

Original Article

Analysis of Knowledge, Usage and the Practice of Total Body Care Cosmetic Products in Western Province; Sri Lanka

Hettihewa LM¹, Yasendri KGIM²

¹Department of Health and Medical Sciences, Faculty of Health Science, CINEC Campus

²Faculty of Medicine, Kothalawala Defense University, Department of Cosmetic Sciences

Menik.Hettihewa@cinec.edu

Abstract

Cosmetic care product are used for skin, hair and nail caring practices. The cosmetic product regulations in Sri Lankan regulatory authorities is not properly implemented for importing and marketing thus it is needed to prevent the misuse and related adverse events. As an initiative, our team investigated data on knowledge of cosmetic care, and the practicing methods of the participants in western province in Sri Lanka as a phase 1 study. It was a descriptive cross-sectional survey and participants aged from 18 to 70+ years were openly invited. Informed consent was included in the self-administered questionnaire, validated before proper research. It includes questions on knowledge, attitudes, and practice of cosmetic usage. Our data showed that majority were female (71%), age group of 18-39 yrs (93%). 92% of them are Sinhalese, and 17% of Muslims. 93% of participants were aware reasons for using cosmetic product and 68% of them were aware composition of and adverse effects. 93% of them were aware about risk of allergy and 89% of them uses skin and body products. Average using time was more than 5 years by 39% and 31% used it for 1-5 years, rest of them less than one year respectively. Use of cosmetic is mainly for minor skin abnormalities (24%) and to enhance the appearance (16%) others included both reasons (60%). Majority had used both herbal and cosmetic products (63%). 61% of them preferred both local and international products. Most of them had referred social media for the selection of the product. We concluded that participants from western province showing expected personal knowledge on composition, indications, and potential adverse effects. This data is important to consider for preparing cosmetic rules and regulations and also recommend proper scientific based audio and visual educational program in selection process.

Keywords: *cosmetic care product, Knowledge and practice, Sri Lanka.*

Introduction

The advancement in the cosmetic industry and the production of large number of products all over the world has resulted in an increase of personal care product consumption. Variety of inclusions in all cosmetic products had led to excessive exposure of the world population different types of chemicals which can induce adverse health effects (1, 2). Out of some chemical, parabens and phthalates are the most concerned harmful chemicals found in personal care products (3). Various analytical methods have been developed to evaluate the content of these chemicals in different sample. For an example, parabens is used commonly in cosmetic products and it is a endocrine disruptors in some in vitro screening tests (4) The negative impact of harmful chemicals in cosmetics can affect the environment and animals (5). In our literature survey, few studies were found out in different countries. They have evaluated the consumption pattern of cosmetic products in different populations. Biesterbos *et al.* had evaluated the use frequency of thirty-two cosmetics including general hygiene, skin care, hair care, and makeup products in the Netherlands (6). Furthermore, another study displayed in France by Ficheux *et al* on consumption pattern of products among French consumers (7, 8).

Sri Lankan cosmetic industry emerged within last 8 years and changing from primary functional product to more advanced products now. Therefore, our team hypothesized to conduct survey-based research to find out the usage of cosmetic products in our country to evaluate the health risks for consumers. Finding of this data would be helpful to determine the exposure risk of consumers, potential adverse events, usage prevalence, and usage frequency.

According to the report of Mushtaq *et al* to the International News Services.com, in 2014 Sri Lankan Local Market had a collection of 4000 cosmetic and beauty care products as per a report of Cosmetic, Devices and Drugs Authority.

Furthermore, raising of the purchasing power of consumers and raised awareness and concern in beauty and hygiene has positively impacted the growth of beauty care industry (9-11). According to a study conducted in the Galle district of Sri Lanka in 2019 on popularity and usage of Skin care products, 53% used skincare agents, rest of them do not use any such products (12)

According to a study conducted among female population in Saudi Arabia it was revealed that majority used cosmetic products on a daily basis. >50% had reported the use of deodorant, sunscreen, and night cream once a day, and 40% indicated lipstick/balm, shower gel, body lotion, makeup remover, and eyebrow pencils one time per day (14). As scientists, we reiterate the fact that simultaneous use of cosmetic products with same ingredients without insight would lead to aggregate body system exposure and (15). Therefore, data on co-use of different products containing same chemicals are also important for health risk assessment in our country (14).

