CHAPTER 1

INTRODUCTION

1.1 Background

The part of the body that is most often exposed to sunlight is the skin. The skin is the outermost layer of the human body that can receive stimulation and interact with the surrounding environment. Soft, smooth and healthy skin is everyone's dream, one of the most common skin problems is dry skin.[1] Currently, people are increasingly aware of maintaining body hygiene and skin health. People are also aware that the effects of long-term use of chemicals are detrimental to health.[2]

The negative impact of chemicals has the potential to cause skin irritation for individuals suffering From dry skin.[3]Dry skin produces sebum that can increase the risk of bacterial exposure so it requires effective and efficient protection against bacteria. One way of protection is by using soap. Currently, antibacterial soap is highly demand by the public because it can effectively cleanse the skin with its antibacterial properties.[4]Soap, besides cleaning the skin, can also soften and maintain the health of the skin.[5]

Soap has 2 types, solid and liquid, the advantage of solid soap is that it is available in various variations.[6]Solid soap has good physical stability and is economical.[7]The use of natural ingredients as antimicrobials that can be used in

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[1] Maria Butar-Butar and Anis Chaerunisaa, "The Role of Moisturizers in Treating Dry Skin Conditions" 6 (October 29, 2020): 56–69.

[2] Selamet Riadi et al., "The Effect of Different NaOH Doses on Soap Making Using One-Way Anova Method and Determination of the Comparison of 3 Types of Oil as Main Ingredients Using the AHP Method on Environmentally Friendly Bath Soap Products," J. Ilm. Tech. Ind 8, no. 2 (2020): 101–12.

[3] Shaninda Alyaziyan, Didit Widiatmoko Soewardikoen, and Rizki Yantami Arumsari, "Designing the Brand Identity of Barraka Worksoap UMKM and Its Application," eProceedings of Art & Design 8, no. 3 (2021).

[4] Lela Sulastri and Yayan Rizikiyan, "Formulations transparent soap solid lime juice (Citrus aurantifolia Swingle)," Journal of Transparent Solid Soap Formulation 1, no. 1 (2016): 8–16.

[5] Nurul Muti'ah, Endang Setia Muliawati, and Dyah Ayu Suryaningrum, "Natural Soap Production from Aloe Vera and Ginger Using the Cold Process Method:-," Journal of Applied Agriculture, Health, and Technology 1, no. 2 (2022).

[6] Nina Arlofa et al., "Making Solid Bath Soap from Waste Cooking Oil," Jurnal Chemtech 7, no. 1 (June 1, 2021): 17–21.

[7] Elfia Neswita, "Comparative physical evaluation of solid soap formulation of 96% ethanol extract of leeks by utilizing used cooking oil and packaged palm oil," Jurnal Prima Medika Sains 3, no. 2 (2021): 68–73.

soap preparations is whey containing lactoferrin as an inhibitor of microbial growth.[8]Whey can come from goat or cow's milk after cheese production involves coagulation, which is the breakdown of milk proteins by a heat process.[9]

Additional ingredients in soap production to improve the aesthetics of soap, such butterfly pea flowers as natural dyes have a fairly high anthocyanin content. Anthocyanins are pigments with blue or purple colors are secondary metabolite compounds found in various plants such as flowers, fruits, and vegetables.[10]The use of butterfly pea flower powder (Clitoria ternea L) as a natural dye in soap products is still rarely done, most still use synthetic dyes which have the potential to irritate the skin, especially for sensitive skin.

This study aims to overcome skin problems that are at risk of bacterial exposure and the utilization of cheese whey waste. Preparation of solid soap using yoghurt whey as a base ingredient and butterfly pea flower powder (Clitoria ternea L) as a natural dye and evaluate its benefits and effectiveness. It is hoped that this product can provide a healthier and more natural alternative, while also increase the added value of local products.

1.2 Problem Formulation

1. Does the solid yoghurt whey soap from butterfly pea flower (Clitoria ternea L) meet the quality standards of the Indonesian National Physical Standard 3532-2016 ?
2. Which formula best meets the quality of the Indonesian National Physical Standard 3532-2016 ?

1.3 Research Objectives

1. Knowing that the solid soap of butterfly pea flower whey yoghurt (Clitoria ternea L) meets the quality of the Indonesian National Physical Standard 3532-2016 .

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[8] Maxs UE Sanam, "Potential Antimicrobial in Whey and Latic Acid Bacteria in Sumba Mare's Milk," ResearchGate 10, no. 1 (2022): 97–98.

[9] Thomas Bintsis and Photis Papademas, "Sustainable approaches in whey cheese production: A review," Dairy 4, no. 2 (2023): 249–70.

[10] Purwaniati Purwaniati, Ahmad Rijalul Arif, and Anne Yuliantini, "Analysis of Total Anthocyanin Content in Butterfly Pea Flower Preparations (Clitoria Ternatea) Using Differential Ph Method Using Visible Spectrophotometry," Farmagazine Journal 7, no. 1 (2020): 18–23.

