HEDONIC TEST OF ANTI-AGING FACE SERUM PREPARATIONS OF SEVERAL BRANDS MARKETED IN BANDUNG AREAS

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Abstract

To find out whether a product is liked or not or to find out the level of liking or acceptance of a product, a hedonic test or a favorability test can be used as a tool, so that it can be a reference for manufacturers before marketing their products. The purpose of this study is how a researcher conducted a hedonic test of products that had been circulating in the market where the panelists were not previously informed about the brand of the product and placed in the same packaging to avoid biases and impressions that were already attached to certain brands / brands, the samples tested came from 3 brands of anti-aging facial serum marketed in the Bandung. This study conducted of a descriptive study method by observation using a tool in the form of a questionnaire filled out by the panelists after being given a sample and asked to respond to sensory responses to preparations in the range of between 1 to 5, so that conclusions can be drawn from the three samples tested which sample got the highest score from 20 panelists. The results obtained from the three samples showed that sample 3 was the sample that got the highest score from the three criteria given to the panelists, namely in terms of texture, color, and odor.

Keywords: Hedonic Test, anti-aging face serum, questionnaire.

Introduction

With the growing popularity of cosmetics, the production of preparations that are widely circulated on the market is also growing, not only decorative cosmetics intended to improve a person's appearance, but also skin care cosmetics have not escaped the interest of modern society. Not only are more attractive people healthier and better groomed, but skin care cosmetics are also becoming more popular and available in larger quantities to meet consumer needs. This trend continues to increase from year to year.

Beauty care products have undergone significant development over the past decade with increasing public awareness of skin health and appearance based on healthy skin. Therefore, the skin care product market has flooded the market with various types and various qualities, especially in this case facial skin care products, ranging from moisturizing products, anti-acne products, lightening products and also anti-aging products or anti-aging products.

One form of facial care preparations that are in great demand by consumers is anti-aging preparation products where it is expected that by consuming these products, the facial skin of users will avoid premature aging caused by one of them from exposure to UV rays from the sun, which is very abundant, especially in tropical climates.

Anti-aging cosmetics is one branch of cosmetics that contain efficacious substances that help reduce fine lines and increase the moisture level of the skin. The main function of anti-aging preparations is to reduce wrinkles and sagging skin. (Sahu G., et.al, 2014).

The basic preparation of anti-aging cosmetics among others is how to increase penetration into the skin from drugs or other cosmetic chemicals with the use of the vesicular system, which has

advantages in penetrating the top layer of the skin, (Carlota et al., 2011) which based on its composition, vehikel used in general has an effect on the skin as follows:

1) Hydration
2) Decoration
3) Care
4) Hydration and protection

Preparations produced as anti-aging in addition to cream form are also widely made in the form of serum preparations , where the preparations are liquid / liquid preparations with a gel base in the preparation and have a lot of water content so that it can hydrate the skin It spreads easily whenapplied, and also offers a non-greasy finish product that is skin-friendly and provide comfort in its use (Budiasih et al., 2019). Serum preparations in addition to providing moisturizing effects are also used to deliver active ingredients deeper into the skin (Mayoral et al., 2014), as well as other benefits in the form of skin rejuvenation and nutrition (Thakre, 2017). Serums also have advantages in terms of usage time efficiency as skin physiology-based moisturizer (Surini et al., 2018), where immediately after applying serum immediately hydrates and is absorbed into the skin (Thakre, 2017). When developing a face serum, its physical properties and stability are the main characteristics that determine its quality. The formula of a face serum is basically an emulsion consisting of two immiscible liquids. Thickeners and emulsifiers are added to the system to prevent emulsion instability. Emulsifiers balance the system by reducing the interface voltage between two immiscible liquids, which stabilizes the dispersion phase. As a contributor to the system, thickeners also play an important role as rheology modifiers and add elasticity to emulsion flow characteristics (Moravkova and Filip, 2014). In addition to durability, another consideration in the formulation of facial serum is pH. If the pH value of the skin changes, then the microbiology and natural functions of the skin will be disrupted. It is online with this, there is no denying that skin care products are now the prima donna of the cosmetic market. Thus, the responsible regulatory authority, in this case BPOM, is the only organization under the Ministry of Health that is authorized to regulate the movement of medicines, cosmetics, and food products to ensure that the products on the market are trustworthy safe and secure. We need to make sure that it is valid.

