Chaliew Maud-ew 2011: Antibacterial Activity of Selected Natural Dyes on Cotton Fabric. Doctor of Philosophy (Tropical Agriculture), Major Fieled: Tropical Agriculture, Interdisciplinary Graduate Program. Thesis Advisor: Assistant Professor Kajijarus Piromthamsiri, Ph.D. 120 pages.

The objectives of this research were to study the antibacterial activity of cotton fabric dyed with various natural dyes, and to study the colours and antibacterial activity of cotton fabric dyed with the dye from mangosteen husk. Data were analyzed using one-way analysis of variance and Least Significant Difference.

From the experiment on antibacterial activity of cotton fabric dyed with various natural dyes, it was found that only the cotton dyed with the dyes from mangosteen husk and betel nut had antibacterial activity against *Staphylococcus aureus*.

From the experimental dyeing cotton with the dye from mangosteen husk using different ratios of materials in the dye extraction, it was found that the colour values and antibacterial activity against *Staphylococcus aureus* were significantly affected by the ratios of material: water used at .01 level. The 1:3 ratio yieled the highest K/S value. The 1:5 ratio yieled the highest a* b* C* and h* values. The 1:3 ratio yielded the highest antibacterial activity against *Staphylococcus aureus*.

From the experimental dyeing cotton with the dyes from various parts of mangosteen husk, it was found that 1) before washing and light exposure, the cotton dyed with the dye from inner, outer, and mixed husk significantly had different colour values and antibacterial activity against *Staphylococcus aureus* at .01 level. The cotton dyed with the dye from mixed husk had the lowest L* value but had the highest a* b* C* h* K/S values, and also showed the best result in antibacterial activity. 2) After 5 washes, the cotton dyed with the dye from outer, inner, and mixed husk significantly had different colour values and antibacterial activity against *Staphylococcus aureus* at .01 level. The cotton dyed with the dye from mixed husk had the lowest L* value but had the highest a* b* C* h* K/S values and showed the best antibacterial activity against *Staphylococcus aureus*. 3) After 10 washes, the cotton dyed with the dye from outer, inner, and mixed husk significantly had different colour values at .01 level. The cotton dyed with the dye from mixed husk had the lowest L* value but had the highest a* b* C* h* and K/S values. No dye from any part of mangosteen husk had antibacterial activity against *Staphylococcus aureus*. 4) After the light exposure, the cotton dyed with the dye from outer, inner, and mixed husk significantly had different colour values at .01 level. The cotton dyed with the dye from the mixed husk had the lowest L* value but had the highest a* b* C* h* and K/S values. No dye from any part of mangosteen husk had antibacterial activity against *Staphylococcus aureus*.

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