THE DETERMINATION OF PARABEN PRESERVATIVES IN BODY SCRUB

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Abstract. Esther alkyl of p-hidroksibenzoat (paraben) widely used as an agent antimikroba with activity antimikroba increase in line with the length of the chain alkyl. The compound is widely used as a preservative on scrubs to extend the savings products. Scrubs is one care products the body much used to lift sel-sel dead skin can replace the soap. Although beneficial as a preservative , research liaise paraben with some side effects adverse as cancer, infertility and miscarriage. The identification of the two kinds of paraben (metyl paraben and propyl paraben) of 10 sample wraps done with thin layer chromatography (TLC) who proceed to the analysis of the levels of parabens using spectrophotometer UV-Vis. The results showed that of the 10 samples there are 8 samples positive methyl paraben with average levels of value of 0.05% and 7 samples positive with propyl paraben are common values of average levels of 0.03%. The average total of paraben in sample 8 body scrub that is amounted to 0.08%. Comparison paraben shows that methyl paraben having concentration higher in any product.

Keywords : *Paraben, Body Scrub, KLT, Spektrophotometer UV-Vis*

INTRODUCTION

Body Scrub is a body care products containing grains of coarse-grain in it functioning lifting dead skin cells on the surface of the skin is rough and dull, In addition it serves also helps speed up the turnover of skin cells of the body. Products this treatment often used as a substitute for soap. However, the concern in the selection of the product body scrub is the biological chemicals harmful on continuous usage can eventually cause serious disturbances on the health condition of the wearer. Despite this health disorder in General can appear and are the long term effects after continuous product usage. Recognize and see what types of content and composition of body care products that are purchased and used every day, not expected to arise the negative impact of the use of these products. One of synthetic chemicals used in many body care products is Paraben. Esther alkyl of p-hidroksibenzoat (paraben) widely used as an agent antimikroba , with activity antimikroba increase in line with the length of the chain of methyl to alkyl n-butil (Darbre, 2004). Because the effectiveness of antimikroba in compounds paraben, so the compound is widely used in thousands of care products body used every day to prevent growing bacteria. These chemicals found a lot in cosmetics, shampoo, lotion, soap, body scrub and products other treatment in the form of metilparaben, etilparaben, butilparaben, propyl-paraben And usually also used more than one kind paraben or in combination with a preservative other chemical. In 1984 the use of paraben in cosmetics allowed in concentration until 1 % (Elder, 1984). But , the study of years 1998 and so on have started to show paraben having the nature of estrogeni (Darbre, 2004), And estrogen known play a central role in the development , growth and development breast cancer (Miller, 1996)

Research conducted by barr *et al*. (2011) Reveals ester acid p-hidroksibenzoat (paraben) found at locations across the breast on the breast cancer a primary in england from to 2005 and 2008. Overall type paraben the highest namely n-propil paraben and metilparaben and rates are lower to n-butilparaben, etilparaben and isobutilparaben. In this study of paraben cannot identification. But, paraben measured in 7/40 patients reported never used cosmetics on the side during their life.

In indonesia need use paraben in care products the body still used for use memperpajang the products. The need for these chemicals as antimikrobial be found in a few body scrub products. May be needed to preliminary study to establish levels of paraben used in some owns the body scrub so they could be used as a reference to further investigation into the paraben toxicity of exposure in the human body. The determination of paraben with thin layer chromatography (TLC) and spectrophotometer UV-Vis.

MATERIALS AND METHODS

2.1 Reagent and chemicals

Samples of body scrub, methanol, silica gel, toluen, glacial acetic acid, TLC, the standard series solution, aqueous raw methyl paraben, propyl paraben, aquades.

2.2 Equipments

Instrumentation used is UV-Vis Spectrophotometer with a wavelength of 254 nm, an analytical balance, Volumetric Flask 25 ml dan 50 ml, rotafavour, Dropper Pipette, TLC plat, Oven, desikator, TLC chembeer, UV lamp, Graduated Cylinder, beaker glass, separator, Erlenmeyer Flask, Scissor, kuvet, capillary pipe.

2.3 Preparasi sampel

Prepare tools and material used, on each sample opened packaging then weigh 10 gram sample body scrub disbursed first using methanol. Then extracted with methanol and triplo (three times) with 20 ml: 20 ml: 10 ml volume. Then take the methanol phase by way of filtration. Next concentrated with a rotafavour device to a solution volume of 25 ml. Then put in a 25 ml measuring flask and adjusted its volume by adding methanol to the boundary mark and performed TLC (Thin Layer Chromatography).