Sensory testing (panel testing) plays an important role in product development by minimizing risk in decision making. Panelists can identify sensory traits that will help to describe the product. Sensory evaluation can be used to assess any desired or unintended changes in a product or formulation ingredients, identify areas for development, determine whether optimizations have been obtained, evaluate competitors' products, observe changes that occur during process or storage, and provide data necessary for product promotion. Consumer acceptance and preferences or preferences, as well as correlations between sensory and chemical or physical measurements can also be obtained by sensory evaluation. In addition to the safety aspects that can be accounted for, a cosmetic care product, from the packaging to the dosage form itself, has an attractive aesthetic appearance, that is, an organoleptic or sensory evaluation of its color, smell and texture. In order for cosmetics to become products that are competitive and acceptable to the market, and have high selling power when sold as consumables, consumers of cosmetic care products determine whether or not the product is accepted by consumers. For this reason, the evaluation used to determine how well the product is received by product users is important as a basis for decision making to design the right formulation to ensure adequate consumer acceptance.

Sensory assessment, also called organoleptic assessment or sensory assessment, is one of the most primitive methods of assessment. Assessment with the senses becomes a field of science after the assessment procedure is standardized, rationalized, linked to objective assessment, data analysis becomes more systematic, as well as statistical methods used in analysis and decision making. Organoleptic assessment is very widely used to assess quality in the food industry and other agricultural product industries. Sometimes this assessment can give the results of a very thorough assessment. In some respects the assessment with the senses exceeds even the thoroughness of the most sensitive tools. Organoleptic assessment, also called sensory assessment or sensory assessment, is a method of assessment that has been known for a long time and is still very commonly used. This assessment method is widely used because it can be implemented quickly and directly. In some ways, sensory

assessment has even better accuracy compared to the most sensitive measuring instruments (Meilgaard et al, 2016). The application of organoleptic assessment in practice is called organoleptic testing which is carried out with certain procedures. This test will produce data that is further analyzed using statistical methods (Kartika, 1992).

Organoleptic test is a way of measuring, assessing or testing the quality of commodities using the sensitivity of human sensory organs, namely the eyes, nose, mouth, and fingertips of the hands. Organoleptic tests also called subjective measurements are based on human subjective responses as measuring instruments (Soekarto, 1990). Organoleptic assessment is very widely used to assess quality in the food industry and other agricultural product industries. This assessment can sometimes give very thorough assessment results. Assessment with the senses in some ways even exceeds the accuracy of the most sensitive tools, one of which is the hedonic test (liking). The favorability test is basically a test in which the panelists express a response in the form of whether they are happy or not with the properties of the material being tested.

The favorability test is also called the hedonic test. Panelists were asked for their personal feedback about likes or vice versa (dislikes). In addition, the panelists also expressed their level of liking. These favorability levels are called hedonic scales. For example in terms of "likes" can have hedonic scales such as: very, very like, very like, like, quite like. Conversely, if the notion of "dislike" can have hedonic scales such as like and somewhat like, there is a response called neutral, i.e. neither like nor dislike.

The hedonic scale can be stretched or collapsed according to the range of the scale it wants. The hedonic scale can also be converted into a numerical scale with a quality score according to the level of preference. With this numeric data, statistical analysis can be carried out. The use of hedonic scales in practice can be used to determine differences. So hedonic tests are often used to organoleptic assessment of similar commodities or development products. Hedonic tests are widely used to assess the final product.

So that in this study a problem was raised about how an example of implementing a test on patient / consumer acceptance is referred to as the "Hedonic Test", because the test is one important aspect that cannot be ignored, especially in the production of a consumer product, which in this case is an anti-aging serum skin care cosmetic product.

Research Methods

The study was conducted using a descriptive observational study with a focus area in the city of Bandung, where panelists were given a questionnaire on the calm organoleptis sensory response to samples of several brands of aging serum.

