Analysis of the Clinical Volunteer Complaint
Relation with Dangerous Substances in Cosmetic
Formula Used

Titik Taufikurohmah*, Siti Tjahjani, I Gusti Made Sanjaya, Andika Pramadya
Department of Chemistry
Universitas Negeri Surabaya
Surabaya, Indonesia
titiktaufikurohmah@unesa.ac.id

Hans Lumintang
Department of Dermatology and Sex
Universitas Widy Mandala
Surabaya, Indonesia

Tjandra Kirana
Department of Biology
Universitas Negeri Surabaya
Surabaya, Indonesia

Afaa Bakhtir
Department of Chemistry
Universitas Airlangga Surabaya
Surabaya, Indonesia

Adi Soeprijanto
Department of Electrical Engineering
Institut Teknologi Sepuluh Nopember
Surabaya, Indonesia

Abstract—Dangerous substances in cosmetics have been widely known especially mercury face whitening. Socialization of the impact has also been made by NA-DFC (The National Agency of Drug and Food Control). However, the circulation of cosmetics contain mercury still exist on the community society. It needs an effort to convince the society about the dangers of mercury, by showing directly the users complaints data about cosmetics that contain mercury on it. The research got accurate data from those cosmetic user as volunteer. This research is intended to give accurate information on the impact of the use of cosmetics containing that contain mercury on the face through the volunteers complaints in medical records. Research data in the form of volunteer medical record data and the data content of mercury in cosmetics are used. The result showed there are strong correlation between volunteer complaints i.e., spot, acne and blackheads with mercury that contains in cosmetics formula used. It can be concluded that mercury in cosmetics causes dangerous effects including spot, acne and blackheads. It is hoped that this research will bring cosmetics users not to use mercury cosmetics although the result is nice in the beginning.

Keywords—cosmetics, mercury, black spot, acne, blackheads.

I. INTRODUCTION

The use of whitening in cosmetics is already common nowadays, even dangerous materials. Dangerous whitening material in cosmetics include mercury [1], hydroquinone [2], retinoic acid [3] and alpha hydroxy acid (AHA) (KEUN, HEE and JIN 2010). This is inseparable from misleading advertising that is often shown in the society that beautiful is identical to whites. This also triggers from misleading advertising that is often shown in the community society. It needs a effort to convince the society about the dangers of mercury, by showing directly the users complaints data about cosmetics that contain mercury on it. The research got accurate data from those cosmetic user as volunteer. This research is intended to give accurate information on the impact of the use of cosmetics containing that contain mercury on the face through the volunteers complaints in medical records. Research data in the form of volunteer medical record data and the data content of mercury in cosmetics are used. The result showed there are strong correlation between volunteer complaints i.e., spot, acne and blackheads with mercury that contains in cosmetics formula used. It can be concluded that mercury in cosmetics causes dangerous effects including spot, acne and blackheads. It is hoped that this research will bring cosmetics users not to use mercury cosmetics although the result is nice in the beginning.

Keywords—cosmetics, mercury, black spot, acne, blackheads.

By regulating the use of dangerous substances in cosmetics it will be avoided [12][13]. Mercury in cosmetics has caused many metabolic disorders in a variety of important human tissues. In addition to damage to the skin, also damage to the kidneys, lung damage, heart damage, reproductive organ damage, brain [13] and nerve (Luiza et al 2016.) damage due to accumulate in the brain (Pereira et al 2016.) and liver damage [7][14]. The damage caused by the use of mercury in cosmetics is not only limited to tissue but also to the cellular level that causes cell mutation and cancer [15]. Mercury inflicts directly on Melanocyte cells where the presence of mercury initially suppresses this cell's work and further disrupts the cell metabolic system [16][17]. Indeed melanocyte cells are in charge of keeping the skin surface from damage caused by sunburn, especially Ultra Violet rays by releasing melanin as a skin cells protector [18].
This research is intended to express the complaints of cosmetic users containing mercury as a form of awareness and increased public awareness of the existence of this cosmetic in order not to become next victims of cosmetics containing mercury.

II. MATERIALS AND METHOD

This research involves cosmetic user as a volunteer with the age limit of 15 years and over, beside checking volunteers’ skin health they brought their cosmetics sample which will be analyzed it contains mercury or not through Chemical Laboratory with Voltammetry Striping Ion method. Volunteers also receive sufficient explanation regarding this research and sign an agreement or inform consensus agreement and also they have the freedom to cancel if they change their mind later. As well as the confidentiality volunteers’ identity and the result of the research will be the responsibility of the researcher who will use them as scientific data to be published in accordance with the agreed ethics and with the approval of the Research Ethics Commission Volunteer’s medical conditions will be linked to cosmetic formulas that have been used previously. The long use of cosmetics and the formula has a profound effect on the medical condition of volunteer’s facial skin.

