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Forensic Pharmacy Case Study: Identification of Hazardous Mercury Content as a Whitening Agent in Beauty Cream Products

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ABSTRACT

Forensic pharmacy is crucial in identifying hazardous substances like mercury in beauty products. Counterfeit items with mercury pose health risks, emphasizing the need for accurate identification methods. The research, employing content analysis, focuses on illegal cosmetics containing mercury, aiming to understand distribution patterns and assess associated health risks. This systematic approach provides valuable insights into public health issues, contributing to safer regulatory practices. The utilization of these products may pose serious health risks to consumers. The implicated products include Temulawak New Day & Night, CAC Glow, Natural 99, HN (Day & Night), SP Special UV Whitening, Dr Original Pemutih, Super DR Quality Gold SPF 30, Diamond Cream, Herbal Plus New Day & Night, Ling Zhi Day & Night, Sj Sin Jung, Tabita, and Krim Labella. In Indonesia, the use of mercury in cosmetic products is prohibited by legislation, such as Law Number 32 of 2009 on Environmental Protection and Government Regulation of the Republic of Indonesia Number 81 of 2016 on the Security of Industrial Chemicals. Additionally, BPOM, responsible for overseeing drugs, food, and cosmetics, has issued relevant regulations

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INTRODUCTION

Forensic pharmacy has experienced rapid growth and plays a significant role in supporting law enforcement and justice. One of the primary focuses in forensic pharmacy is the identification of hazardous substances in consumer products, particularly beauty products. The increasing use of skincare and beauty products underscores the urgency of research related to the identification of potentially harmful substances they may contain (Smith, 2021).

One hazardous substance that has garnered widespread attention in beauty products is mercury. The use of mercury as a whitening agent in beauty creams is often adopted to achieve quick results. However, the use of mercury in cosmetic products poses serious risks to consumer health, including the potential for mercury poisoning that can harm vital organs such as the kidneys and central nervous system (Jain, 2021).

The identification of hazardous substances, especially mercury, in beauty products requires a meticulous scientific approach. In this regard, research in forensic pharmacy plays a crucial role in developing accurate and reliable identification methods to detect mercury content in beauty products. The prevalence of cases involving counterfeit beauty products containing mercury as a whitening agent further emphasizes the urgency of this research. Counterfeit product actions not only jeopardize consumer health but also harm the beauty industry as a whole. Therefore, in-depth case studies are necessary to identify the contents of hazardous substances, especially mercury, in beauty product creams (Smith, 2021).

This research not only impacts clinical and public health fields but also supports the development of stricter regulatory policies concerning the use of hazardous substances in cosmetic products. As a result, this research is directed towards making a positive contribution to maintaining consumer safety and health while simultaneously enhancing the quality of beauty products circulating in the market (Smith, 2021).

LITERATURE REWIEW

This research aims to conduct a comprehensive investigation within the discipline of forensic pharmacy, with a focus on the identification of hazardous mercury-containing substances as whitening agents found in beauty cream products circulating in the market. The initial phase of the study involves a comprehensive analysis of the content of hazardous mercury-containing substances in products using modern and accurate laboratory analysis techniques. Subsequently, the research will evaluate potential health impacts arising from the use of beauty products containing hazardous mercury-containing substances, with a specific emphasis on the risks of toxicity and possible side effects (Sudarmadji, 2022).

Other aspects of this research will include an investigation into the sources of contamination of hazardous mercury-containing substances in beauty products, whether originating from raw materials or manufacturing processes, with the aim of forming a holistic picture related to the supply chain of these products. Furthermore, the research will formulate identification guidelines that can be adopted by regulatory authorities and the pharmaceutical industry to

detect the presence of hazardous mercury-containing substances in beauty products. The formulation of policy recommendations will also be undertaken to enhance supervision and control over the use of hazardous mercury-containing substances in beauty products (Paramitha, 2023).

