

CHARACTERISATION OF ENZYMATIC RETTED
PINEAPPLE LEAF FIBRES

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ABSTRACT

CHARACTERISATION OF ENZYMATIC RETTED PINEAPPLE LEAF FIBRES

This study focused on the development of enzymatic retting for the pineapple leaf fibre using combination of enzymes and chemicals. Formulations used in this project were cellulase and EDTA, pectinase and EDTA, xylanase and EDTA, and combination of the cellulase, pectinase, xylanase and EDTA. Untreated sample was used for comparison purposes. The morphological and physical properties of the fibre were tested for fibre fineness, moisture content and moisture regain, fibre strength, and yarn strength. For the morphological properties combination of xylanase and EDTA was effective because the fibres seemed to be closely associated in bundles and more compact and the fibre surfaces were relatively cleaner and smoother. The finest fibres obtained were those treated with combination of cellulase and EDTA (7.17 micronaire) while the strongest of fibres obtained were from those treated with pectinase and EDTA (0.57 N of force was needed to break the fibre at 2.64% elongation). For the yarn strength, obtained were from those treated with xylanase and EDTA (0.93 N of force was needed to break the yarn at 1.83% elongation). For the lowest moisture content and moisture regain obtained were from those treated with xylanase and EDTA which 12.00% and 13.64 %. Overall compared to conventional treatment, enzymatic treatment using cellulase and EDTA produced the finest fibres, xylanase and EDTA produced the strongest yarn and lowest percentage of the moisture content and moisture regain while combination of pectinase and EDTA produced the strongest fibres. This new retting formulation perhaps can be applied in textile industries especially in textile composite in order to produce high quality of pineapple leaf fibres.