

# Dyeing in Bhutan - the production and application of lac dye

Ochanomizu University Graduate School of Humanities and Sciences

Yukiko Togo

I went to Bhutan that is a country in the Himalayan foot and investigated lac dye obtained from the resinous secretion sticklac of lac scale insects. This is the report of the investigation.

## 1. Importance of the lac dye for the Bhutanese clothing habits

In Bhutan, the nation must wear traditional costume in a public place. Dyeing and weaving of the cloth is in particular prosperous in east Bhutan, they impart skill to next generation. The clothes of the Buddhist monk are dark red, and it is said that the clothes are dyed by lac dye. It is often that the yarn of the dark red is interwoven in the traditional costume which the commoner wears. I felt that the lac dye is important position in the clothing habits of Bhutanese people.

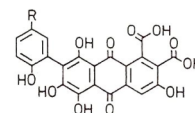
## 2. Production of lac dye (Cultivation of lac scale insect)

The resinous secretion sticklac of lac scale insects (*Laccifer lacca* Kerr)(“JYATSO” in Bhutan) is produced in Yadi and Yayum. There are in east Bhutan.

In Yadi (at 1600m elevation), the form of stick lac is hung on the branches of flame-of-the-forest (*Butea monosperma* = *B. frondosa*) (“TSO-SHIN” in Bhutan) in May and June, the insects are reared on the twigs in summer, and they produce stick lac. It is harvested in October and November and the form of stick lac is hung on the branches of Indian jujube (*Zizyphus mauritiana* = *Z. jujube*) (“KANKAR-SHIN” in Bhutan) in Yayum (at 925m elevation) . Yayum is warm area, mangos and bananas grow around there. The next generation of insects lives on the tree. This local people lend the tree to people who lives in Yadi in 200 - 300Nu (about 480-720 yen) per one Indian jujube tree for a winter. In May and June the insects are changed again to flame-of-the-forest in Yadi. The people who live in Yadi are leading to produce sticklacc.

## 3. The process of lac dyeing (dye extraction and dyeing)

I looked the process of lac dyeing in Ranjung. The silk yarns are dyed there, but for experiment, white fabrics of wool, silk and cotton were dyed.



A: R=CH<sub>2</sub>CH<sub>2</sub>COCH<sub>3</sub>

B: R=CH<sub>2</sub>CH<sub>2</sub>OH

C: R=CH<sub>2</sub>CH(NH<sub>2</sub>)COOH

Laccic acid

### <Lac dye (Laccic acid) extraction method from sticklac >

- ① Hot water was poured into the bucket which the crushed sticklac was in , and it was stirred (55°C)。
- ② It was filtered through a colander, and it was separated by dye extract and solid bodies, and the thing which stayed on a colander was returned to the bucket, and hot water was poured.
- ③ ② is repeated 8 times. The temperature of the hot water is gradually raised, and after 3 times, it was poured boiled water. Dyes were extracted at 85 ~ 90 °C. All of extraction liquid was mixed and the liquid was used as the dye bath.

### <Dyeing method by lac dye >

- ① The dye bath was poured to a large pan and boiled. The dried quince(*Choenomeles Lagenaria*) (Bhutanese : Khomang) was soaked in water and putted in the dye bath. The dye bath was boiled for 30 minutes. (acid condition : pH=3.88)
- ② The yarns and fabrics pretreated by the extraction liquid of the *Symplocos paniculata* was putted in the lac dye bath, and boiled and stirred. The yarns and fabrics were in the dye bath in 3 hours.
- ③ The dyed yarns and fabrics were washed with water and soap and then dried at normal temperature. The wool and the silk were dyed well, but the cotton was not dyed very much.