Parabens are used as preservatives and phthalates are used in nail polishers and hair sprays (16). But most of these chemicals are toxic and adversely affect different body systems (17). Other chemicals can also be found in cosmetic products such as triclosan, heavy metals, hydroquinone, and nitrosamines can cause negative health impacts including allergy, endocrine disruption, birth defects, neurotoxicity, or cancers (18). According to a study conducted among female population in Saudi Arabia it was revealed 16% of the participants had experienced adverse effects from the use of cosmetic products. The most complained cosmetic products were lotions (51%), face creams (27%), and deodorants (10%). Most reported adverse events were redness, itching, skin soreness, breakage of hair, eye inflammation, darkening of armpits, and discoloration of face (9).

Although it is clear that Sri Lankan population is using different types of cosmetic products, research on the prevalence and usage of cosmetic products with a focus on health risks are scarce. In order to assess health risks for consumers and to determine the bad effects on the body systems, use prevalence, frequency, and co-use pattern of these products should be done in our country. Little is known about the cosmetic product usage and practice in Sri Lankan population and this study

was conducted to fulfill the gap. Findings from this study will provide baseline information on important predictors such as percentage of users, frequency of use, co-use pattern of cosmetics, and their adverse events among Sri Lankan Population. Findings from this study could be used by all the health care policy makers and regulatory authorities to take measures on the health risks caused by cosmetics and to educate not only the general public but also relevant production companies on them.

The provided information can be useful in developing consumer exposure model and we have to do the aggregate exposure assessment in phase 2 of this study.

Research Methodology

Study was done as descriptive cross-sectional survey in population in the Western Province of Sri Lanka and online survey was the tool for data collection. Based on the statistical data and official figures released by the Department of Statistics and Information, estimated population of the Western Province of the country for the year 2020 is 6 million. Non probability convenient sampling type is used and based on the western province population, 385 participants were included within 95% confidence interval with a 5% margin of error. All inclusion criteria were outlined in the participant information sheet attached to the survey. This study considered both male and female population. The study included participants aged from 18 to 70+ years and members who cannot grant consent were excluded. Informed consent was obtained through the first part of the Google Form and self-administered questionnaire comprising of 17 questions was validated properly before conducting the proper research. A total of 11 questions were done to assess the knowledge, attitudes, and practice of the participants regarding cosmetic usage. All the compulsory details on the aims, methods and contact information of the researches were mentioned in the information sheet where the participant can direct their problems related to the study through a call. Participant's informed consent was taken through the consent form via google link. Ethical clearance was obtained from the Ethics Review Committee, CINEC Campus Sri Lanka.

Statistical Analysis

The descriptive data in terms of percentage and frequency were used to demonstrate the findings. The chi-square test was used to assess possible relationships between different variables. For all statistical tests, a value < 0.05 was considered significant. Spearman correlation coefficient (*R*) was used to measure the strength of correlations between the uses of different products.

Results

Majority of responders were found to be undergraduate, female (71%). 93% of them are aware about the cosmetic products, 68% of them are aware about the composition of the cosmetic product and 69% of them were convinced about the potential adverse effects. 25% of the participants had experienced with side effects related to the cosmetic product usage. 39% of the participants had withdrawn the use of the product and rest had continued the product they selected. 93% of participants are aware about potential allergies,

Figure 1A shows that percentages of using skin/body care products, Hair/ nail products and Facecare, lip and eye care products by the western population.

Figure 1

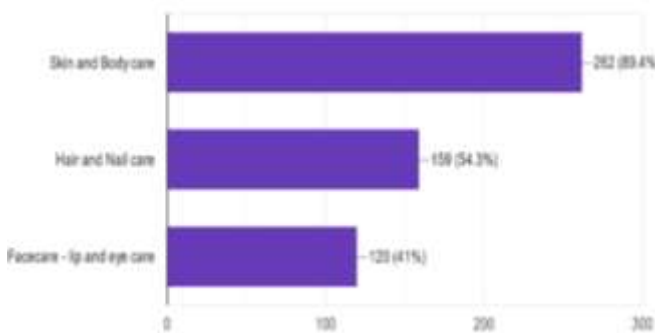


Fig 1A: percentages of usage pattern of skin/body care products

Figure 1 A shows the percentages of usage pattern of skin/body care products, Hair/ nail products and Facecare, lip and eye care products by the western population.

