

A Study on the Properties of Silk Fabrics Dyed with Walnut Shell Extract

Mi-Sun Joen and Jeong-Dae Jang

Department of Clothing and Textiles, Pusan National University, Korea

A natural dye aqueous solution(walnut shell extract) was obtained by extraction of walnut shell using water at various conditions in this study. Silk fabrics were dyed at various dyeing and mordanting conditions using walnut shell extract and various mordants(Al, Cu, Fe ions). Studies have been made on the effects of dyeing and mordanting conditions on the dyeing properties and fastness(light, water and dry cleaning fastness) of dyed silk Fabric.

The results obtained in this study were as follows; The dye content in the walnut shell extract increased with increasing extraction temperature to 90°C and extraction time to 120min, and thereafter the dye content decreased a little. The dye content increased with decreasing pH to 3.

By FT-IR and UV-visible spectrum analysis; the dye(coloring component) in the walnut shell extract was found to be a tannin. The K/S value of silk fabrics was found to increase with increasing dyeing temperature to 90°C and dyeing time 120min. The dyeing temperature 90°C, dyeing time 120min, and pH 3 was the condition to obtain the highest K/S value(8.33).

The hue value(0.4Y) of silk fabrics pre- and post- mordanted with mordants Cu and Al was the same (Yellow) as that of non-mordanted silk fabric, however, the value of silk fabric mordanted with Fe shifted to higher value (raddish color) compared with non-mordanted with silk fabric.