

COMPARISON OF PHYSIOLOGY PARAMETERS OF THE SKIN OF FACE IN NORMAL PEOPLE UNDER TWO DIFFERENT CONDITIONS

Jiang Yihong**M.D.*, Wang Xuemin**M.D.*, Lin Yinfen**M.D.*, Le Jiayu**M.D.*

*Shanghai Control Centre for Skin Disease & STD - 196 Wu Yi Road, Shanghai 200050, PRC

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Synopsis

This study is to compare the difference of physiology parameters of the skin of face (PPSFs) in normal people under two different conditions. 100 normal volunteers were measured in the skin of forehead, zygomatic area, cheek, chin and neck before and after cleaning the face with warm water. The result showed that the PPSFs of the skin of forehead, zygomatic area and cheek were significantly different before and after cleaning in those who often use cosmetics ($p < 0.05$). But for those who rarely used cosmetics there was no difference in PPSFs before and after cleaning ($p > 0.05$). The difference between the two groups indicates that only the PPSFs after cleaning will be helpful to consumers in choosing suitable cosmetics and using them correctly, and the PPSFs before cleaning will probably lead them to a wrong choice.

Riassunto

Questo studio ha lo scopo di paragonare la differenza dei parametri fisiologici della pelle del volto (PPSFs) in individui normali in due condizioni diverse. A cento volontari normali sono stati rilevati i PPSF della pelle della fronte, dell'area degli zigomi, delle guance, del mento e del collo prima e dopo aver effettuato la pulizia del volto con acqua calda.

I risultati hanno mostrato che negli individui che usano frequentemente cosmetici i PPSF della pelle della fronte, dell'area degli zigomi e delle guance si differenziavano in modo significativo prima e dopo la pulizia ($p < 0.05$). Ma per coloro che utilizzano raramente cosmetici non c'era alcuna differenza nei PPSF rilevati prima e dopo la pulizia ($p > 0.05$).

La differenza tra i due gruppi indica che solo i PPSF dopo la pulizia possono rivelarsi utili per i consumatori nello scegliere cosmetici adatti e nell'usarli correttamente, mentre i PPSF rilevati prima della pulizia li condurrebbero probabilmente a scelte sbagliate.

INTRODUCTION

Physiological Parameters of the skin of face (PPSFs) are often used in dermatocosmetology, such as Sebum Index (SeI), Moisture Index (MoI) and PH Value (PHV). There are some differences under two different conditions which are before and after cleaning the skin. A study was made from March to April 1995 in order to find the difference between them.

MATERIAL AND METHOD

There were 100 healthy volunteers, 24 were male and 76 were female. The age was from 19 to 62 years old. The average age was 39.12 ± 11.50 . Skin Tester (Model No. STC 20, IMC Co. Germany).

The scales of the frequency of cosmetics used was divided into 10 points, the volunteers who never use cosmetics was 0 point, while those who use them everyday were 10 points. 56 volunteers were over 5 points and the average was 7.29 ± 1.09 , 44 volunteers were below or equal to 5 points and the average is 2.66 ± 1.63 . The volunteers were asked some questions about how they use the cosmetics such as category, frequency according to the questionnaire and planned

rule. First, the SeI, MoI and PHV of volunteers without asking them to clean their skin were measured. Second, the skin of faces was cleaned with warm water and no cosmetics was used, then after one to two hours they were measured again in order to get the PPSFs under physiological condition. PPSFs were taken from five parts of the face, they were forehead, zygomatic area, cheek, chin and neck.

RESULT

All the volunteers have finished the test. The average PPSFs of five parts in SeI, MoI and PHV were 40.99 ± 71.62 , 153.78 ± 79.03 and 5.39 ± 0.25 before cleaning. And the average PPSFs after cleaning were 25.20 ± 56.74 , 128.34 ± 78.42 and 5.48 ± 0.27 . After cleaning the skin, the Sels about 2 volunteers were 0 in five parts, 24 were below 100 and 1 was over 100. The MoIs about 59 were over 100, 11 were over 200 and none of them was all below 100. The PHVs about 11 were all over 5.4 and also 11 were all below 5.4. The PPSFs under two conditions of 56 volunteers who often use cosmetics and of 44 ones who seldom use cosmetics are as follows (see Table I and Table II).

