunakan One Way ANOVA, uji kekenyalan menggunakan *Kruskal-wallis*, sedangkan uji Stability menggunakan analisis *Paired T-Test*. Program statistik yang digunakan adalah SPSS 26.00 dengan taraf signifikansi 95%. Hasil penelitian menunjukkan bahwa sediaan pada hasil uji organoleptik memiliki Colour putih kehijauan, aroma khas pegagan, Taste manis sedikit sepat, dengan Texture kenyal; nilai kekenyalan 1,67-1,97; kadar air 12,46% - 13,82%; nilai pH 5,58 – 5,8; Weight Uniformity tidak menyimpang dari rentang kolom A (5%) dan kolom B (10%). Kadar air dan pH seluruh formula sediaan *gummy candy* stabil ($p > 0,05$), kecuali pH F1 ($p < 0,05$). Konsentrasi ekstrak daun pegagan dan variasi konsentrasi karagenan *Eucheuma cottonii* berpengaruh tidak signifikan ($p > 0,05$) terhadap kekenyalan pada sediaan *gummy candy*.

Kata Kunci: *Eucheuma cottonii*, *gelling agent*, *gummy candy*, karagenan, pegagan

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PREFACE

Praise and gratitude be to Allah SWT, for His grace and guidance have enabled the author to complete this thesis, entitled "**Formulation of Gummy Candy from Pegagan Leaf Extract (*Centella asiatica* (L.) Urb.) with Variations of *Euclidean cottonii* Carrageenan as a Halal Gelling Agent**", in a timely manner. This thesis is written as a final project requirement for obtaining a Bachelor's degree (Strata 1) in the Pharmacy Study Program, Faculty of Health Sciences, Darussalam Gontor University.

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