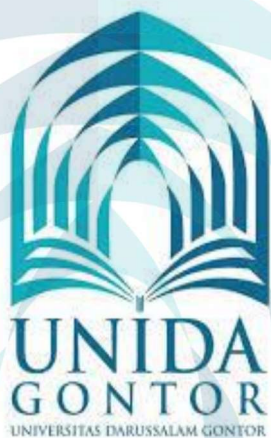


THESIS

**FORMULATION AND QUALITY EVALUATION OF WATERMELON
RIND EXTRACT (*Citrullus lanatus*) AND ANTI BACTERIAL ACTIVITY
TEST AGAINST *Staphylococcus aureus***



Prepared by:

Zohratun Fatimah

NIM 422021718081

**PHARMACY STUDY PROGRAM
FACULTY OF HEALTH SCIENCES
DARUSSALAM GONTOR UNIVERSITY**

PONOROGO

2025

VALIDITY SHEET

VALIDITY SHEET

It is hereby stated that the thesis with the title:

**"FORMULATION AND QUALITY EVALUATION OF WATERMELON RIND
EXTRACT (*Citrullus lanatus*) AND ANTIBACTERIAL ACTIVITY TEST AGAINST
Staphylococcus aureus"**

Written:

**Zohratun Fatimah
NIM 422021718081**

Has been tested and approved & before the Thesis Examiner Board

On: 31 December 2024

Examiner Board:

Supervisor I
Indriyanti Widyaratna M.Farm.
NIDN. 0713119603

Supervisor II
apt. Fauziyyah Al Hasanah, M.Farm.
NIDN. 0705089602

Examiner
Dr. Solikah Ana Estikomah, M.Si.
NIDN. 0716089501



Aproved by,

Head of Pharmacy Department
Faculty of Health Science, University of Darussalam Gontor



Apt. Nadia Iha Fatimah, M.Clin.Pharm.
NIDN. 0714059105

UNDA
GONTOR
UNIVERSITAS DARUSSALAM GONTOR

AUTHENTICITY STATEMENT

AUTHENTICITY STATEMENT

It is hereby declared by,

Nama : Zohratun Fatimah
NIM : 422021718081
Fakultas : Ilmu Kesehatan
Program studi : Farmasi
Judul penelitian : Formulasi dan Evaluasi Mutu Gel Ekstrak Kulit Semangka (*Citrullus lanatus*) serta Uji Aktivitas Antibakteri Terhadap *Staphylococcus aureus*

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, 22th January 2025

Writer,



Zohratun Fatimah
NIM. 422021718081

UNILA
GONTOR
UNIVERSITAS DARUSSALAM GONTOR

ABSTRACT

FORMULATION AND QUALITY EVALUATION OF WATERMELON RIND EXTRACT (*Citrullus lanatus*) AND ANTI BACTERIAL ACTIVITY TEST AGAINST *Staphylococcus aureus*

Zohratun Fatimah
NIM 422021718081

Antibacterial gel has become an alternative for treating acne-prone skin caused by bacteria. Long-term use of antibacterial gels can lead to irritation. One of the natural ingredients has potential as an antibacterial agent is watermelon (*Citrullus lanatus*) peel. The aim of this research is to evaluate the physical quality of the watermelon peel extract gel preparation and its effect on the growth of *Staphylococcus aureus*. This study is experimental, involving gel formulation with extract concentrations of 2%, 6%, and 10%, and physical quality tests such as organoleptic evaluation, viscosity (according to SNI 16-4380-1996), pH (according to SNI 06-2588-1996), spreadability test (according to SNI 06-2588-1992), homogeneity, syneresis, and antibacterial activity against *Staphylococcus aureus* using the well diffusion method. The results show that all gel preparations of watermelon peel extract meet SNI standards. The watermelon rind extract gel preparations are in gel form, with a transparent brown to dark brown color, a characteristic watermelon peel extract odor, and good homogeneity. The pH values range from 5.39 to 5.03, viscosity between 5,110 to 10,530 cPs, spreadability between 5.22 to 6.34, with no syneresis. The antibacterial activity test results show that all formulations have inhibition zone diameters of 0 mm, 6.54 mm, 10.24 mm, and 16.85 mm. The formulation with 10% extract (F3) has the highest inhibition with an inhibition zone diameter of 16.85 mm, categorized as strong. Therefore, it can be concluded that watermelon peel extract gel meets SNI standards and has antibacterial activity against *Staphylococcus aureus*. The watermelon peel extract gel formulation has the potential as a natural active ingredient alternative to address skin issues caused by *Staphylococcus aureus* bacteria.

Keywords: Acne, Antibacterial, Gel, *Staphylococcus aureus*, Watermelon Rind.

