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Preparation of Fine Silk Powder obtained and It's Application for Surface Modification.

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The purification, dissolution and powdering of stained waste silk obtained from weaving and dyeing process were studied for the surface modification of textile fabric and plastic materials. The whiteness of stained waste silk could be improved through degumming and bleaching with sodium hydrosulfite. The water-soluble fibroin solution can be obtained by dissolving the degummed waste silk in a boiling solution of 50% calcium chloride for 60 minutes. The salts and heavy metals contained in fibroin solution were removed by electric dialysis, wool fiber filtration and gel filtration chromatography. The fibroin powder was prepared by using a fine grinder after the alkali treatment for weakening the silk fiber. The fine fibroin powder of particle size around 30㎛ was obtained with a ultra fine-mill, while it was finer below 10㎛ with a ball-mill. The dissolved or powdered silk was applied to the surface of fabric with addition of the binder(a urethane resin). The moisture content of polyester and nylon fabrics treated with the silk solution was improved due to hygroscopic property of silk. The fine fibroin powder mixed with the binder was coated on the surface of synthetic film by use of the air pressed sprayer. It was revealed that the hygroscopicity as well as the softness of fibroin powder coated film was much improved. Therefore, it is thought that the fine silk fibroin powder is applicable as an coating agent for the surface modification of plastic and synthetic leather.