Tools and Materials

The equipment used in this study is a questionnaire as a research aid and also a sample, wherethe ampelous used in this study is anti-aging serum which represents three categories of price rangelevels, namely one sample with a price below Rp.100,000.00 to represent the relatively cheap price, one sample with a price range between Rp.100,000.00 Rp.250,000.00 which represents the middle price and one sample from the price above Rp. 250,000.00 to represent the relatively expensive price, the sample was obtained from the online market or online shop in the Bandung city area. Researchersselect samples that are most in demand or purchased by consumers that can be searched based on the rating listed on the online store that provides the product.

Preparation of Panelist

The researchers who participated in this research were 20 panelists with the following intrinsic and extrinsic criteria:

- Intrinsic criteria: women, aged 20-50 years, can communicate well, are willing to take hedonic tests and fill out questionnaires, and have sensory sensitivity to the five senses.
- Extrinsic criteria: have limitations in responding to sensory senses.

How to Present Samples

Hedonic test samples should be presented randomly and coded. In providing an assessment, the reviewer should not repeat the assessment or compare the examples presented. So, for one untrained panelist, samples should be presented one by one so that panelists will not compare one sample with another.

How to Assess

Assessment of the hedonic test should be spontaneous. Then panelists can fill out a fill-in questionnaire. In this case, the panelists first conducted an acceptance test on serum from 3 types of brands and the assessment was carried out at 5 levels of favorability. Then proceed with the hedonic test.

Observation Table

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Panelist Name        :
Sample Type          : Serum
Number of Samples    : 3
Date. Testing:
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Instructions: Test samples from left to right, finish testing and assessing each sample thoroughly then neutralize your vision and smell for 1 minute. Then continue for other samples until the 3rd sample. Hedonic/Favorability Test

Give an assessment based on the following scale:

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1 = Strongly Dislike
2 = Dislike
3 = Regular/Neutral
4 = Likes
5 = Very Like
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Sample Code	Evaluation Criteria		
	Texture	Color	Odor

Research Variables

The variable used is a single variable, namely the level of preference for serum cosmetic preparations for the texture, warrants and odor of facial care serums from 3 brands circulating in the Bandung City market.

Data Analysis Techniques

Data analysis used by researchers is descriptive quantitative data analysis, which is based on the Likert scale where the calculation of the highest score divided by the maximum score of each indicator is carried out.

Data analysis activities include:

1) Scoring

Scoring is giving values in the form of numbers in question answers to obtain quantitative data. In this study, the scores given were based on the level of answers received from respondents, namely:

   a) Really like the score of 5
   b) Like 4
   c) Simply like the score of 3
   d) Dislike score 2
   e) Dislike score 1

2) Tabulating

Tabulating is a grouping of answers in an orderly and thorough manner, then calculated and added in the form of a table.

Analysis of Respondent favorability measurement

Increase respondents' preferences by calculating the percentage of each question indicator (texture, color and odor). Using Sugiyono's Formula, 2010.

$$\% = \frac{Number\ of\ Earned\ Scores}{Maximum\quad number\quad of\ scores} \times 100\%$$

Range of respondents' favorability scale :

   1. Very Like 81-100%
   2. Likes 61-80%
   3. Enough Likes 41- 60%
   4. Dislike 21-40%
   5. Dislike 0-20%

Results and Discussion

Based on the results of hedonic testing of samples of facial care serum preparations, the following results were obtained:

1) Hedonic Test of serum preparation texture

Testor hedonic assessment of textur of anti-aging facial serum preparations is carried out by making direct observations on the three preparations as test samples. The high favorability level represents the texture display most preferred by respondents, and can be observed in Table 1.

Table 1. Hedonic Test on the Texture of Anti-Aging Serum Preparations

HEDONIC EVALUATION FOR SERUM TEXTURE		
Panelist	Sample 1	Sample 2
P1	5	2
P2	4	2
P3	5	2
P4	2	3
P5	2	2
P6	3	2
P7	2	4
P8	3	2
P9	3	3
P10	5	4
P11	2	2
P12	3	2
P13	4	3
P14	2	2
P15	3	4
P16	3	2
P17	3	5
P18	3	5
P19	2	3
P20	2	2

Remarks : P = Panelists
Favorability level 1 = Strongly Dislike
2 = Dislike
3 = Regular/Neutral
4 = Likes
5 = Very Likes

From the responses given by respondents to the three serum samples based on the texture of the preparation, it was found that sample 3 got the highest total score compared to the other two samples, namely 84 which if converted into the liking level according to Sugiyono, 2010, was in the very like range, while for samples 1 and 2 each collected a score of 61 and 56 where sample 1 was in the like range and sample 2 was in the quite like range.