The results of this research will be disseminated widely to the public as an effort to increase consumer awareness of associated potential risks. Overall, this research is expected to make a substantial contribution to advancements in forensic pharmacy, particularly in the context of identifying hazardous mercury-containing substances in cosmetic products, and serve as a foundation for the development of safer and more sustainable regulatory and industry practices (Setiawan, 2023).

METHODOLOGY

This research employs a content analysis design, focusing on data obtained from articles published by the National Agency of Drug and Food Control (Badan Pengawas Obat dan Makanan or BPOM) and available through the online news platform at https://kumparan.com. The primary focus of this research centers on articles titled "BPOM Discovers 1,541 Illegal Cosmetics, 13 of Them Contain Mercury," accessible via the link https:// kumparan.com/ kumparanwoman/bpom-discovers-1-541-illegal-cosmetics-13-of-them-contain-mercury-20j8LKp1itD. The data collection process is conducted meticulously, where the researcher identifies and analyzes information related to illegal cosmetic products containing mercury, as revealed in the content of those articles.

The initial steps of this research involve the identification of illegal cosmetic products reported by BPOM, particularly those detected to contain mercury. Subsequently, content analysis is performed, considering the classification of products based on type and brand, aiming to comprehend the distribution patterns of products in the beauty market. This process aims to gain a deeper understanding of the characteristics and prevalence of illegal cosmetic products containing mercury in Indonesia.

The success of this research lies not only in the identification of products but also in evaluating the potential health risks that may arise from the use of these illegal cosmetic products. Therefore, content analysis is not limited to product identification; it also involves assessing the health risks that may emerge due to consumer use. The entire research process is executed meticulously and systematically, ensuring the accuracy and precision of the content analysis drawn from the specified data sources. Thus, this research is expected to provide valuable insights regarding public health issues associated with the use of illegal cosmetic products containing mercury.

RESEARCH RESULT

The Indonesian Food and Drug Administration (BPOM) has released startling information regarding the presence of illegal cosmetic products in the market in 2022. According to BPOM, approximately 1,541 illegal cosmetic products were successfully identified circulating in the market during that year, sparking serious concerns regarding the supervision and quality control of beauty products in Indonesia. More worrisome is the fact that, out of this total, 13 products were found to contain mercury, a substance explicitly prohibited by BPOM for use in skincare products.

Mercury is a substance with a high level of health risk and the potential to have adverse effects on the skin and other organs of the body. The prohibition of its use in skincare products is a measure taken by BPOM to safeguard consumers from potential serious health risks. This finding indicates that some cosmetic manufacturers or distributors may be disregarding the rules and regulations established by regulatory authorities.

Table 1. List of Illegal Cosmetic Products

No.	Product Name	Description
1	Temulawak New Day & Night	Coptains Merkury
2	CAC Glow	Coptains Merkury
3	Natural 99	Coptains Merkury
4	HN (Siang & Malam)	Coptains Merkury
5	SP Special UV Whitening	Coptains Merkury
6	Dr Original Pemutih	Coptains Merkury
7	Super DR Quality Gold SPF 30	Coptains Merkury
8	Diamond Cream	Coptains Merkury
9	Herbal Plus New Day & Night	Coptains Merkury
10	Ling Zhi Day & Night	Coptains Merkury
11	Sj Sin Jung	Coptains Merkury
12	Tabita	Coptains Merkury
13	Krim Labella	Coptains Merkury

Source : BPOM, 2023

The list comprises 13 illegal cosmetic products containing harmful substances such as mercury. The utilization of these products may pose serious health risks to consumers. The implicated products include Temulawak New Day & Night, CAC Glow, Natural 99, HN (Day & Night), SP Special UV Whitening, Dr Original Pemutih, Super DR Quality Gold SPF 30, Diamond Cream, Herbal Plus New Day & Night, Ling Zhi Day & Night, Sj Sin Jung, Tabita, and Krim Labella.

