

Quantitative Evaluation of Skin Condition According to Ayurvedic Constitution Classification

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Abstract Objective: The purpose of this study was to investigate the characteristics of facial skin parameters (hydration, lipid and pH) on forehead and cheek according to Ayurvedic constitution classification of Vata, Pitta and Kapha. The condition of hydration, lipid and pH in the facial skin was measured using non-invasive diagnostic technique. The collected data was analyzed with the SPSS 16.0 windows statistical program.

Design: Eighty-nine Korean female subjects were recruited for this study and the average age of them was 19.9±0.84 years. Three groups by the Ayurvedic constitution were classified by questionnaire.

Results: There was a significant difference in hydration, lipid and pH according to Ayurvedic constitution. The measurement of hydration on the face depending on the constitution were shown in the order of Pitta, Kapha and Vata ($p<0.001$). The measurement of lipid on the face depending on the constitution were shown in the order of Kapha, Pitta and Vata ($p<0.001$, $p<0.01$). The measurement of pH on the face depending on the constitution were shown in the order of Kapha, Pitta and Vata ($p<0.01$).

Conclusion: Facial skin surface seemed to be dependent on Ayurvedic constitution classification in Korean. These findings indicated that Ayurvedic constitution classification might be a useful esthetic treatment for caring facial skin in the future.

요 약 본 논문은 89명의 여대생을 대상으로 아유르베다의 세 가지 체질인 바타, 피타, 카파에 따른 얼굴 피부의 수분, 유분, pH의 값을 측정하여 비교하였다. 아유르베다 체질에 따른 피부 상태를 알아보기 위하여 분석한 결과 수분의 경우 피타, 카파, 바타의 순으로($p<0.001$) 유분의 경우 카파, 피타, 바타의 순으로 ($p<0.001$, $p<0.01$) pH의 경우 카파, 피타, 바타의 순으로 ($p<0.01$) 통계적으로 유의한 차이가 있었다. 앞으로의 연구에서는 피부미용학적 관점에서 아유르베다 체질에 대한 보다 체계적이고 과학적인 연구가 진행되어야 할 것이다.

Key Words : Ayurvedic constitution, Skin condition, Measurement of hydration, Lipid, pH

1. Introduction

Ayurveda is a holistic system of medicine that is indigenous and widely practical in India.

The word 'Ayurveda' is a Sanskrit term meaning 'science of life'. 'Ayu' means 'life' or 'daily living', and

'Veda' is 'knowing'. Man is a microcosm of nature and so the five basic elements-ether, air, fire, water and earth-present in all matter also exist within each individual. The five basic elements manifest in the human body as three basic principles, or humors, known as the tridoshas like the three humors of Vata, Pitta and Kapha.

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The general conception of health in the Ayurveda is based on the notion of life and growth as well as on the balance of three dosha [1].

The World Health Organization (WHO) estimates that about 80% of the population living in the developing countries relies on traditional medicine for their primary health care needs [2]. Ayurveda, which literally means the science of life, is one of the oldest systems of medicines in India. Use of natural resources for betterment of health was developed by the experimentation and experiences of day-to-day life style of Indian people [1]. Use of natural sources deals with not only curation of disease but also its prevention [3].

Ayurveda is a holistic form of medicine traditionally used in India, the human organism is considered to be a microcosm within the external cosmos. It is the result of a well-documented health-care philosophy and the oral tradition passed down from generation to generation 5000 years. Treatment includes not only herbal medication but also breathing exercises, meditation, yoga, massage and fasting.

Ayurvedic medicine is the traditional holistic approach to health and treatment of disease practised in India. Its popularity in other cultures is increasing as complementary medicine becomes more widespread [4].

In the past Indian medicine spread across the Eastern world to Tibet, Central Asia, Indo-China, Indonesia and Japan, filling the same role in Asia as Greek medicine in the West. At present there is increasing interest in Ayurveda in the West [5].

Ayurveda considers that the universe is made up of combination of the five elements (pancha mahabhutas). These are akasha (ether), vayu (air), teja (fire), aap (water) and prithvi (earth). The five elements can be seen to exist in the material universe at all scales of life and in both organic and inorganic things. In biological system, such as humans, elements are coded into three forces, which govern all life processes. These three forces (Kapha, Pitta and Vata) are known as the three doshas or simply the tridosha. Each of the dosha is composed of one or two elements. Vata is composed of space and air, Pitta of fire, and Kapha of water and earth. Vata dosha has the mobility and quickness of space and air; Pitta dosha the metabolic qualities of fire; Kapha dosha the stability and solidity of water and earth. The tridosha

regulates every physiological and psychological process in the living organism. The interplay among them determines the qualities and conditions of the individual. A harmonious state of the three doshas creates balance and health; an imbalance, which might be an excess (vridhhi) or deficiency (kshaya), manifests as a sign or symptom of disease [6, 7].

