

THERMO PHYSIOLOGICAL COMFORT OF CHIFFON CERUTTI AS LINING ON THE BROCADE DRESS

Hapsari Kusumawardani, Dinda Santi Maharini, & Endang Prahastuti

Fakultas Teknik, Universitas Negeri Malang

Jl. Semarang 5, Malang 65145, Indonesia

hapsari.kusumawardani.ft@um.ac.id, diindamaharani.dm@gmail.com,

endang.prahastuti.ft@um.ac.id

ABSTRACT

Thermo-physiological comfort is one of the effects of comfort levels on clothing. Using cerutti chiffon (CC) as lining material for dress with any conditions need and important to be analysed. Therefore, the purpose of this study is want to know the comfort level of CC as lining on the brocade dress. Heat transfer and moisture transfer are two indicators that determine the comfort level of CC that used in this study. 40 students from fashion department with body size medium (M) involved in this study. The results of this study showed that heat transfer and moisture transfer indicators are comfort to use both inside and outside room, also it can be used during activities at daytime. It suggests that CC gives a sense of comfort to the clothing and can be used as an alternative lining material from brocade fabric. It can be concluded that CC is one of the good material to use for lining after the main fabric, especially for brocade dress.

KEYWORD: *thermo-physiological comfort, brocade dress, lining, cerruti chiffon.*

1. INTRODUCTION

The lining material is a fabric that coats the main material in whole or in part of clothes. The material that functions as a lining should be able to adjust and compensate for the main material. The accuracy in choosing lining materials can enhance the quality of clothing. So that, the clothing can have the better construct. On the other hand, in choosing lining, it is necessary to see the opportunity in wearing clothing, such as a jacket that serves as a warming body or a protector of cold weather, thus selected lining that can make the wearer warmer, or work clothing needs to be selected also cloth that does not give a sense of heat and can suck sweat and can provide comfort while working. Tuneeca (2009) stated that the country of Indonesia is tropical, so it is needed a very hygroscopic material.

One of the material often to be used as a lining is chiffon fabric CC. CC is one of the types from chiffon. It characteristic is transparent, pliable, thin, lightweight, and simple weaving (Wangki, 2014). Gunawan, et al. (2009) said that the chiffon is one of the ideal material for making formal dresses, falling gently on the body, and gives the impression of waving. Chiffon that made from silk, cotton, polyester, and rayon is a type of fabric that is easy to decompose its yarn. So that, it needs a special technique in sewing. CC material is often to choose in the manufacture of clothing to become lining for main material, because it is more easily shaped and feels more comfortable when used. So this material can also be used as a lining

material because it has a high elasticity. Therefore, this study aims to know the comfort level of CC as lining on the brocade dress.

2. METHOD

This study used descriptive statistics with quantitative approach. This study conducted in State University of Malang and 40 students from fashion department with body size medium (M) involved in this study. Data collection used questionnaire and analysis used SPSS. The results of reliability test are 0.92, it means the instrument reliable and can be used in this study.

3. RESULTS

In this study, researcher used two indicators, namely: 1) Heat transfer and 2) Moisture transfer. For the detail of descriptive statistics of each indicator is explained in the paragraph below.

3.1 Heat Transfer Indicator

Heat transfer in this study is the process of heat transfer that felt by respondents in their skin directly when they wore brocade dress with CC as lining on the dress. In heat transfer indicator consist of four sub-indicators to know CC as lining on the brocade dress comfortable to wear by respondents, included: 1) conduction, 2) convection, 3) radiation and 4) wind penetration. For the detail of each sub-indicator is presented in paragraph below.