Table I

PPSFs of 56 volunteers who often use cosmetics under two different conditions

| | SeI | | MoI | | PHV | |
|----------------|--------------|-------------|---------------|--------------|------------|-----------|
| | Before | After | Before | After | Before | After |
| Forehead | 48.80±73.29* | 18.66±45.40 | 130.43±100.21 | 101.36±89.39 | 5.33±0.24 | 5.39±0.27 |
| Zygomatic Area | 47.14±78.93* | 11.50±37.30 | 193.82±61.39* | 146.32±76.57 | 5.50±0.23* | 5.63±0.21 |
| Cheek | 19.18±48.90 | 4.23±27.32 | 156.43±74.04* | 112.89±59.75 | 5.38±0.22* | 5.48±0.18 |
| Chin | 74.07±85.36 | 59.59±80.84 | 184.23±60.81 | 161.05±75.52 | 5.43±0.23 | 5.48±0.19 |
| Neck | 6.38±23.06 | 4.39±20.59 | 154.02±70.73 | 133.48±66.90 | 5.27±0.20 | 5.29±0.23 |

* The difference of PPSFs in the same part of skin under two conditions is significant, $p < 0.05$.

Table II

PPSFs of 44 volunteers who seldom use cosmetics under two different conditions

| | SeI | | MoI | | PHV | |
|----------------|--------------|-------------|--------------|--------------|------------|-----------|
| | Before | After | Before | After | Before | After |
| Forehead | 50.36±71.03 | 37.16±65.12 | 113.32±92.86 | 83.16±90.49 | 5.28±0.24* | 5.43±0.25 |
| Zygomatic Area | 45.86±75.92 | 29.16±51.87 | 165.05±67.38 | 136.34±80.66 | 5.55±0.21* | 5.68±0.24 |
| Cheek | 12.32±45.14 | 10.32±39.29 | 130.89±84.87 | 108.02±66.60 | 5.44±0.24* | 5.57±0.27 |
| Chin | 100.57±90.36 | 76.98±87.00 | 174.05±68.19 | 158.36±66.09 | 5.46±0.28 | 5.54±0.29 |
| Neck | 7.84±34.10 | 7.64±26.20 | 144.66±69.54 | 138.75±76.45 | 5.32±0.23 | 5.35±0.32 |

* The difference of PPSFs in the same part of skin under two conditions is significant, $p < 0.05$.

DISCUSSION

SeI, MoI and PHV of skin of face were the PPSFs which can be easily got and they could reflect the physiological condition of the skin of face. A fine physiological condition was very important for people to protect their skin and for skin to realize its function (1,2). If PPSFs can be got objectively, it can be a good guidance for people to protect their skin in a correct way. Because of the development of science and technology, it is not difficult to get PPSFs. So many factories and companies of agencies of cosmetics try to guide consumers with PPSFs.

On the other hand, skin care products and make-up products become more and more necessary for everyday use as the elevating of the people's life, especially in developing countries. The frequency of cosmetics using is very high. According to this study, the PPSFs of 56 volunteers who often use cosmetics are not same under two different conditions. For example, the SeI in forehead and zygomatic area, the MoI and PHV in zygomatic area and cheek have differences before and after cleaning the skin ($p < 0.05$). The PPSFs before cleaning can not be the guidance for cosmetic consumers, because they were affected by many factors, eg. skin care products

and make-up products.

The PPSFs from 44 volunteers who seldom use cosmetics have not much difference under two conditions ($p > 0.05$). It is indicated that the cosmetics would influence PPSFs to some extent. This kind of change was connected with the method, frequency and category of cosmetic using. For instance, the difference of those who often use cosmetics is only existed in some parts of skin, as the forehead, zygomatic area and cheek. The method of the volunteers of using cosmetics are almost the same as most consumers. They always put the cosmetics first on zygomatic area and then on cheek and forehead, finally on chin. The neck is almost forgotten.

This study also indicates that the PPSFs under physiological condition are different in various parts, especially the PPSFs of neck is different from those of the face. It tells us that when consumers use skin care products, don't forget the skin of neck and they should choose different product on various parts of the skin. The difference between two groups indicates that only the PPSFs after cleaning will be helpful for consumers in choosing suitable cosmetics and using them correctly, while the PPSFs before cleaning will probably lead them to a wrong choice.

REFERENCE

1. **A. Conti, ME Schiavi, S. Seidenari (1995)** Capacitance, transepidermal water loss and causal level of sebum in healthy subjects in relation to site, sex and age. *Int. J. Cosmetic Science* **17**:77-85.
2. **AV Rawlings, A. Watkinson, J. Rogers, et al. (1994)** Abnormalities in stratum corneum structure, lipid composition, and desmosome degradation in soap-induced winter xerosis. *J. Soc. Cosmet. Chem; July/August* **45**:203-220.

Author Address:

Wang Xuemin, MD

Skin & Cosmetic Research Dept.

Shanghai Control Center for Skin Disease & STD

196 Wu Yi Road

Shanghai 200050

Tel: 86-21-62523573

Fax: 86-21-62524527

P.R. CHINA