Changes of the duration of the use of cosmetic product is given in figure 1B and three reasons for

selecting cosmetic products were analyzed and data were illustrated in figure 1C

Figure 1B and 1C

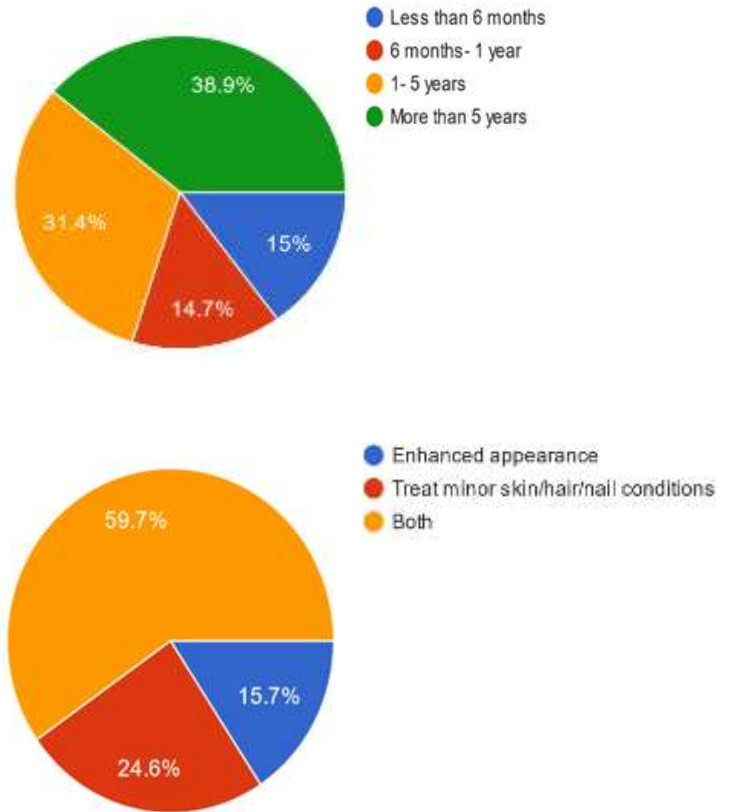


Fig 1B: The time duration of the use of cosmetic product by participants

Fig 1C: The reasons for selecting cosmetic products by participants

Figure 1A and 1B shows the time duration of the use of cosmetic product by participants. The reasons for selecting cosmetic products by participants were given in figure 1C. Data represents percentage analysis by SPSS.

Most of the participants said that they use both herbal and synthetic products and also majority had no choice it as local or international product. We found that 56% of participants, had brand preference and 44% of them are not interested in any brand.

We also analyzed the sources of information which they had referred for the selection of the cosmetic product. Figure 2A showed the results and most common resource is the social media.

Figure 2A

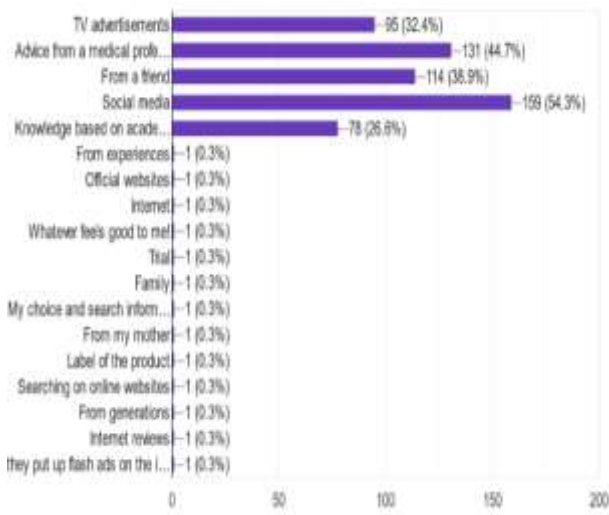


Figure 2A: the data related to reference sources about cosmetic product for selection by the participants from western province in Sri Lanka

We further analyzed the data in relation to the places for the common purchasing sites in western province. Majority of participants had bought products from cosmetic outlets, and others buy from supermarkets and online stores. Figure 2B