Table 1. Heat Transfer Indicator

| Sub Indicator | Item | Strong heat | | Moderate heat | | Slight heat | | No heat at all | | Total | |
|------------------|------|-------------|-----|---------------|------|-------------|------|----------------|------|-------|-----|
| | | f | % | f | % | f | % | f | % | f | % |
| Conduction | P1 | 0 | 0 | 6 | 15 | 12 | 30 | 22 | 55 | 40 | 100 |
| | P2 | 0 | 0 | 5 | 12.5 | 19 | 47.5 | 16 | 40 | 40 | 100 |
| Convection | P3 | 1 | 2.5 | 12 | 30 | 10 | 25 | 17 | 42.5 | 40 | 100 |
| | P4 | 2 | 5 | 9 | 22.5 | 16 | 40 | 13 | 32.5 | 40 | 100 |
| Radiation | P5 | 0 | 0 | 5 | 12.5 | 18 | 45 | 17 | 42.5 | 40 | 100 |
| | P6 | 3 | 7.5 | 16 | 40 | 10 | 25 | 11 | 27.5 | 40 | 100 |
| Wind Penetration | P7 | 2 | 5 | 10 | 25 | 18 | 45 | 10 | 25 | 40 | 100 |

3.1.1 Conduction Sub-Indicator

Conduction sub-indicator used two items of questions. Item 1 (P1), the question is “Do you feel sultry/ heat when you wear brocade dress with CC as lining on your dress on the first 5 minutes?”. Based on Table 1, 55% (22) respondent felt no heat at all during they wore the brocade dress with lining CC on their dress, 30% (12) respondents felt slight heat when they wore it, and the other 15% (6) respondents felt moderate heat. It means the CC as lining on the brocade dress was no heat transfer in the respondents’ skin on the first 5 minutes’ activities.

Furthermore, Item 2 (P2), the question is “Do you feel sultry/ heat when you wear brocade dress with CC as lining on your dress?”. This question asked to the respondents in the end of they wore the brocade dress (after 3 hours they wore it). In the Table 1 showed that 47.5% (19)

respondents felt slight heat after 3 hours they wore brocade dress, 40% (16) respondents felt no heat at all after they wore it, and the other 12.5% (5) respondents felt moderate heat. It means the CC as lining in the brocade dress was no heat transfer even though the respondents wore it for 3 hours' activities.

Based on the item P1 and P2 related with conduction sub-indicator mentioned that the CC as lining on the brocade dress was no conduction occur for first 5 minutes' activities and during 3 hours' activities.

3.1.2 Convection Sub-Indicator

Convection sub-indicator in this study used two items of questions. The first item (P3), the question is "Do you feel sultry when you wear the brocade dress with the CC as lining on the dress during your activities?". Based on Table 1, 42.5% (17) respondents felt no heat at all during their activities to wear brocade dress with CC as lining on dress, 30% (12) respondents felt moderate heat to wear brocade dress during their activities, 25% (10) respondents felt slight heat to wear it for activities, and the other respondent (2.5%) felt strong heat. It means CC material as lining for brocade dress comfort can be wore during activities.

While, item P4 for convection sub-indicator the question is "Do you feel sultry when you wear the brocade dress with the CC as lining inside the room?". Table 1 presented that 40% (16) respondents felt slight heat when they wore the brocade dress with the CC as lining inside the room, 32.5% (13) respondents felt no heat at all when they wore it inside the room, 22.5% (9) respondents felt moderate heat, and the other respondents (5%) felt strong heat. It means CC material as lining for brocade dress comfort can be wore inside the room.

Based on the item P3 and P4 can be concluded that the CC as lining on the brocade dress was no convection occur. Thus, CC as lining can wear for activities and comfortable to use it inside the room.

3.1.3 Radiation Sub-indicator

Radiation sub-indicator in this study used two items of questions. The first item P5, the question is "Do you feel sultry when you wear the brocade dress with the CC as lining in outside the room?". Table 1 showed that 45% (18) respondents felt slight heat when the wore brocade dress with the CC as lining on the dress in outside room, 42.5% (17) respondents felt no heat at all to wear it in outside room, and the other (12.5%) respondents felt moderate heat. It means CC as lining on the brocade dress comfortable to wear outside room.

On the other hand, the item P6 the question is "Do you feel sultry/heat when you wear the brocade dress with the CC as lining and then it exposed the sun directly?". In the Table 1 presented that 40% (16) respondents felt moderate heat when they wore brocade dress with the CC as lining even though they exposed the sun directly, 27.5% (11) respondents felt no heat at all when they wore it and exposed the sun

directly, 25% (10) respondents felt slight heat, and the other 7.5 % (3) respondents felt strong heat. It means CC as lining on the brocade dress cannot wear as lining when they exposed the sun directly.

