

A Study on the Dyeing of Ramie Fabric Treated with Medicinal Plant

V. The Natural Dyeing on Ramie Fabric Using *Epimedium brevicornum* Herba

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ABSTRACT

This study was performed to investigate the effect of *Epimedium brevicornum* Herba extract on the treatment of chromaticity and colorfastness. *Epimedium brevicornum* Herba has been used as a Korean medicine. It is effective in sexual excitement, depressant of blood pressure and anti-virus. It is also good as a tonic and in treating involuntary emission of semen. In the long history of Korea, dyeing has been applied for a means representing the grace of natural and inner esthetic consciousness of man. Vegetable dyes give us such great benefits, diversified color, but no pollution. And ramie fabric has distinctive features such as beautiful brilliance, elegance, and strong durability. So, it is regarded as a special product of Korea traditionally. These studies were carried out to treat with acetate iron, dichloride copper and alum with a mordant to ramie fabric. The ramie fabric was died with *Epimedium brevicornum* Herba extract. The results of experiment showed as follows:

First, the chromophoric degree was the highest in acetate iron but not distinction in another mordants. Second, the light colorfastness was the highest in non treated and dichloride copper, but alum was the lowest. Third, the discoloration was alum and dichloride copper showed first grade in washing colorfastness. Abrasion colorfastness was not significant in this test. According the previous results, *Epimedium brevicornum* Herba has an efficiency in sexual excitement, depressant of blood pressure and anti-virus. So it is considered that *Epimedium brevicornum* Herba can be applied effectively to tonic and in treating involuntary emission of semen.

Key Words : *Epimedium brevicornum* Herba, ramie fabric, chromophoric, colorfastness, discoloration, climacteric disturbance.

INTRODUCTION

In the long history of man, dyeing has been applied

for a means of representing the grace of God and inner esthetic consciousness of man.

Epimedium brevicornum.(Berberidaceae family) is an evergreen perennial plant which grow in under trees

Table 1. Color differences by mordants

Fabric	Mordants	Temperature(°C)	Testing time (min)	chromophoric effect
Ramie-fabric	Non-mordant	40~50°C	20~30	Ivory
	Alum	40~50°C	20~30	Green yellow
	Acetate-iron	40~50°C	20~30	Light green
	Dichloride copper	40~50°C	20~30	Light brown

Table 2. Variation of color chart by after mordanting with alum, acetate iron, and dichloride copper.

color sample	Mordants	COLOR CHART
Japan Inc-chemical company	Non-mordant	chart3
	Alum	chart 4 (Y10%)
	Acetate-iron	chart 3 (Y10%)
	Dichloride copper	chart 5 (Y20%)
Doosung Paper (Designers color 139)	Non-mordant	P62
	Alum	G58
	Acetate-iron	N 6
	Dichloride copper	L61

and shrubs and in crevices in the mountains (Lee, 1982).

Whole plants of *Epimedium brevicornum*. were gathered at the late summer and dried. The whole plant tastes to be sweet and pungent. *Epimedium brevicornum*. is effective in premature ejaculation, incontinence of urine, chronic pain in the lower body and legs climacterium hypertension, chronic tracheitis. It is also good as a sexual excitement, depressant of blood pressure and anti-virus. (Euk, 1981).

It's main compounds are icariin, ceryl alcohol, phytosterol, tannin, palmitic acid, stearic acid, oleic acid. (Euk, 1981). Vegetable dyes give us such great benefits, diversified color but no pollution. And the ramie fabric has distinctive features such as beautiful brilliance, elegance, and strong durability. Also It is regarded as a special product of Korea traditionally.

In these days, the life of convenient color is being needed more and more as technology is developed day after day. But the synthetic dyestuff has some serious

problems. Synthetic dyestuff's causes the side effects such as dermatitis, nasal inflammation, and allergy. And synthetic dyeing makes us be polluted. The high technology goes with non-pollution and the moderns take pleasure in natural color and desire the life of non-pollution (Lee et al, 1993).