ABSTRAK
FORMULASI DAN EVALUASI MUTU GEL EKSTRAK KULIT
SEMANGKA (*Citrullus lanatus*) SERTA UJI AKTIVITAS ANTIBAKTERI
TERHADAP *Staphylococcus aureus*

Zohratun Fatimah
NIM 422021718081

Gel antibakteri kini menjadi alternatif untuk mengatasi kulit yang berjerawat dikarenakan bakteri. Penggunaan gel antibakteri dalam jangka panjang dapat menimbulkan iritasi. Salah satu bahan alami yang memiliki potensi sebagai agen antibakteri adalah kulit buah semangka (*Citrullus lanatus*). Tujuan penelitian ini untuk mengetahui evaluasi mutu fisik sediaan gel ekstrak kulit semangka serta pengaruhnya terhadap pertumbuhan *Staphylococcus aureus*. Jenis penelitian ini merupakan penelitian eksperimental meliputi formulasi gel dengan konsentrasi ekstrak 2%, 6% dan 10% dan dilakukan uji mutu fisik berupa organoleptis, viskositas (standar SNI 16-4380-1992), pH (Standar SNI 06-2588-1992), uji daya sebar (Standar SNI 06-2588-1992), homogenitas, sineresis serta uji anti bakteri terhadap *Staphylococcus aureus* menggunakan metode difusi sumuran. Hasil penelitian menunjukkan bahwa semua sediaan gel ekstrak kulit semangka memenuhi standar SNI. Sediaan gel Ekstrak Kulit Semangka berbentuk gel, berwarna coklat transparan hingga coklat pekat, berbau khas ekstrak kulit semangka, serta memiliki homogenitas yang baik. Nilai pH berada pada rentang 5,39-5,03, viskositas berkisar antara 5.110-10.530 cPs, daya sebar berkisar antara 5,22-6,34, tidak terjadi sineresis. Hasil uji efektivitas anti bakteri diperoleh semua formulasi memiliki diameter zona hambat sebesar 0 mm, 6,54, mm, 10,24, mm, dan 16,85 mm. Formulasi F3 dengan konsentrasi ekstrak 10% memiliki daya hambat paling tinggi dengan diameter zona hambat sebesar 16,85 mm kategori kuat. Sehingga dapat disimpulkan bahwa gel ekstrak kulit semangka memenuhi standar SNI serta memiliki kemampuan antibakteri terhadap *Staphylococcus aureus*. Formulasi gel ekstrak kulit semangka berpotensi sebagai alternatif berbahan aktif alami dalam mengatasi permasalahan kulit yang disebabkan oleh bakteri *Staphylococcus aureus*.

Kata kunci : Antibakteri, Gel, Jerawat, Kulit semangka, *Staphylococcus aureus*.

UNIDA
GONTOR
UNIVERSITAS DARUSSALAM GONTOR

FOREWORD

Alhamdulillahilahirabbil'alamin, all praise is due to the presence of Allah Subhanahu wa ta'ala. who has given and facilitated all affairs, so that the researcher can complete the final project with the title Thesis "Formulation and Quality Evaluation of Watermelon Peel Extract Gel (*Citrullus Lanatus*) and Activity Test against *Staphylococcus Aureus*", as one of the requirements to obtain a degree as a Bachelor of Pharmacy at Darussalam Gontor University. 'Then don't forget our great Prophet Muhammad (peace be upon him) who brought Muslims to the truth. Hopefully what is written and researched has many benefits and can be continued by further research to be even better.

The researcher realizes that behind the success in writing and researching this thesis there are people who always help from behind the researcher with prayers that never stop in every prayer. With this, the researcher would like to thank very much

1. Prof. Dr. Hamid Fahmi Zarkasyi. M.A., M.Phil as the Rector of Darussalam Gontor University. Dr. Abdul Hafidz Zaid, M.A., as the vice rector I of Darussalam Gontor University. Dr. Setiawan Bin Lahuri, M.A., as the vice rector II of Darussalam Gontor University.

2. apt. Amal Fadholah, S.Si., M. Si as the dean of the Faculty of Health Sciences, Darussalam Gontor University and Apt.Nadia Iha Fatihah, M. Clin. Pharm, as the Head of the Pharmacy Study Program at Darussalam University.

3. Indriyanti Widhyaratna M.Farm as the first supervisor and Fauziyyah Al Hasanah, M.Farm as the second supervisor who always provides motivation, guidance and direction from the beginning to the end of this thesis.

4. All Lecturers, Workers, Education Staff and Admin of the Pharmacy Study Program who have been willing to share their knowledge, guide and provide provision during the lecture process until the final thesis.

5. Both of my parents, my father Sabang Tikara S.Pd and Selvi, my dearest brother Ilham Fatahillah, my mother who I consider my real mother Mrs. Hamsia Rudin and Mrs. Zulaeha, as well as the entire extended family who have always provided motivation and support.

6. Friends in arms, especially members of the 2021 Pharmacy class at Darussalam Gontor University, my roommates, and my dearest overseas colleagues in Sulawesi, the sadness of motivation and abundant support in these last years.

7. To all parties who cannot be mentioned one by one who have helped the smooth running of this thesis and provided prayers, support, and encouragement to the researcher.

Ponorogo, 28 August , 2024

Researcher

Zohratun Fatimah

NIM : 422021718081

UNIDA
GONTOR
UNIVERSITAS DARUSSALAM GONTOR