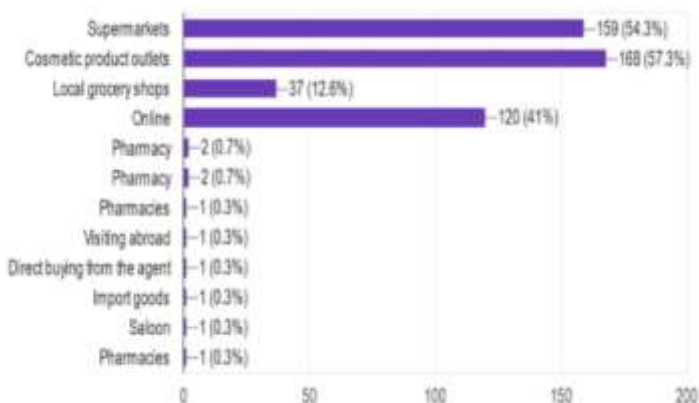
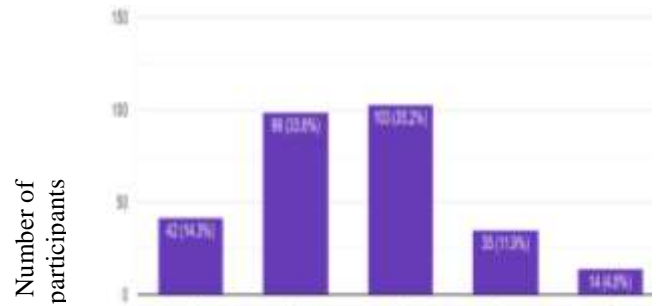


Figure 2B: the data related to common sites of the purchase of the cosmetic products by the participants from western province in Sri Lanka

We also tested the knowledge on the adverse events/ effects of the cosmetic product utilization. Figure 3 shows the results of our study. We used a strongly agree (1) to strongly disagree (5) scale to analyze the following results.

Figure 3



1 strongly agree, 2 agree, 3 neutral, 4 disagree and 5 strongly disagree

Fig 3: knowledge on the adverse events/ effects of the cosmetic product utilization

Further, our team also researched on the monthly expenses by the participants for the cosmetic product procurement. Majority spend less than 1000 rupees per month

Monthly cost for cosmetic products

	Frequency	%	Valid %	cumulative %
Less than LKR 1000	134	45.7	45.7	45.7
LKR 1000-5000	131	44.7	44.7	90.4
LKR 5000-10000	22	7.5	7.5	98.0
More than LKR 10000	6	2.0	2.0	100.0
Total	293	100.0	100.0	

Table 1 : monthly expenses by the participants for the cosmetic product procurement. Majority spend less than 1000 rupees per month.

Our team also investigated on the qualitative analysis of the cosmetic products usage of our participants. (Figure 4)

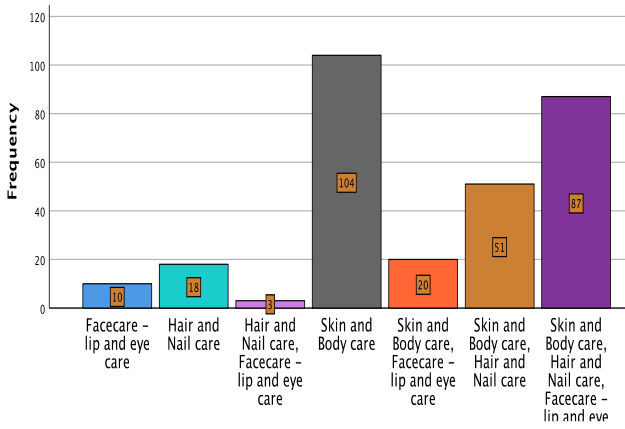


Figure 4: qualitative analysis of the cosmetic product usage among our participants.

Figure 4 shows the qualitative analysis of the cosmetic product usage among our participants. Majority use for skin and body care products while least expense were done for hair, nail lip and eye care. Analysis by SPSS.

We also analyzed the participant's knowledge of long term usage effects of cosmetic product. Figure 5A shows that majority are not aware any risk of malignancy with cosmetic product usage. Figure 5B shows the knowledge about importance of using cosmetic supportive products in elderly.

Figure 5A

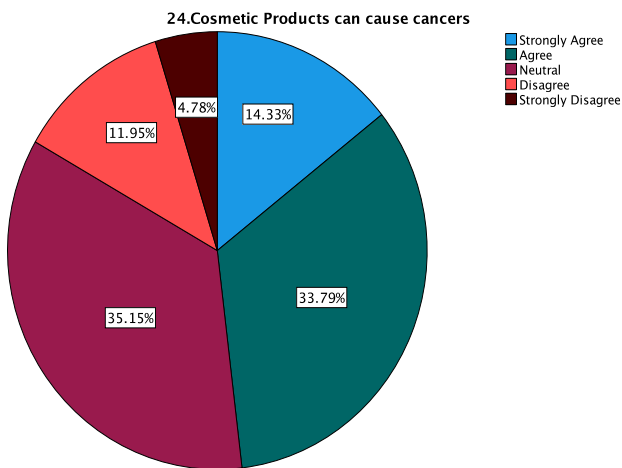


Figure 5A : participants knowledge analysis on long term risk of malignancy with cosmetic products.

