

Eco-friendly Dyeing of Silk with *Ligustrum japonicum* Fruit

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In this study the optimum dyeing conditions and blocking effect of UV of *Ligustrum japonicum* Thunb was investigated. Colorants were water-extracted from *Ligustrum japonicum* Thunb fruit and freeze-dried to obtain colorants powder. The effects of dye concentration, dyeing temperature, dyeing time, and the number of dipping count were studied. Fastness to dry cleaning, rubbing, perspiration, and light were measured according to KS K 0644, KS K 0650, KS K 0715 and KS K 0700, respectively. In order to examine the dyeability according to dyeing conditions, absorbance of fabrics were measured by using UV/VIS spectrophotometer.

The bath ratio was 1:20. Dyeing concentration was 100, 200, 300, 400 and 500% on the weight of fiber. Dyeing time was

20, 40, 60, and 80 minutes. Dyeing temperature was 20, 40, 60, 80, and 100°C. The infrared high pressure dyeing machine was used. As dyeing concentration increased, dye adsorption increased up to 400% and it slowed down. Dye uptake was increased with raising temperature up to 80°C and it slowed down. Dye adsorption occurred rapidly at first 20 minutes and then it slowed down and reached almost maximum dye uptake at 60 min. Dye uptake increased by repeated dyeing. Blocking effect of ultraviolet radiation was good.

Therefore optimum dyeing condition is 400%(o.w.f.), 80°C, 60 min. And repeated dyeing improves dye uptake. Color fastness to dry cleaning and rubbing was good, but light fastness and perspiration fastness was poor.

Key Words

Ligustrum japonicum Thunb, Optimum dyeing condition, Colorfastness, Blocking effect of UV, Natural dyeing, Silk fabric