2.3.1 Detection and Differentiation of Parabens by thin-layer chromatography (TLC)

Eluen is prepared by comparison of toluene solution: CH3COOH glacial 80:20, then saturated by hanging filter paper on a chembeer cover that has eluent until the filter paper becomes moist (± 30 minutes) then filter paper in lift. Next do the sample and standard sampling on the TLC plate. Then the TLC plate is inserted into the chembeer containing the eluent and wait until the eluen reaches the pond (15 cm). Then plate klt is raised and dried in an oven in temperature of 80^{o}C for 10 minutes. Then the TLC plate is read using a UV lamp with a wavelength of 254 nm and compare the sample pick and stain standard. Pay attention visually (color and Rf). If there are similarity of color in standard and sample mean positive result (+) then continued by quantitative test.

Calculate the Rf price with the formula:

$$Rf = \frac{Distance\ from\ baseline\ travelled\ by\ solute}{distance\ from\ baseline\ travelled\ by\ solvent\ (solvent\ front)}$$

2.3.2 Determination of Paraben Spektrofotometer UV-Vis

Methyl and propyl paraben extraction was performed by thin layer chromatography. Then the determination of methyl and propyl paraben levels was checked by Visible Spectrophotometric (UV-Vis). The levels of methyl paraben and propyl paraben in the sample are calculated based on the standard curve obtained (note if there is a dilution factor, and the sample absorbance must be within the standard absorbance range).

Calculation of concentration of methyl and propyl paraben in percent (%):

$$\% = \frac{\text{Paraben concentration x Final volume}}{sample\ weight} \text{ x df}$$

RESULT AND DISCUSSION

Parabens are a group of chemicals widely used as preservatives of cosmetics and personal care products one of them on a body scrub. Paraben effectively prevent the growth of microorganisms. Evaluasi keamanan pengawet paraben yang digunakan pada body scrub telah dikaji berulang kali oleh. The Scientific Committee over the years about the potential health effects of parabens. Experimental in animal studies have shown that it has toxicity paraben that cause cancer.

The identification of two paraben types (methyl paraben and propyl paraben) from 10 lulur samples was performed by thin layer chromatography (TLC) which continued to paraben content analysis using UV-Vis spectrophotometer. The results showed that from 10 samples there were 8 positive samples of methyl paraben with an average grade value of 0.05% and 7 positive samples of propyl paraben with an average grade value of 0.03%. The mean total paraben in 8 body scrub samples was 0.08% (Table 1). In 1981, the Food Drugs Administration (FDA) identified a parabens in 13,282 cosmetic formulations. Methyl parabens are detected in 41% of the products and are thus most commonly used. Paraben propyl was detected in 25% of the product, Ethyl paraben at 22%, Butyl paraben at 14% and isobutylparaben in 13% of the product (Cowan-Ellsberry, 2009).

In Table 1 shows that from 10 brands of body scrub samples identified there are 80% of brands using methyl paraben and 70% using propyl paraben. This value shows a high number considering the body care products that consumers use about 1-5 different products every day. This can trigger paraben absorptio dermally. Based on data Scientific Committee on Consumer Safety (SCCS) has recommended to reduce the maximum concentration of parabens in cosmetics from 0.4% to 0.19%. This concentration is a concentration for one body care product. However, consumers who in fact are women using more than one body care products so that the possibility of exposure to parabens per day greater (SCCS, 2011).

Table 1. The Spectrofotometer UV-Vis analysis of paraben in body scrub

No.	Sample code	Paraben concentration mg/L		Paraben Content (%)		Total paraben content
		Metyl Paraben	Propyl Paraben	Metyl Paraben	Propyl Paraben	
1	A	5,98987	8,48803	0,03	0,04	0,07
2	B	-	-	-	-	-

3	C	10,98077	8,13801	0,05	0,04	0,09
4	D	10,78340	6,98889	0,05	0,03	0,08
5	E	10,38580	8,07615	0,05	0,04	0,09
6	F	6,92671	-	0,03	-	0,03
7	G	11,01434	7,58309	0,08	0,03	0,11
8	H	8,19908	3,78597	0,04	0,02	0,06
9	I	9,28806	8,74579	0,05	0,04	0,09
10	J	-	-	-	-	-
		Mean		0,05	0,03	0,08

CONCLUSION

From the results of research conducted it can be concluded that from 10 samples there are 8 samples of positive methyl paraben with an average grade value of 0.05% and 7 positive samples of propyl paraben with an average grade value of 0.03%. The mean total paraben in 8 body scrub samples was 0.08%.

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