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Eco-Tanning Using Tannins Extracted from *Tamarindus indica* leen Seeds and Evaluation of Leather Quality

Martin Mwenda Nyaga^a, Paul Tanui^a, Samuel Njenga Mirie^a

^aSchool of Science, Dedan Kimathi University of Technology, Private Bag, Nyeri, 7381, Kenya, E-mail: Martin.mwenda@dkut.ac.ke

Abstract

Tanning is a treatment mechanism of converting collagen fibrous protein of an animal hide/skin into a stable material (leather) which has a higher hydrothermal stability. Over the years, there has been need for an alternative tanning system in line for the growing

ecological worries arising due the manufacture of leather using inorganic tanning chemicals. This has led to an increase in research for other sources of tannins that are cheap and locally available. In this study, tannins from *Tamarindus Indica L.* seeds were extracted for determination of tannin content and the tanning strength by the hide powder method. The physical properties of tanned leathers were tested using standard IUP methods and reference was made to the commercial tanned leather. From the results, the *Tamarindus indica* had 15.14 ± 0.93 % tannins while the control had 58.91 ± 0.16 %. The tanning strength was 1.73 for the tamarind seed extract and 2.06 for mimosa respectively. The leather had shrinkage temperature of $80.16 \pm 0.57^{\circ}\text{C}$ and $81.50 \pm 0.81^{\circ}\text{C}$ respectively. The tensile strength for leather tanned with TSE was 18.39 ± 0.44 N/mm² and a tear strength 32.57 ± 0.63 N, grain crack of 8.40 ± 0.39 mm and grain burst 8.69 ± 0.25 mm. The leather produced were dark brown in colour with some of the mechanical properties above the minimum recommended values. The use of tannins from Tamarind seeds which are by-product of the pulp industry amongst others can be adopted for tanning; more so in the countries within the tropical zones where the tamarind trees are mostly cultivated.

Keywords: Tannins, *Tamarindus indica L.* seed, Mimosa, Leather