Based on the item P5 and P6, the CC as lining material on the brocade dress occurred moderate radiation. Therefore, CC material as lining can be used in the outside room but it cannot be exposed sun directly.

3.1.4 Wind Penetration Sub-Indicator

In this study, wind penetration used one item of question. The question of P7 is "Do you feel sultry when you wear the brocade dress with the CC as lining in outside the room and it exposed the hot-wind?". 45% (18) respondents felt slight heat when they wore it and exposed the hot-wind, 25% (10) respondents felt moderate heat and no heat at all, and the other 5% (2) respondents felt strong heat. It means CC as lining on the brocade dress, it comforts to wear in the outside room even though it exposed the hot-wind. In the other word, CC can be used lining in the brocade dress without wind penetration.

3.2 Moisture Transfer Indicator

Moisture transfer indicator in this study consist of seven sub-indicators, namely: 1) difussion, 2) sorption-desorption, 3) adsorption, 4) convection, 5) *condentation*, 6) wetting, and 7) wicking. Detail explanation is on Table 2.

Table 2. Moisture Transfer Indicator

| Sub-Indicator | Item | Strong moisture | | Moderate moisture | | Slight moisture | | No moisture at all | | Total | |
|---------------------|------|-----------------|------|-------------------|------|-----------------|------|--------------------|------|-------|-----|
| | | f | % | f | % | f | % | f | % | f | % |
| Diffusion | P8 | 5 | 12.5 | 12 | 30 | 17 | 42.5 | 6 | 15 | 40 | 100 |
| | P9 | 9 | 22.5 | 14 | 35 | 15 | 37.5 | 2 | 5 | 40 | 100 |
| | P10 | 1 | 2.5 | 10 | 25 | 19 | 47.5 | 10 | 25 | 40 | 100 |
| Sorption-desorption | P11 | 1 | 2.5 | 18 | 45 | 12 | 30 | 9 | 22.5 | 40 | 100 |
| Absorption | P12 | 6 | 15 | 20 | 50 | 10 | 25 | 4 | 10 | 40 | 100 |
| Convection | P13 | 0 | 0 | 16 | 40 | 15 | 37.5 | 9 | 22.5 | 40 | 100 |
| Condensation | P14 | 9 | 22.5 | 17 | 42.5 | 13 | 32.5 | 1 | 2.5 | 40 | 100 |
| | P15 | 11 | 27.5 | 17 | 42.5 | 10 | 25 | 2 | 5 | 40 | 100 |
| Wetting | P16 | 1 | 2.5 | 12 | 30 | 15 | 37.5 | 10 | 25 | 40 | 100 |
| Wicking | P17 | 5 | 12.5 | 20 | 50 | 14 | 35 | 1 | 2.5 | 40 | 100 |

3.2.1 Diffusion Sub-indicator

Diffusion sub-indicator in this study used three items of questions. The first item is P8. The result of P8 is 42.5% (17) respondents felt slight moisture, 30% (12) respondents felt moderate moisture, 15% (6) respondents felt no moisture at all, and the other 12.5% (5) respondents felt strong moisture. Furthermore, Item P9 showed that 37.5% (15) respondents felt slight moisture, 35% (14) respondents felt moderate moisture, 22.5% (9) respondents felt strong moisture, and the other 5% (2) respondents felt no moisture at all. While, item P10 presented that 47%

(19) respondents felt slight moisture, 25% (10) respondents felt no moisture at all, 25% (10) respondents felt moderate moisture, and the other 2.5% (1) respondent felt strong moisture.

3.2.2 Sorption-desorption Sub-indicator

Sorption-desorption sub-indicator in this study used one item of question (P11). In the Table 3.2 showed that 45% (18) respondents felt moderate moisture, 30% (12) respondents felt slight moisture, 22.5% (9) respondents felt no moisture at all, and the other 2.5% (1) respondent felt strong moisture.

