

**WASH FASTNESS IMPROVEMENT AND ADDITION OF
HYDROPHOBICITY COTTON FABRIC COATED
SILICA NANOSOL/TINGI (*Ceriops tagal*)/HDTMS**

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ABSTRACT

Silica coating on dyed cotton fabric by natural dye of tingi (*Ceriops tagal*) has been done to improve the wash fastness and addition of hydrophobicity properties of the related cotton fabric by using HDTMS (hexadecyltrimethoxysilane) have been carried out. The research aims at studying the effect of silica nanosol on wash fastness improvement of the natural dye tingi, studying about the hydrophobicity of the related cotton fabrics by HDTMS and studying the effect of one pot (Op) and layer by layer (LbL) coating techniques on the fabric coloring.

Fabric coating was done by dip-coating method in two ways, one pot (Op) and layer by layer (LbL). Determination of hydrophobicity was carried out by measuring the contact angle of water dripped on the coated cotton fabric by HDTMS.

The results showed that the optimum wash fastness improvement on cotton fabric coated silica/tingi (Op) with a leaching degree of 1.1% on lerak's leaching, while 2.8% on SDS's leaching. Wash fastness improvement was obtained from cotton fabric coated nanosol silica/tingi by one pot techniques with a percentage of wash fastness improvement are 94.5% under lerak's leaching and 86.9% under SDS's leaching. The best hydrophobicity results were in cotton fabric coated by silica nanosol/tingi (Op)/ HDTMS with a contact angle of 134.7° before leaching, 132.5° in lerak's leaching and 128.6° in SDS's leaching. The durability of hydrophobicity was showed by water flow rate in the sample before leaching and after lerak's leaching that were not so different, but after SDS's leaching the water flow rate decreasing.

Keywords: fabric, HDTMS, silica nanosol, tingi