

Chemistry of Purple-root Dyeing and Its Use

The Kakuyokai Foundation Fumoto, Izumi

Most plants' colorant exists as soluble glucoside. For example, safflower colorant is soluble to alkalinity water and Madder colorant can be extracted by boiling. Indigo, colorant of *Persicaria tinctoria*, is not soluble to water, but it is soluble in the state of living plant because indoxyl, monomer of indigo, is combined with glucose and become soluble to water, which means that silk can be dyed when it extracted by water and it become dimerized into indigo on the fiber.

On the other hand, shikonin of purple-root stays in the living tissue because most of them are associated by lipophilic higher alcohol. Therefore, its colorant is hard to dissolve in the water and ethanol is better for extraction solution.

However, boiling water has been used for extraction of colorant in most part of the history of dyeing because alcohol has not been used freely. Methods like 'batting' and 'kneading' are physically dispersing and suspending colorant from the purple-root in the boiling water. These methods can be classified as a form of dispers dye from the viewpoint of synthetic dye and have been used in unhomogeneous state.

Therefore, those traditional purple-root dyeing is difficult to reproduce the samecolor, and some lipophilic larger molecular colorant in th shikonin colorants in the purple-root are not suitable for dyeing.

Purple-root has two kinds, hard one and soft one and in this symposium I mainly explain the mordant coloring with hard purple-root and demonstrate an experiment. And, I show the results of some experiment of thermo dynamism, different kinds of mordant, mixture of chemicals, or dye-fastness.

I am planning to explain following aspects.

Property and composition of purple-root colorant

Analysis of amount of purple-root colorant

Mordant and its chemistry of purple-root colorant

Thermochemical analysis of purple-root dyeing

Blending dye of purple-root dyeing

Quality estimation and amelioration of purple-root dyeing

In addition, I would report some hard purple-root from north part of Japan has more shikonin colorant than Chinese wild root.