2) Hedonic Test of color serum preparations

Testor hedonic assessment of the color of anti-aging facial serum preparations is carried out by making direct observations on thethree preparations as test samples. A high degree of favorability represents the color display most by respondents, which can be observed in Table 2.

Table 2. Hedonic Test of Color of Anti-Aging Serum Preprarations

HEDONIC EVALUATION OF COLOR			
Panelists	Sample 1	Sample 2	Sample 3
P1	3	5	2
P2	4	3	2
P3	4	3	3
P4	5	5	3
P5	5	5	3
P6	5	4	4
P7	2	5	4
P8	3	5	5
P9	3	5	2
P10	4	5	3
P11	5	3	3
P12	5	3	4
P13	3	4	4
P14	3	5	4
P15	3	5	5
P16	4	5	2
P17	3	5	2
P18	4	2	3
P19	4	4	3
P20	3	2	5

Remarks :   P = Panelists
Favorability level   1 = Strongly Dislike
                       2 = Dislike
                       3 = Regular/Neutral
                       4 = Likes
                       5 = Very Likes

From the responses given by respondents to the three serum samples based on the color of the preparation, it was found that sample 2 got the highest total score compared to the other two samples, namely 83 which if converted into the liking level according to Sugiyono, 2010, was in the very like range, while for samples 1 and 3 each collected a score of 75 and 66 which were both in the like range.

1) Hedonic Test against Odor of serum preparations

Hedonic testing or assessment of the odor of skin care serum preparations is carried out by making direct observations on the three preparations as test samples. A high favorability level represents the display of odors most preferred by respondents, which can be observed in Table 3.

Table   3. Hedonic Test of Odor of Anti   Aging Serum Preparations

HEDONIC EVALUATION OF ODOR			
Panelist	Sample 1	Sample 2	Sample 3
P1	3		3
P2	3	4	5
P3	3	4	2
P4	2	3	5
P5	2	3	4
P6	5	2	4
P7	5	5	4
P8	5	3	4
P9	5	2	5
P10	4	4	3
P11	2	5	5
P12	4	2	5
P13	3	5	5
P14	3	5	3
P15	4	4	4
P16	5	2	5
P17	2	3	2
P18	3	2	2
P19	5	2	3
P20	4	2	5
		5	

Remarks :   P = Panelists
Favorability   level   1 = Strongly Dislike
                         2 = Dislike
                         3 = Regular/Neutral
                         4 = Likes
   5 = Very Likes

From the responses given by respondents to the three serum samples based on the smell of the preparation, it was found that sample 3 got the highest total score compared to the other two samples, namely 78 which if converted into the favorability level according to Sugiyono, 2010, was in the like range, as well as for samples 1 and 2 each collected a score of 72 and 67 was in the   range of likes.

4) Hedonic Test Recapitulation of Each Test Component

If presented in the form of tables and diagrams, the acquisition of each sample based on the three criteria is as follows:

Table 4. Hedonic Test Recapitulation

PARAMETER	TOTAL SCORE		
	SAMPLE 1	**SAMPLE 2**	**SAMPLE 3**
TEXTURE	61	56	84
COLOR	75	83	66
ODOR	72	67	78
TOTAL SCORE	208	206	228
AVERAGE	69,3	68,7	76
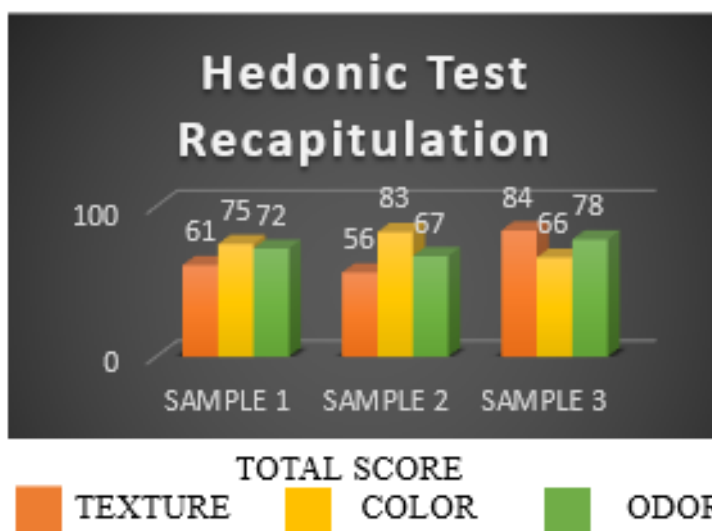
Pic 1. Hedonic Test Recapitulation Diagram

