CHAPTER 5

CONCLUSION

The natural textile fabrics such as cotton, silk and wool were applied with natural sources (Bv, Bo, Tc, Pg, Al and Cp) particularly those obtained from fruits. The natural dye application on cotton, silk and wool fabrics gave very good colors in the intact forms well as different variations in the colors when applied with natural dye combinations.

The FTIR analysis of the natural dyes exhibited the presence of various groups which revealed the existence of chromophores and auxochromes. The presence of chromophores in the natural dyes was responsible for the emergence of good colors on cotton, silk and wool fabrics. The variations of colors were due to the presence of different chromophoric groups in the natural dyes when applied in the combined form on cotton, silk and wool textile fabrics.

There was an overall good fastness property with respect to light, wash and crocking on natural dyed cotton, silk and wool fabrics. The light fastness property was moderate to good. The wash fastness was good to very good with respect to both color change and color stain on natural dyed cotton, silk and wool fabrics either in the intact dyeing or in the combination dyeing form. The crocking fastness was good in the dry state and poor to moderate in the wet state. The color change and color stain parameters gave similar trends both in wet and dry states of crocking fastness on natural dyed cotton, silk and wool fabrics. The good color fastness property towards light, wash and rocking on natural dyed cotton, silk and wool fabrics was due to the presence
of chromophores and auxochromes in the natural dyes as exhibited by FTIR. The auxochromes fix the produced colors from the natural dyes on the textile fabrics, such as cotton, silk and wool fabrics suitably.

As cotton, silk and wool fabrics are natural cellulosic and protein categories respectively, obviously the microbial attack was more. The natural dye applications on those fabrics reduced considerably the growth of microbes thereby the reduction percentage of microbial attack is increased for both gram (+) and gram (-) microbes.

The color strength values (K/S) of almost all the natural dyes applied on cotton, silk and wool fabrics in intact and combined form is good. The color strength on the natural dyed textile fabric (cotton, silk and wool) was due to the generation of color and its fixation on the textile fabrics. This is due to the presence of chromophores responsible for producing colors and auxochromes responsible for retaining and fixing the colors firmly on the textile fabrics.

In general, the average fastness properties (light, wash and crocking) of the natural dyes (Bv, Bo, Tc, Pg, Al and Cp) and their combinations applied on cotton, silk and wool fabrics are between 3 and 3-4. The achieved fastness property ratings were considered as moderate to good. The average color strength of all the natural dyed samples exhibited by K/S value is good. The antimicrobial property of natural dyes and their combination applied on textile fabrics (cotton, silk and wool) is also good. The chemical group of natural dyes analyzed from the peaks obtained from FTIR was found that the extracted dyes contained the essential reactive groups responsible for a dye compound, to react with the textile fabrics.
Based on these considerations, as these natural dyes give good colors on textile fabrics with required color strength, fastness properties and functional considerations, they would be suitable as responsible natural dyes by providing the major requirements needed for the textile processing industries, including garment and apparel units.