III. RESULTS AND DISCUSSION

Volunteers are 45 people with the results of cosmetic analysis used primarily mercury content analysis, obtained data as presented in table 1. With medical complaints recorded briefly show the main complaints of each volunteer.

<table>
<thead>
<tr>
<th>No</th>
<th>Complaints</th>
<th>Long wear</th>
<th>Mercury (+/-)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No complaints</td>
<td>3 months</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>No complaints</td>
<td>2 months</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>Pimply</td>
<td>3 years</td>
<td>+</td>
</tr>
<tr>
<td>4</td>
<td>Black spot appears</td>
<td>4 months</td>
<td>+</td>
</tr>
<tr>
<td>5</td>
<td>No complaints</td>
<td>1 month</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>Face still not clean</td>
<td>1 year</td>
<td>+</td>
</tr>
<tr>
<td>7</td>
<td>No complaints</td>
<td>6 years</td>
<td>-</td>
</tr>
<tr>
<td>8</td>
<td>Blackish skin</td>
<td>7 years</td>
<td>+</td>
</tr>
<tr>
<td>9</td>
<td>No complaints</td>
<td>4 years</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Pimply</td>
<td>6 months</td>
<td>+</td>
</tr>
<tr>
<td>11</td>
<td>Blackish Face</td>
<td>6 months</td>
<td>+</td>
</tr>
<tr>
<td>12</td>
<td>Pimply face</td>
<td>7 years</td>
<td>+</td>
</tr>
<tr>
<td>13</td>
<td>Blackish skin</td>
<td>7 years</td>
<td>+</td>
</tr>
<tr>
<td>14</td>
<td>The skin is getting dry</td>
<td>2 months</td>
<td>+</td>
</tr>
<tr>
<td>15</td>
<td>Acne appears</td>
<td>8 months</td>
<td>+</td>
</tr>
<tr>
<td>16</td>
<td>Oily, blackheads</td>
<td>2 years</td>
<td>+</td>
</tr>
<tr>
<td>17</td>
<td>Dry skin</td>
<td>1 year</td>
<td>+</td>
</tr>
<tr>
<td>18</td>
<td>Still have flecks</td>
<td>6 months</td>
<td>+</td>
</tr>
<tr>
<td>19</td>
<td>No complaints</td>
<td>1 year</td>
<td>-</td>
</tr>
<tr>
<td>20</td>
<td>Dull, oily</td>
<td>-</td>
<td>+</td>
</tr>
</tbody>
</table>

Data from Table 1. Shows that from 45 creams are used by volunteers 39 of them are positive containing mercury. This indicates an increase in the ratio of cosmetics containing mercury in the society this statement accorded to 2012 research data that state 5 of 6 cosmetics that circulate widely in the community contain mercury [19]. This means that increase from 83.3% to 86.6% over the last 5 years. People are not afraid of the dangers of mercury that can cause neurological disorders and important organ damage [20].

Complaints caused by the use of cosmetics containing mercury is the appearance of black spots, acne, blackheads, oily skin, dry skin, skin redness and dull skin. However, it should be noted that some people have not experienced a complaint even after 1 year of using, as well as volunteers who have 2 months, 3 months and 6 months also have no complaints.

Even before the complaints arise in general they are very satisfied with the results because the skin become smooth, white, soft without acne and black spots. This very satisfying condition generally makes the users very unconvinced of the bad impact in the future. In a short time their skin turned into their wishes and it is very satisfying Of the 39 volunteers who positively uses cosmetics contain mercury only 3 people or 7.6% that do not have complaints, 92.4% complain of pimples, black spots and blackheads accompanied by oily skin. So that’s why public should be alert when found the complaint after using cosmetics.
Although the skin turned white in a short time do not satisfied with that, pay attention to the skin’s health.

Generally, volunteers who use cosmetics which contain no mercury, there are no complaints. In General, skin’s health is quite good although it’s not white. It needs to be appreciated for minority groups (13.4%) who still thinking about their health beside the phenomenal white skin nowadays.

IV. CONCLUSION
From the results that obtained in this research we can conclude that:

1) Common complaints of cosmetic users contain mercury i.e. the skin becomes pimply, black spot, oily, reddish, dry and dull. Although everyone has different times for complaints resulting from the use of these mercury-containing cosmetics.

2) Common stages for this mercury-containing cosmetics user, i.e. in the early use of cosmetics, in general, are very satisfied with the results which is vanished acne, dead skin and dull disappear as well as stains or skin with uneven color will be clean white. Irregular use and discontinuation will result in complaints starting from black spots, acne, redness, oily skin, dry and dull skin.

ACKNOWLEDGMENT
Thanks to Ministry of Research, Technology, and Higher Education of The Republic of Indonesia through the PUSN scheme in year 2018 and UNESA’s LPPM has disbursed funds from Ministry of Research, Technology, and Higher Education of The Republic of Indonesia.

REFERENCES