

Ultrasonic Extraction of Dyestuffs from Safflower and Its Dyeing Effect on Cotton

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Natural dyes not only can be used to get various colors but also to get valuable effect upon human beings like antibacterial and skin protection activity, so that they can be made to create high-value products when they are applied to industry. However, in the process of getting dyed fabrics from the natural dyes, the extraction of dyestuffs can be uneven and lack of representative quality, and the problem is that the production process itself is so complex and delicate and in need of much labor that they are hard to be produced massively and are lack of commercial competitive potential, and these act as a kind of big weakness of natural dyestuffs. Therefore, in order to make industrialize the natural dyes economically it should be devised new techniques to produce even and representative natural dyestuffs, and also mechanically simplified dyeing process.

This study was performed to develop a new method of dyestuffs extraction from safflower: Safflower(*Carthamus tinctorius* Linnaeus) dyestuffs were extracted by ultrasonic treatment, as compared to the traditional extraction process. Because of the high vibration energies from the ultrasonic treatment, natural dyestuffs were easily and repeatedly extracted from the safflower. It means that the new method of dyestuffs extraction by ultrasonic treatment is successful, not only in improved production yields of dyestuffs from safflower, but also in better dyeing effects on cotton, as compared to traditional hot water extraction. By comparing experiments between ultrasonic treatment and conventional extraction, the conclusions of this study are summarized as follows.

1. The optimum conditions for ultrasonic treatment on the red and yellow, dye yields from safflower were a 50% cycle and output number 2, using a 3% K_2CO_3 solution and water as extraction media, respectively.

2. The dyeing properties of bleached cotton with ultrasonically extracted dyestuffs were better than for those with traditionally extracted dyestuffs by the analysis of the colour reader. Also, the optimum conditions for ultrasonic treatment with regard to dyeing properties were similar to those for the dye extractions.

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3. Ultrasonic treatment of traditionally extracted dyestuffs from safflower also increased the dyeing properties of bleached cotton. It means that ultrasonic treatment changes the physical characteristics of the dyestuffs and finally improves the dye properties.

References

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