Conclusions and Suggestions

Conclusion

Based on the results of data analysts obtained from hedonic testing of 3 brands of serum preparations as test samples, the following conclusions can be drawn:
Sample 3 is the sample that has collected the most scores by panelists as serum preparations from various test criteria, both in terms of texture, color and odor.

The average total score of the sample of 1.2 and 3 is in the like range, with a consecutive score of 69.3; 68.7 and 76.

Suggestion

For future research it is recommended to add all components of this hedonic testing, both in terms of the number of samples, the number of volunteers and also testing carried out on the new formula.

References

Budiasih, S., Masyitah, I., Jiyauddin, K., Kaleemullah, M., Samer, A. D., Fadli,A. M., & Yusuf, E., 2019, Formulation and Characterization of Cosmetic Serum Containing Argan Oil as Moisurizing Agent. Bromo, 297–304.

Carlotta M, Maria C, Luisa DM, Federica R, Chiara DM, Franco A, Pietro M and Tommasina C., 2011. A New Vesicle-loaded Hydrogel System Suitable for Topical Applications: Preparation and Characterization, Journal Pharm Pharmace Sci., 14(3): 336-346.

Fisher GJ, Kang S, Varani J, Bata-Csorgo Z, Wan Y, Datta S, Voorhees JJ., 2002. Mechanisms of photoaging and chronological skin aging. Arch Dermatol. 138(11):1462-70.

Kartika, B.,1992, Petunjuk Evaluasi Sensori Hasil Industri Produk Pangan. Yogyakarta.

Kotler. 2005. Teori kepuasan dan faktor-faktor yang mempengaruhi kepuasan, Jakarta
Mayoral, F. A., Kenner, J. R., & Draelos, Z. D. 2014. The skin health and beauty pyramid: a clinically based guide to selecting topical skincare products. Journal of Drugs in Dermatology: JDD, 13(4), 414–421.

Moravkova, T., dan Filip, P., 2014, The Influence of Thickeners on the Rgeological and Sensory Properties of Cosmetic Lotions, Acta Polytechnica Hungarica, Vol 11(6) : 173-186.

Meilgaard, M.C., Civille, G.V., Carr, T.B., 2016. Sensory Evaluation Techniques, 5th Ed., CRC Press.

Nursalam. 2001. Pengertian Kepuasan, Yogyakarta

Sahu, G., Sahu, s., Sharma, H., dan Jha, A.K., 2014, A review of current and Novel Trends for Anti-Ageing Formulation, IJPCBS, 4(1), 118-125.

Schreml, S., Kemper, M., dan Abels, ., 2014. Skin pH in The Elderly and Appropiate Skin Care. European Medical Journal. 86-94.

Sugiyono. 2010. Metodologi Penelitian Kesehatan. Mitra Cendakia. Yogyakarta

Surini, S., Mubarak, H., & Ramadon, D. (2018). Cosmetic serum containing grape (Vitis vinifera L.) seed extract phytosome: Formulation and in vitro penetration study. Journal of Young Pharmacists, 10(2), s51–s55.

Thakre, A. D. (2017). Formulation and development of de pigment serum incorporating fruits extract. International Journal of Innovative Science and Research Technology, 2(12), 330–382.

Tranggono, R.I., Latifah, F., Jayadisastra, J., 2007, Buku Pegangan Ilmu Pengetahuan Kosmetik. Gramedia Pustaka Utama, Jakarta.s

Undang-undang Repubik Indonesia No.36 Tahun 2009 tentang kesehatan Indonesia. Jakarta

Umar. 2003. Dasar Pertimbangan Kepuasan Pasien. Jakarta