

Dyeability of Silk Fabrics Using *Ligustrum japonicum Thunb* Fruit.

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1. INTRODUCTION

In this study the optimum dyeing conditions and blocking effect of UV, and deodorization efficiency of silk fabrics dyed with *Ligustrum japonicum Thunb* was investigated.

2. EXPERIMENTAL

1. Materials

100% silk woven fabric was used.

Fiber	Weave	Fabric count (ends×118)	Thickness (mm)	Weight (g/m ²)
Silk 100%	Plain	150×118	0.18	50

2. Preparation of Colorants

Fresh *Ligustrum japonicum Thunb* fruit was extracted in distilled water(liquor ratio 1:20) at 100°C for 1hour and freeze-dried at -40°C to obtain colorants powder. The pH value of dyeing solution was 5.

3. Dyeing

The silk fabrics were dyed in high pressure dyeing machine(DL-1001 Series, DaeLim Eng. Korea). The Liquor ratio was 20:1. Dyeing was carried out varying dye concentration, dyeing temperature, dyeing time and the number of repeated dyeing.

4. Dyeability

In order to examine the dyeability according to dyeing conditions, reflectance of dyed fabrics were measured by using UV/VIS spectrophotometer.

5. Blocking effect

The blocking effect of UV of dyed silk fabrics were measured by using UV/VIS spectrophotometer.

6. Deodorization efficiency

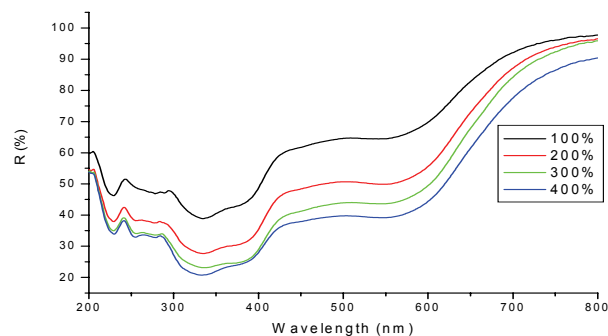
In order to examine the deodorization efficiency the concentration of ammonia gas was measured according to JTETC test method.

7. Color Fastness

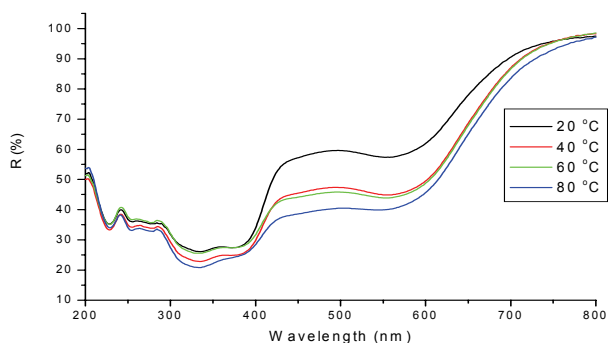
Light fastness, dry cleaning fastness, perspiration fastness and abrasion fastness were measured according to KS K 0700, KS K 0644, KS K 0715 and KS K 0650, respectively.

3. RESULTS

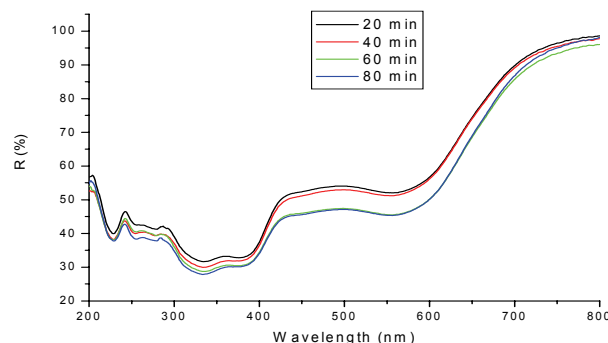
1. Effect of dye concentration



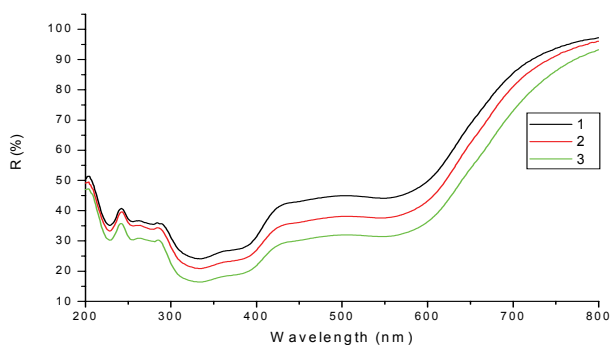
2. Effect of dyeing temperature



3. Effect of dyeing time



4. Effect of the number of repeated dyeing



5. Color fastness of silk fabrics dyed with *Ligustrum japonicum Thunb*

Light Fastness		1	
Dry Cleaning Fastness	colour change	5	
Perspiration Fastness	acidic	colour change	4
		staining	4-5
	alkaline	colour change	2-3
		staining	4
Abrasion Fastness	dry	5	
	wet	5	

6. Blocking effect of ultraviolet radiation of silk fabrics dyed with *Ligustrum japonicum Thunb*

Sample	UDF	T(UV-A)%	T(UV-B)%	UV-A%	UV-B%
Natural silk fabric	4	37.7	15.8	62.3	84.2
Dyed silk fabric	14	11.2	4.6	88.8	95.4

7. Deodorization efficiency of silk fabrics dyed with *Ligustrum japonicum Thunb*

pSilk Fabric	Concentration of ammonia gas(ppm)	
	Initial concentration	After 2 Hours
Blank	100.0	98.0
Natural silk fabric	100.0	10.4
Reduction of ammonia(%)	-	89.4
Dyed silk fabric	100.0	32.7
Reduction of ammonia(%)	-	66.7

4. CONCLUSION

While the colors are generally red purple, the dyeability of *Ligustrum japonicum Thunb* fruit varies depending on dyeing conditions. The higher the dye concentration is, the deeper the color is. Optimum dyeing temperature is 80°C without causing any damage to the fabric. The ideal dyeing time turns out to be 60 minutes. In addition, the repeated dyeing improves dyeability. Colorfastness to dry cleaning and rubbing were good, but light fastness and perspiration fastness were poor. Blocking effect of ultraviolet radiation and deodorization efficiency were good.

5. ACKNOWLEDGEMENT

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6. REFERENCES

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