Each product, namely New Day & Night, CAC Glow, Natural 99, HN (Day & Night), SP Special UV Whitening, Dr Original Pemutih, Super DR Quality Gold SPF 30, Diamond Cream, Herbal Plus New Day & Night, Ling Zhi Day & Night, Sj Sin Jung, Tabita, and Krim Labella, raises serious concerns due to its potential to induce side effects and negative impacts on both skin and overall health. The presence of mercury in these products violates established cosmetic

safety standards. Mercury can cause poisoning that jeopardizes internal organs; hence, it is advised to completely refrain from using these illegal cosmetic products.

DISCUSSION

Thirteen illegal cosmetic products containing prohibited substances have been identified, one of which is a skin brightening product containing mercury. Despite the quick results that mercury-containing skin brightening products may provide, it should be noted that the use of illegal cosmetics, especially those containing mercury, poses health risks.

The National Agency of Drug and Food Control (Badan Pengawas Obat dan Makanan - BPOM) has issued a statement emphasizing that illegal skincare products containing prohibited substances can lead to various negative impacts, including cancer. Mercury is a carcinogenic and teratogenic substance, meaning it can cause defects in fetuses if used by pregnant women.

The use of forbidden substances, such as mercury, in skincare products can pose serious health risks. Various negative effects may arise from mercury, with the most severe threat being the risk of skin cancer. The use of illegal cosmetics also carries high risks as it cannot guarantee safety, benefits, and quality. Mercury content in skincare products has the potential to be absorbed by the body through the skin, leading to damage to vital organs such as the brain, nervous system, and kidneys.

The negative impacts that may result from mercury use on the skin should not be ignored. Mercury can damage the skin, trigger rashes, and cause the appearance of undesirable spots. Moreover, the use of mercury can result in changes in skin color, giving an unhealthy appearance with a grayish tint. Therefore, it is crucial for consumers to always check and ensure that the skincare products they use have undergone safety testing and do not contain harmful substances like mercury. Awareness of the risks associated with the use of prohibited substances is key to maintaining skin health and overall safety.

In Indonesia, the use of mercury in cosmetic products is prohibited by legislation, such as Law Number 32 of 2009 on Environmental Protection and Government Regulation of the Republic of Indonesia Number 81 of 2016 on the Security of Industrial Chemicals. Additionally, BPOM, responsible for overseeing drugs, food, and cosmetics, has issued relevant regulations.

BPOM has issued Head of the National Agency of Drug and Food Control of the Republic of Indonesia Regulation Number 19 of 2016 concerning Cosmetic Safety Requirements, explicitly prohibiting the use of hazardous substances, including mercury, in cosmetic products.

These provisions render cosmetic products containing mercury as violations of regulations, and those involved may be subject to sanctions in accordance with Indonesian laws. The government and related agencies continue to conduct strict supervision to ensure that cosmetic products circulating in the market meet safety standards and can be safely used by the public.

CONCLUSIONS

The Indonesian Food and Drug Supervisory Agency (Badan Pengawas Obat dan Makanan or BPOM) reported the presence of 1,541 illegal cosmetic products in the Indonesian market in 2022, raising concerns regarding the oversight and control of the quality of beauty products. Out of this total, 13 products were found to contain mercury, a substance prohibited by BPOM. Mercury poses a high level of health risk and can have negative impacts on the skin and internal organs. Identified illegal products, such as Temulawak New Day & Night, CAC Glow, and others, raise serious concerns as they have the potential to generate side effects and negatively impact health. BPOM emphasizes the prohibition of mercury use in skincare products as a measure to protect consumers from serious health risks. During discussions, it is emphasized that the use of illegal cosmetics, especially those containing mercury, can result in negative impacts such as cancer and various other health risks. In Indonesia, the use of mercury in cosmetic products is prohibited by legal regulations, and BPOM rigorously monitors the safety of cosmetic products to ensure compliance with regulations. Awareness of the risks associated with the use of harmful substances is crucial in maintaining overall skin health and safety.

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