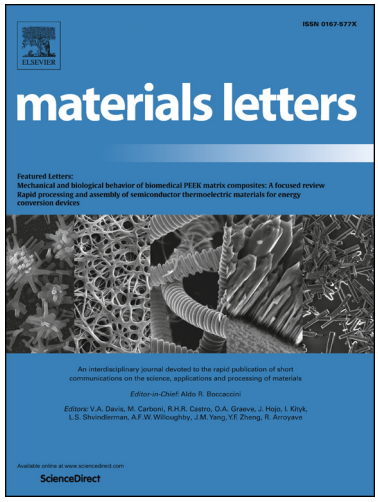

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Preparation of Mud-coated Silk Fabrics with Antioxidant and Antibacterial Properties

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Abstract

Two-tone silk fabric with antioxidant and antibacterial properties was prepared by a traditional technique. Original silk fabric was firstly insolated after being soaked in Chinese herbal extract rich in condensed tannins and then coated with ferrous-rich mud. The treated fabrics were characterized using FTIR. The FTIR spectra suggested the mud-coated side of fabric was hydrophobic attributed to the disappearance of hydrophilic groups while the other side was hydrophilic with typical peaks of silk. This result was confirmed by the increased contact angle. The mud-coated fabric also had stronger antimicrobial activity against *Staphylococuus aureus* and *Escherichia coli* than original fabric. Moreover, the antioxidant activity of mud-coated fabric was enhanced twofold. It was expected that such silk fabrics had extensive application as bioactive materials.

Keywords: Mud-coated; *Dioscorea cirrhosa*; Functional; Silk; Biomaterials

1. Introduction

Silk has been regarded as “fiber queen” due to its superior wear comfort and elegant appearance and used as textiles and biomedical materials for a long time [1]. However, silk fibers have several defects which limited its applications, for example, wrinkling, deforming, yellowing and poor antioxidant and antimicrobial activities [2, 3]. Therefore, it is necessary to modify silk fabrics for wide applications. Currently, several approaches such