Vata means wind and is represented by air and lightness that controls motor and nervous function. Disturbance causes manifestations of gas and muscular or nervous energy, leading to pain. Dryness, atrophy, pricking pain, contraction, dilation, hardness, roughness, horripilation and dusky red coloration are the findings for skin lesions. Pitta is the vehicle for digestion, metabolism, and energy productions. Composed of fire and water, it is responsible for pigmentation, body temperature, hunger, thirst, sight, courage, and mental activities. Disruption of normal function causes imbalance of acid and bile leading to inflammation. Skin manifestations are burning sensations, redness, exudation, suppuration, softening, and sloughing of affected areas. Kapha represents earth and water, and it is a liquid. It is responsible for passive energy and regulates the body's structural elements, cohesiveness and strength. By regulation vayu and pitta, it helps keep the body lubricated and maintains its solid nature, tissues, sexual power, and strength. Disruption causes its manifestation in liquid and mucus leading to swelling with or without discharge. Skin changes range from whiteness, coldness, pruritus, heaviness, sliminess, and softening. Dermatologic conditions elaborately described and various treatment options are mentioned in Ayurveda. The imbalances in the doshas Vata, Pitta and Kapha cause changes in the skin [8].

That dosha functions remain in some sense unchanged and invariant during evolution. For example, the genetic code is supposed to invade the principal location the doshas in the human body: Kapha in the head and chest, Pitta in the middle abdomen and Vata in the lower abdomen. Their functions reveal the gastric canal to be the key to understanding their separation: Kapha provides mucus lubricants and protect the gut walls from potentially damaging materials which were ingested with food. Pitta generates digestive enzymes, necessarily prana the absorption and elimination functions of Vata, which must come last.

Further consideration shows that each dosha corresponds to one of the principle definitions of life itself:

(i) regulation of input/output, or Vata dosha, governs homeostasis, which is the living organism's ability to regulate their own internal environment;

(ii) regulation of metabolism, or Pitta dosha, enables the living organism to function far from equilibrium, and so generate the negentropy needed to maintain its integrity of structure, including its internal environment;

(iii) regulation of storage and structure, or Kapha dosha, is connected to an organism's ability to maintain its characteristic appearance or form—historically, the first and most common definition of how to identify and characterize different forms of life [9].

In the light of these ideas, empirical confirmations of the concept of dosha assume fundamental importance. They are two kinds of ideas, first, statistical analysis of questionnaires used to measure doshas confirms the validity of the concept [10], in a similar way that concepts in psychology of individual differences are validated by similar statistical analyses. Secondly, the dominance of one or more doshas in individual functioning of the physiology, known in Ayurveda as the Prakriti of the individual, has been shown to have genomic correlates [11]—and for good reason, dosha invariance throughout evolution requires the functions and their variations to be genome based [9].

This paper aimed to classify the skin characteristics in accordance with the constitution by investigating the type of hydration, lipid and pH depending on the Ayurvedic constitution such as Vata, Pitta and Kapha. The subject for the study was recruited from women aged in their twenties attending university in Chungcheongnamdo in Korea.

2. Research Methods

2.1 Subjects

Eighty-nine Korean female subjects were recruited for this study and the average age of them was 19.9 ± 0.84 years. All participants agreed to informed consent for the full assessment which is described in detail.

2.2 Procedures

The Questionnaire for Ayurvedic constitution was systematically developed. The accuracy of questionnaire was to be %. Three groups of the Ayurvedic constitution were classified by Questionnaire.

The following procedure was used to measure the skin properties: hydration, lipid, pH on forehead and cheek using non-invasive instruments of Corneometer (CM 825, Schwarzharp, Germany), Sebumeter (SM 815, Schwarzharp, Germany) and Skin-pH-meter (pH 905, Schwarzharp, Germany), respectively. The measurements by the same investigator were performed under standardized condition with a room temperature of 21°C and a humidity level of 40% to 50% in March. Before the measurements, volunteers were given one hour and half to adapt to room conditions without covering the measurement sites with clothes. On the day of examination, the skin was not washed and nothing was applied to the skin surface. They are measured exactly on the same sites three times like forehead and cheeks.

2.3 Statistical Analysis

Demographic differences between Ayurvedic constitution-Vata, Pitta and Kapha were using Analysis of Variance (ANOVA). The data is represented as means and standard deviations. All analyses were conducted using SPSS 16.0.1 for Windows (SPSS Inc., Chicago, IL).

The Quantitative values of the three skin parameters were used to test statistical differences among Ayurvedic constitution groups with one-way ANOVA with repeated measures in SPSS 16.0 Window with a level of significance set at .05. Post hoc multiple comparisons were performed with Tukey's significant difference tests.

3. Results

The total number of subjects for whom complete data were available was 89. The subjects were classified according to 3 predominant doshas: Vata, Pitta and Kapha.