3.2.3 Absorption Sub-indicator

Absorption sub-indicator in this study used one item of question (P12). In the Table 2 presented that 50% (20) respondents felt moderate moisture, 25% (10) respondents felt slight moisture, 15% (6) respondents felt strong moisture, and the other 10% (4) respondents felt no moisture at all.

3.2.4 Convection Sub-indicator

Convection sub-indicator in this study used one item of question (P13). In the Table 2 mentioned that 40% (16) respondents felt moderate moisture, 37.5% (15) respondents felt slight moisture, and 22.5% (9) respondents felt no moisture at all.

3.2.5 Condensation Sub-indicator

Condensation sub-indicator in this study used two items of questions (P14 and P15). The first item P14 presented in Table 3.2 that 42.5% (17) respondents felt moderate moisture, 32.5% (13) respondents felt slight moisture, 22.5% (9) respondents felt strong moisture, and the other 2.5% (1) respondent felt no moisture at all. Furthermore, the item P15 in Table 2 showed that 42.5% (17) respondents felt moderate moisture, 27.5% (11) respondents felt strong moisture, 25% (10) respondents felt slight moisture, and the other 5% (2) respondents felt no moisture at all.

3.2.6 Wetting Sub-indicator

Wetting sub-indicator in this study used one item of question (P16). In the Table 2 showed that 37.5% (15) respondents felt slight moisture, 30% (12) respondents felt moderate moisture, 12% (10) respondents felt no moisture at all, and the other respondents (2.5%) felt strong moisture.

3.2.7 Wicking Sub-indicator

Wicking sub-indicator in this study used one item of question (P17). In the Table 2 presented that 50% (20) respondents felt moderate moisture, 35% (14) respondents felt slight moisture, 12.5% (5) respondents felt strong moisture, and the other respondents felt no moisture at all.

Based on the explanation above that moisture transfer indicator with seven sub-indicators for CC as lining in the brocade dress is comfortable to use.

4. DISCUSSION

Based on the analysis of the thermos-physiological comfort related with using the CC as a lining in brocade dress, CC can be used as a lining because of its' characteristic (non-heat). On the other hand, the characteristic of the CC is thin and light, slippery, slightly elastic has material absorption, strong, and flexible, is a good permeability (Nicola, 2012). In addition, CC which is a mixture between natural fibres and synthetic fibres can adjust to ambient temperature. Thus, CC is a hydroscopic fibre that is tangle-resistant, and resistant to exposure to sun. The mixture of natural and synthetic materials produces a good fabric with conduction characteristic. So that, CC is comfortable for activities both inside and outside the room. So, the CC that used as a lining on brocade dress can absorb sweat well and the body does not feel hot despite being used outside the room during the daytime.

5. CONCLUSION

Based on the paragraph above can be concluded that CC is one of kinds of material that comfort to wear as alternative lining for all type main material. Because, the characteristic of CC material can become heat transfer and moisture transfer.

REFERENCE

- Gunawan, B. 2009. *Kenali Tekstil*. Jakarta: Dian Rakyat
- Gunawan, B. 2009. *Kain*. Jakarta: Dian Rakyat
- Kolcaba, K. 2003. *Comfort Theory and Practice: a Vision for Holistic Health Care and Research*. Retrieved at 8 January 2017, <http://currentnursing.com/nursingtheory/comforttheorykathyKolcaba.html>
- Malik, T. & Sinha, T. K. (2012). *Clothing Comfort: A Key Parameter in Clothing*. India: Shri Vaishnav Institute of Technology and Science.
- Nicola. (2012). Woven Apparel Fabrics. In: *Woven Textiles: Principles, Developments and Applications* (pp. 345-365). Cambridge: Woodhead Publishing, Ltd.
- Tuneeca. 2009. *Kenyamanan dalam Berbusana*. Retrieved at 28 April 2018,
- Wangki. 2014. *Jenis-Jenis Kain Sifon (Shiffon)*. Retrieved at 13 February 2017, <http://www.kaos-kerah.com/jenis-jenis-kain-sifon-chiffon/>