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Title of the thesis/ Development of shades on wool with Cutch (*Acacia catechu*) and Lac dye (*Laccifer lacca/Kerria lacca*) and their characteristics evaluation.

ABSTRACT

Present study was conducted to develop a data bank on dyeing of woollen yarn samples with cutch (*Acacia catechu*) and lac dye (*Laccifer lacca/Kerria lacca*). Dyeing was carried out on pre-mordanted woollen yarn samples with iron and tin separately as well as in different combinations. An attempt was made to standardize the dyeing recipe for dyeing of woollen yarn samples with cutch (*Acacia catechu*) and lac dye (*Laccifer lacca/Kerria lacca*). The study has been performed in various environments, such as acidic, neutral and alkaline medium. By using different permutation and combinations of mordants and dyes 462 shades were developed and evaluated for Colourimetric (CIELab values and K/S) and fastness (Light, wash and rub/crocking) properties. Cutch dye yielded various hues of brilliant brown colour whereas dyeing with lac resulted in shades ranging from light orange-red to dark scarlet. The study showed that the pH has significant role (effect) on the dyeability and colour strength of woollen yarn. The colour was varied with the change of mordanting agents under the same dyeing conditions. Woollen yarns mordanted with iron, tin and their combination showed subtle change of tone and shade as iron and tin create metal complexes that shift colour of dyed materials. Dyed woollen yarn samples found to have good fastness ratings with respect to wash light and crocking. Woollen yarn samples dyed with cutch and lac exhibit considerably high K/S value as these metals can form a ternary complex on one side with the fibre and on the other side with the dye. Such a strong co-ordination tendency can enhance the interaction between the fibre and the dye, resulting in high K/S values. The

structural morphology of woollen yarn was evaluated using scanning electron microscopy (SEM). The observed study indicate that previously mentioned cutch (*Acacia catechu*) and lac (*Laccifer lacca/Kerria lacca*) dye can be used for dyeing of woollen yarn samples.