For comparisons of skin surface hydration according to Ayurvedic Constitution, 3 measurements were performed for each skin spot. One-way ANOVA provided highly

significant differences ($p < .001$) (Table 1).

There was a highly significant difference between the corenometer measurement points at the forehead and cheek when evaluation was performed with one-way ANOVA.

[Table 1] The Composition of Ayurvedic Constitution (N=89)

Ayurvedic Constitutions	Frequency
Vata	34 (38)
Pitta	37 (42)
Kapha	18 (20)

By the classification of the constitution according to Ayurveda, 42% of the classified women belonged to Pitta constitution, whereas Vata constitution 38%, Kapha constitution 20%. Therefore Pitta constitution is viewed as the most predominant among constitution, but Kapha constitution is rare.

[Table 2] Evaluation of skin surface hydration according to Ayurvedic Constitution

area	Unit : AU (Arbitrary Unit)			F	p
	Vata	Pitta	Kapha		
	Mean±SD				
forehead	43.98±15.51	66.36±10.78	62.59±13.27	27.210	.000***
cheek	48.36±16.20	71.40±11.65	68.81±9.64	19.671	.000***

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

The measurement of hydration on the forehead of the face depending on the constitution were shown in the order of Pitta, Kapha and Vata ($F=27.210$, $p=.000$). Multiple comparisons among Ayurvedic Constitution Pitta was significantly higher than Kapha and Vata at the .001 level.

The measurement of hydration on the cheek of the face depending on the constitution were shown in the order of Pitta, Kapha and Vata ($F=19.671$, $p=.000$). Multiple comparisons among Ayurvedic Constitution Pitta was significantly higher than Kapha and Vata at the .001 level.

[Table 3] Evaluation of skin surface lipid according to Ayurvedic Constitution

area	Unit : mg/cm ²			F	p
	Vata	Pitta	Kapha		
	Mean±SD				
forehead	75.41±42.70	121.09±62.61	172.78±50.84	20.107	.000***
cheek	63.15±69.40	106.41±76.70	143.44±67.74	7.767	.001**

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

The measurement of lipid on the forehead of the face depending on the constitution were shown in the order of Kapha, Pitta and Vata ($F=20.107$, $p=.000$). Multiple comparisons among Ayurvedic Constitution Kapha was significantly higher than Pitta and Vata at the .001 level.

The measurement of lipid on the cheek of the face depending on the constitution were shown in the order of Kapha, Pitta and Vata ($F=7.767$, $p=.000$). Multiple comparisons among Ayurvedic Constitution Kapha was significantly higher than Pitta and Vata at the .01 level.

[Table 4] Evaluation of skin surface pH according to Ayurvedic Constitution

area	Unit : pH			F	p
	Vata	Pitta	Kapha		
	Mean±SD				
forehead	6.13±.45	6.28±.66	6.80±.74	7.462	.001**
cheek	5.89±.57	6.05±.89	6.73±.89	6.981	.002**

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

The measurement of pH on the forehead of the face depending on the constitution were shown in the order of Kapha, Pitta and Vata ($F=7.462$, $p=.000$). Multiple comparisons among Ayurvedic Constitution Kapha was significantly higher than Pitta and Vata at the .01 level.

The measurement of pH on the cheek of the face depending on the constitution were shown in the order of Kapha, Pitta and Vata ($F=6.981$, $p=.000$). Multiple comparisons among Ayurvedic Constitution Kapha was significantly higher than Pitta and Vata at the .01 level.

4. Conclusions

The purpose of this study was to investigate the

characteristics of facial skin parameters (hydration, lipid and pH) on forehead and cheek according to Ayurvedic constitution classification of Vata, Pitta, Kapha.

Consequently, There was a significant difference in hydration, lipid and pH according to Ayurvedic constitution. The measurement of hydration on the face depending on the constitution were shown in the order of Pitta, Kapha and Vata ($p < 0.001$). The measurement of lipid on the face depending on the constitution were shown in the order of Kapha, Pitta and Vata ($p < 0.001$, $p < 0.01$). The measurement of pH on the face depending on the constitution were shown in the order of Kapha, Pitta and Vata ($p < 0.01$).

Facial skin surface seemed to be dependent on Ayurvedic constitution classification in Korean. These findings indicated that Ayurvedic constitution classification might be a useful esthetic treatment for caring facial skin in the future. This is a basic study to find Ayurvedic constitution can be a major factor to care and manage skin. To establish the potentiality of Ayurvedic medicine, research needs to be conducted on different disciplines of Ayurveda to meet the requirement of the society based on the following aspects: To standardize materials, methods and measures for preparation, preservation, presentation and administration of Ayurveda drugs. To provide proper scientific validation and significance to the fundamental principles of the system to the possible extent, so that they can be accepted within a scientific framework. It is necessary to rationalize the utility of positive and judicious use of modern scientific methods pertaining to the development of Ayurveda.

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<Research Interests>

Esthetics, Cosmetology