

## Application of Natural Dyes on Polyester and Polyester-Cellulosic Blended Fabrics

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**Abstract :** Comfort and safety are two essential factors in a newborn's clothing. Natural dyes are considered safe for infant clothes because they are non-toxic and have medicinal properties. Natural dyes are sensitive to pH and may show changes in hue under different pH conditions. Infant garments face treatments different than adult clothing, for instance, exposure to infant's saliva, milk, and urine. The present study was designed to study the suitability of natural dyes for infant clothes. Cotton fabric was dyed using fifteen natural dyes and two mordants, alum, and ferrous sulphate. The dyed samples were assessed for colour fastness to washing, rubbing, perspiration and light. In addition, fastness to milk, saliva, and urine was also tested. Simulated solutions of saliva and urine were prepared for the study. For milk, one of the commercial formulations for infants was taken and used as per the directions. A wide gamut of colours was obtained after dyeing the cotton with different natural dyes and mordants. The colour strength of all the dyed samples was determined in terms of K/S values. Most of the ferrous sulphate mordanted dyes gave higher K/S values than alum mordanted samples. The wash fastness of dyed cotton fabrics ranged from 3/4 -5. Perspiration fastness test for the samples was done in both acidic and alkaline mediums. The ratings ranged from 3-5, with most of the dyes falling in the range of 4-5. The rubbing fastness of the dyed samples was tested in dry and wet conditions. The results showed excellent rub fastness ranging between 4-5. Light fastness was found to be good to moderate. The main food for infants is milk, and this becomes one of the main agents to spot infants' garments. All dyes showed excellent fastness properties against milk with a grey scale rating of 4-5. Fastness against saliva is recommended by various eco-labels, standards, and organizations for fabrics of infants or babies. The fastness of most of the dyes was found to be satisfactory against saliva. Infant garments get frequently soiled with urine. Most of the natural dyes on cotton fabric had good to excellent fastness to simulated urine. The grey scale ratings ranged from 3/4 - 5. Thus, it can be concluded that most of the natural dyes can be successfully used for infant wear and accessories and are fast to various liquids to which infant wear are exposed. Therefore, we can surround little ones with beautiful hues from nature's garden and clothe them in natural fibres dyed with natural dyes.

**Keywords :** fastness properties, infant wear, mordants, natural dyes

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