2. Knowing the best formula to meet the Indonesian National Physical Standard 3532-2016 .

1.4 Benefits of research

1.4.1 Theoretical Benefits

The results of this study are expected to be additional scientific insight for the community, along with a source of scientific information for further research on the use of whey yoghurt and butterfly pea powder (Clitoria ternea L) as natural dyes in making solid soap.

1.4.2 Benefits of Practice

The results of this study are expected to be used as a reference in the development of pharmaceutical preparations in the industrial sector, especially cosmetics, by utilizing whey yoghurt and butterfly pea powder (Clitoria ternea L) as natural dyes in the manufacture of solid soap.

1.5 Originality of research

Table1. Research Authenticity

Research Title	Research methods	Variable	Results	Research Differences
Evaluation of the quality of transparent solid soap from whey waste with butterfly pea flower extract (Clitoria ternatea L.).[11]	Experimental	**Dependents :** Making transparent solid soap **Independent:** Tofu whey waste and butterfly pea flower extract	The addition of butterfly pea flower extract (Clitoria ternea L) produces a yellowish white soap preparation, pH 10.7, foam stability 70%. Water content 29% and non-irritating	**Dependents :** Solid soap preparation formulation **Independent :** Combination of whey yoghurt and butterfly pea flower powder (Clitoria ternea L)
Evaluation of butterfly pea flower (Clitoria ternatea L.) extract soap and its potential antioxidant activity.[12]	Experimental	**Dependents :** Solid soap **Independent :** Butterfly pea flower extract (Clitoria ternea L)	The absorption value was measured using a UV-Vis spectrophotometer at a	**Dependents :** Solid soap preparation formulation

[11] Eva Malahayati, Dian Puspita Anggraini, and Latifatul Nararia Kusuma, "Quality evaluation of transparent soap from whey waste with butterfly pea flower extract (Clitoria ternatea L.)," Indonesian Journal of Biology Education 6, no. 2 (2023): 69–77.

[12] Nur Amira Abd Rashid, Anggzas Sari Mohd Kassim, and Aisyah Mohamed Rehan, "Evaluation of Butterfly Pea Flowers for Antioxidant Activity and its Potential as Antioxidant Soap," Progress in Engineering Application and Technology 3, no. 1 (2022): 64–73.

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Research Title	Research methods	Variable	Results	Research Differences
		Antioxidant activity	wavelength of 517 nm.	**Independent :** Combination of whey yoghurt and butterfly pea flower powder (Clitoria ternea L)
Antimicrobial activity of natural solid soap from a combination of cheese liquid waste and turmeric (Curcuma longa) and dragon fruit skin (Hylocereuspolyrhizus) .[13]	Experimental	**Dependents:** Antimicrobial activity of soap **Independent :** Extracturmeric (Curcuma longa) and dragon fruit skin (Hylocereuspolyrhizus	The 100% whey formula is the best formula because it has good physicochemical properties and good antimicrobial activity.	**Dependents :** Solid soap preparation formulation **Independent :** Combination of whey yoghurt and butterfly pea flower (Clitoria ternea L)
Utilization of fermented whey cheese with kefir grains as an antibacterial solid soap.[14]	Experimental	**Dependents:** Antimicrobial activity of soap **Independent :** whey cheese fermented with kefir grains	All solid whey kefir soap formulas meet SNI requirements with the best formula for 100% whey soap variations.	**Dependents :** Solid soap preparation formulation **Independent :** Combination of whey yoghurt and butterfly pea flower powder (Clitoria ternea L)
Evaluation of the physical properties of liquid soap preparations from butterfly pea flower extract (clitoria ternatea).[15]	Experimental	**Dependents:** Independent evaluation of physical properties of liquid soap preparations:	The physical characteristics of liquid hand soap with butterfly pea flower extract (clitoria ternatea) have	**Dependents :** Solid soap preparation formulation **Independent :**

[13] Solikah Ana Estikomah et al., "Antimicrobial Activity of Natural Solid Soap with a Combination of Liquid Cheese Waste, Turmeric (Curcuma longa), and Dragon Fruit (Hylocereus polyrhizus) Peel," Molecule 18, no. 3 (2023): 434–41.

[14] Solikah Ana Estikomah et al., "The Utilization of Whey Cheese Fermented with Kefir Grains as An Antibacterial Solid Bar Soap" 6 (2024): 664–71.

[15] Dwi Endah Kusumawati and Rega Puspitasari, "Evaluation of Physical Properties of Liquid Soap Preparations from Butterfly Pea Flower Extract (Clitoria ternate)," Indonesian Journal of Medical and Pharmaceutical Science 2, no. 2 (2023): 48–53.

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Research Title	Research methods	Variable	Results	Research Differences
		Butterfly pea flower extract (clitoria ternatea)	met SNI standards and have an attractive color due to the anthocyanin content.	Combination of whey yoghurt and butterfly pea flower powder (Clitoria ternea L)

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