

DEVELOPMENT OF GARMENT LEATHER FROM YELLOWFIN TUNA (*Thunnus albacares*) SKIN

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by

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Abstract

The present study was carried out to add value to waste generated during yellowfin tuna (*Thunnus albacares*) fish processing and to promote fish leather production in Sri Lanka through developing a garment-type leather using discarded skins. At present, hides and skins from cattle, buffaloes, sheep, and goats are used for leather production. In addition, fish species including carp, pacific salmon, shark, tuna, catfish, and tilapia are taken for leather production in the world. The objectives of this study were to find out the best fat liquor percentage to obtain maximum softness of chrome-tanned yellowfin tuna fish leather and to find out the best tanning method for garment leather production from yellowfin tuna skin. Yellowfin tuna skins were treated with 33% basic chromium sulphate and five different concentrations (12%, 14%, 16%, 18%, and 20%) of fat liquors. Softness, feel, tensile strength, tear strength, and stitch tear strength of the developed leather were measured. Maximum tensile strength and tear strength values were observed in 16% fat-liquored leather with average values of $23.46 \pm 6.06 \text{ N/mm}^2$ and $401.59 \pm 77.75 \text{ N/mm}$, respectively meanwhile 18% fat-liquored leather showed the highest stitch tear strength ($187.91 \pm 5.39 \text{ N/mm}$) and softness value. From the four tanning methods studied (Full chrome tanning, Full vegetable tanning, Semi tanning 1 – vegetable tanned leather direct tanning with chrome, and Semi tanning 2– vegetable tanned leather stripping with NaHCO_3 and chrome tanning), chrome-tanned leather showed the highest value for tensile strength ($22.56 \pm 0.86 \text{ N/mm}^2$), tear strength ($373.75 \pm 23.20 \text{ N/mm}$) and stitch tear strength ($187.91 \pm 5.39 \text{ N/mm}$). In addition, values for softness and feel were higher in full-chrome tanned leather. Hence, it can be suggested to use full chrome tanning with 18% fat-liquor concentration to produce garment-type leather from Yellowfin tuna skin.

Key words – Fat liquor, Tanning, tensile strength, tear strength, garment leather, yellowfin tuna skin