

Research on Antibacterial Characteristics of Plant Dyes

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The antibacterial characteristics of some kinds of plant dye were examined based on "Testing method for antibacterial of textiles" of JIS L 1902 method. Each *Phellodendron amurense* dye liquid 0.2ml of the ordinary concentration and the high concentration (5 times of ordinary state) was dropped on the thick paper disk with the circular state of 8mm diameter and put on two kinds of bacteria culture media of regulation concentration, then they were cultivated for 24 hours. Consequently, against the *Staphylococcus aureus*, in the case of using both concentration of dye liquid, it was observed the clear prevention reaction circle, "halo". Both *Phellodendron amurense* dye liquid against the *Pneumonia bacillus*, the prevention reaction circle was not confirmed. This showed that the dye liquid of *Phellodendron amurense* had the antibacterial characteristics against the gram-positive bacteria. The halo width of the *Staphylococcus aureus* were 3.5mm in the ordinary concentration and 8.7mm in the high concentration, so the reaction in the high concentration showed 2.6 times in comparison with the case of ordinary concentration. From this phenomenon, it was known that the higher the concentration of dye liquid, the higher the antibacterial characteristics. Based on these fundamental examinations, the silk clothes were dyed by the two kinds of *Phellodendron amurense* liquid of the ordinary concentrations and the high concentrations, and the antibacterial of silk clothes were examined. As a result, against the *Staphylococcus aureus*, in the case of using both concentration of dye liquid, it was observed the halo and the antibacterial characteristics against the gram-positive bacteria was confirmed. Both *Phellodendron amurense* dye liquid against the *Pneumonia bacillus*, the prevention reaction circle was not confirmed. The halo width of *Staphylococcus aureus* was 9.7mm in the ordinary concentration, and 11.0mm in the high concentration, that is, the high concentration shows a little bigger than the ordinary concentration. In the fundamental examinations using of using dye liquid, the halo width difference between ordinary concentration and high concentration was big, on the contrary, the examination using silk clothes, the difference was small. This shows that the pigment quantity carrying into the silk fiber is not proportional to the density of dye liquid.