Figure 5B

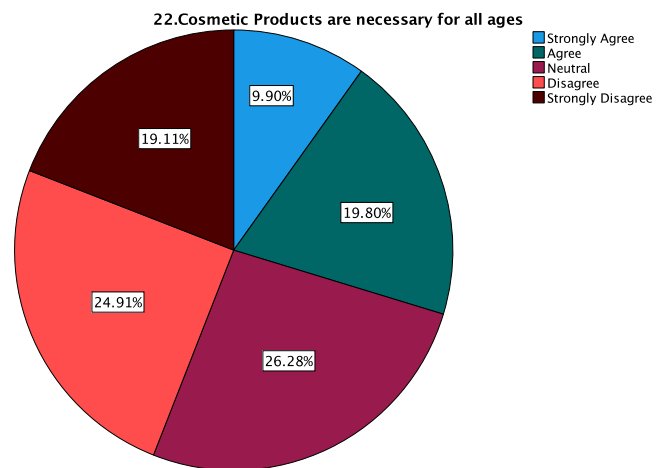


Figure 5A : participants knowledge of using cosmetic product in different age.

Discussion

We conducted this research to facilitate the availability of the data in relation to cosmetic care products in Sri Lanka. We could not find any research or data in relation to this spatiality despite competitive tailor made shops /market and social media marketing. Therefore as a national requirement, we are happy to submit the data of cosmetic product usage and practices which may be useful to the government for formulating the regulations in importing, marketing and usage. We found that Sri Lankan adolescence use the local and international products more or less equally despite their low cosmetic budget. As we highlighted in our research paper, most of the chemicals which are included in many cosmetic applications available here are harmful to different systems of the body in acute and chronic manner. Cosmetic product registration after ingredient analysis is not practiced in Sri Lanka before marketing. Our research indicates the high usage of these products and it will have a serious after effects in near future.

Most interestingly clients take the social media as the best reference learning center. This is very important finding to be considered seriously because social media is one of the place with unregistered local and international cosmetic products. High reference rate of this site can be associated with predictable high risk to the society. Sri Lankan

regulatory is not involved in social media marketing regulation and it is more dangerous due to the absence of marketing surveillance program for these unregistered products in our country. Our study showed society spent considerable amount of money for cosmetic products and it is a responsibility of the government regulatory authorities to address this issue and minimize the cosmetic product based adverse events. Considering the total results of this study, we recommend for more standard wellness education program about cosmetic usage and cosmetic product selection, criteria and activities.

Our next plan to continue with the product based cost effective analysis after understanding the common practices used by Sri Lankan society. Our team want to this as one of the take home message of this exercise and all relevant stakeholders should consider in educational program on cosmetic product selection, usage, requirements, and common ingredients. We concluded that participants from western province showed significant percentage of knowledge on composition, indications, potential adverse effects of the product but they need proper education on selecting all types of cosmetic products. We recommend audio and visual media to be conducted via cosmetic regulatory authorities.

A. Study Limitations

This study was confined to the western province and it may have limited the extent of the results.

B. Acknowledgements

Authors would like to be thankful to Ms Himali Kumari, former lecturer and Mrs Kanchana Ekanayake lecturer in CINEC Campus for the intellectual contribution given in preparing the research proposal for Ethics committee. We also are grateful to the all participants who had volunteered to the study.

D. Conflict of Interests

No conflict of interest exist in this publication.

E. Human and Animal Related Study

If the work involves the use of human/animal subjects, each manuscript should contain the following subheadings under the declarations section-

F. Ethical Approval

This study was reviewed and approved by the Ethics review committee in CINEC campus.

G. Informed Consent

Informed consent which was approved by the ERC of CINEC campus was shared with the participants before the proper questionnaire. Write a statement of informed consent taken from the participants to publish this research work. The editor may ask to upload scan copy if required.

