

Taweesak Boonsod 2007: Finishing Cotton and Silk Fabrics with Glyoxal- β -cyclodextrin Complexes. Master of Science (Chemistry), Major Field: Chemistry, Department of Chemistry. Thesis Advisor: Mrs. Potjanart Suwanruji, Ph.D. 92 pages.

The preparation of glyoxal- β -cyclodextrin complexes were studied using different molar ratios of β -cyclodextrin to glyoxal (1 : 7, 1 : 14 and 1 : 21), catalysts ($\text{Al}_2(\text{SO}_4)_3$ and Na_2CO_3) and reaction temperatures (Room temperature (RT), 50 °C, and 80 °C). The formation of the complexes was confirmed by FTIR, TGA, and DSC analysis. The synthesized glyoxal- β -cyclodextrin complexes were applied on cotton and silk fabrics by pad-dry-cure process. The conditions of time and temperature in the dry and cure processes for each fabric were studied. The amount of glyoxal- β -cyclodextrin complexes on the fabrics were analyzed using a phenolphthalein indicator. TGA and SEM techniques were also used to confirm the complexes on the treated fabrics. The glyoxal- β -cyclodextrin treated fabric was washed once to study the durability of the complexes on the fabric. The fabric retained the complexes after a cycle of washing. Vanillin was loaded to the fabrics by immersing and padding processes. UV-Vis spectrophotometer was used to analyze the concentration of vanillin on the fabric. The result showed that immersing method can load more vanillin on fabrics than padding method. During the 25-day experiment, the amount of vanillin on the glyoxal- β -cyclodextrin treated fabrics was higher than the untreated fabrics. The results indicated that finishing fabrics with glyoxal- β -cyclodextrin complexes could encapsulate loaded vanillin to release over a longer period of time.

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