EVALUATION OF MICROMECHANICAL PROPERTIES OF *NEUROPELTIS ACUMINATAS* (NA) FIBERS

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ABSTRACT

The present work aims at determining the chemical composition as well as the micromechanical properties of the fibers coming from a liana of South Cameroon locally called "Ndik Kussa" of scientific name Neuropeltis acuminatas (NA). After obtaining NA fibers by a traditional method, spectroscopic spectroscopic analysis at the spectograph of the fiber reveals the presence of the H-O groups of the polysaccarides and the water of hydration, the C-H groups of the cellulose, the groups of the esters and acids of hemicelluloses, C=C lignin groups, C-O groups of cellulose, acetyl groups of lignin, C-H groups and aromatic vibrations, CH_2 groups of polysaccharides. A tensile test is performed on ten fibers of 90mm length. The degree of crystallinity is calculated by the method of Segal. A relation between elongation at the beginning of the linear zone and the angle of the microfibrils is established, leading to the deduction of the mirofibrillar angle. Thus, with the relation based on isochoric deformations, a relation between the Young's modulus of the crystalline and noncrystalline parts of the fiber is established, making it possible to have an evolution of the Young's modulus of the crystalline and noncrystalline parts. The results indicate that the cellulose microfibrils are oriented 1,39° with respect to the axis of the fiber. They also reveal that the crystallinity index is $CrI(\%)=42$ and that the Young's modulus of the crystalline and non-crystalline parts evolves according to a linear law.

Key words: *Neuropeltis acuminatas*, fiber, micromechanical properties, chemical composition.