But some kind of natural dyestuffs had anti-virus. When the ramie-fabric were dyed and treated with *Epimedium brevicornum*. extract, we have found that the change of color and dyeing color fastness were occurred.

MATERIALS AND METHODS

Epimedium brevicornum. was used for testing dyeing plant. Testing material was ramie fabric. And acetate iron, dichloride copper, alum were used for mordant.

Testing progress was as follows: washing the dried *Epimedium brevicornum*. 1.2kg., soaking *Epimedium brevicornum*. in water 12 l . Boiled the soaked *Epimedium brevicornum*. making first dyeing solution.

Table 3. Colorfastness to light of fabric

mordants	Discoloration(grade)			
	Non-mordant	Alum	Acetate-Iron	Dichloride copper
<i>Epimedium brevicornum.</i>	5	5	4-5	5

Table 4. Colorfastness to washing of fabric

Mordants	Non-mordant		Alum		Acetate-Iron		Dichloride copper	
	DIS	POL.	DIS	POL	DIS	POL.	DIS	POL.
<i>Epimedium brevicornum.</i>	4-5 grade	5 grade	4-5 grade	5 grade	4 grade	5 grade	4 grade	5 grade

^{x)} DIS : Discoloration, POL. : Pollution

Table 5. Colorfastness to abrasion of fabrics

Mordants	Pollution			
	Non-mordant	Alum	Acetate-Iron	Dichloride copper
<i>Epimedium brevicornum.</i>	3grade	3grade	2-3grade	3grade

Pour out the first solution, and then boiled with 8 l water to make second solution. and then I made the third solution Third solution need 4 l water. Mixing whole solutions and preparing strained solution for the test.

The ramie-fabric was tamper with 10~20 minutes treat in 40~60°C for soaked in dyeing solution. The ramie-fabric as soaked with dyeing solution at whole testing time. Because It was prevent ramie-fabric from stain. This kind of treats were 2 or 3 times repeated. The ramie-fabric was washed 5 to 6times after dyed.

The ramie-fabric was mordant with acetate iron, dichloride copper and alum and treated for 20~30 min. After treating mordant ramie-fabric was washed many times. Each mordants weights were 2~3% per ramie-fabric weight.

RESULTS AND DISCUSSION

1. Test of Colorimetry

The investigation was made for the purpose of finding out ramie-fabric mordant with *Epimedium*

brevicornum. Color chart of Japan Inc-chemical company was used in this test. The colorimetry was shown in Table 1 and Table 2.

Testing temperature was 40~50°C and testing time was 20~30 minutes spent. This test was carried out under the same condition. Non-mordant showed light-green, alum showed green yellow, acetate-iron showed ivory, dichloride copper showed green. Ramie-fabric showed differences in color by mordants.

In Japan Inc-chemical company's color sample, non-mordant showed chart3, alum showed chart4, acetate-iron showed chart3, dichloride copper showed chart5. In Doosung Paper's color sample, non-mordant showed P62, alum showed G58, acetate-iron showed N2, dichloride copper showed L61.

Colorimetry was significant by each mordants.

2. Measure the colorfastness

Colorfastness of ramie-fabric dyed with mordants was shown in Table 3. Table 4. and Table 5.

Investigation of light colorfastness was carried out used 4 kind of ramie-fabric It was basked in the light

20hours. Discoloration has 8 grade. non-mordant, dichloride copper and alum' s grade is 3 and acetate-iron' s grade is 3-4. Discoloration was non-mordant, alum and dichloride copper was higher grade than acetate-iron.

Investigation of washing colorfastness was carried out and used 4 kind of ramie-fabric. It was tested by KS K0430 A-1. Discoloration was non-mordant, alum and dichloride copper was higher than acetate Iron. Pollution was not significant in this test.

Investigation of abrasion colourfastness was carried out and used 4 kind of ramie-fabric. The ramie-fabric was rubbed ten times by 900g weight per 10seconds. Abrasion colourfastness has 5 grades. Pollution was non-mordant, alum and dichloride copper higher than acetate-Iron in this test.

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