References

1. H. Shaaban, "Exposure to endocrine disrupting compounds from personal care products: can be reduced?" *Annals of Pharmacology and Pharmaceutics*, vol. 2, no. 12, 2017.
2. H. Shaaban, "Endocrine disruptors from cosmetic products: health impacts and regulatory methods," *Acta Scientific Medical Sciences*, vol. 2, pp. 1-2, 2018.
3. M. G. Soni, I. G. Carabin, and G. A. Burdock, "Safety assessment of esters of p-hydroxybenzoic acid (parabens)," *Food and Chemical Toxicology*, vol. 43, no. 7, pp. 985–1015, 2005.
4. R. Golden, J. Gandy, and G. Vollmer, "A review of the endocrine activity of parabens and implications for potential risks to human health," *Critical Reviews in Toxicology*, vol. 35, no. 5, pp. 435–458, and 2005.
5. J. L. Liu and M. H. Wong, "Pharmaceuticals and personal care products (PPCPs): a review on environmental contamination in China," *Environment International*, vol. 59, pp. 208–224, 2013.
6. J. W. H. Biesterbos, T. Dudzina, C. J. E. Delmaar et al., "Usage patterns of personal care products: important factors for exposure assessment," *Food and Chemical Toxicology*, vol. 55, pp. 8–17, 2013.
7. A. S. Ficheux, G. Chevillotte, N. Wesolek et al., "Consumption of cosmetic products by the French population second part: amount data," *Food and Chemical Toxicology*, vol. 90, pp. 130–141, 2016.
8. A. Bernard, A. Houssin, A. S. Ficheux et al., "Consumption of hair dye products by the French women population: usage pattern and exposure assessment," *Food and Chemical Toxicology*, vol. 88, pp. 123–132, 2016.

9. Heba Shaaban, Wejdan Alhajri, "Usage Patterns of Cosmetic and Personal Care Products among Female Population in Saudi Arabia: Important Factors for Exposure and Risk Assessment", *Journal of Environmental and Public Health*, vol. 2020, Article ID 8434508, 8 pages, 2020. <https://doi.org/10.1155/2020/8434508>
10. X. M. Wu, D. H. Bennett, B. Ritz, D. L. Cassady, K. Lee, and I. Hertz-Picciotto, "Usage pattern of personal care products in California households," *Food and Chemical Toxicology*, vol. 48, no. 11, pp. 3109–3119, 2010.
11. Ghazali, E., Soon, P. C., Mutum, D. S., & Nguyen, B. (2017). Health and cosmetics: Investigating consumers' values for buying organic personal care products. *Journal of Retailing and Consumer Services*, 39, 154-163.
12. Mayuri Napagoda*, Buddhika Dahanayake, Shyama Lankika, Gayani Dahanayake, Mahesh Wannakukorala, Ravindi Manampery, Nadeesha Jayasekera, Thilani Tiranagama and Dinushi Kumari "Popularity and usage of different skincare agents among the inhabitants of Galle district in Southern province, Sri Lanka" *RUHUNA JOURNAL OF SCIENCE* Vol 11 (1): 38-46, June 2020 eISSN: 2536-8400 DOI: <http://doi.org/10.4038/rjs.v11i1.85>
13. L. J. Loretz, A.M. Api, L.M. Barra et al., "Exposure data for cosmetic products: lipstick, body lotion, and face cream," *Food and Chemical Toxicology*, vol. 43, no. 2, pp. 279–291, 2005.
14. Heba Shaaban and Wejdan Alhajri, "Usage Patterns of Cosmetic and Personal Care Products among Female Population in Saudi Arabia: Important Factors for Exposure and Risk Assessment", *Journal of Environmental and Public Health* Volume 2020, Article ID 8434508, 8 pages <https://doi.org/10.1155/2020/8434508>
15. C. E. Cowan-Ellsberry and S. H. Robison, "Refining aggregate exposure: example using parabens," *Regulatory Toxicology and Pharmacology*, vol. 55, no. 3, pp. 321–329, 2009.
16. M. G. Soni, I. G. Carabin, and G. A. Burdock, "Safety assessment of esters of p-hydroxybenzoic acid (parabens)," *Food and Chemical Toxicology*, vol. 43, no. 7, pp. 985–1015, 2005.
17. R. Golden, J. Gandy, and G. Vollmer, "A review of the endocrine activity of parabens and implications for potential risks to human health," *Critical Reviews in Toxicology*, vol. 35, no. 5, pp. 435–458, and 2005.
18. S. H. Safe, "Endocrine disruptors and human health--is there a problem? An update," *Environmental Health Perspectives*, vol. 108, no. 6, pp. 487–493, 2000.