

# ABSTRACT – *Effect of degree of polymerisation on enzymatic degradation of cotton fibres*

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**Abstract:** In the present study, the enzymatic degradation of cotton cellulose fibres with different degrees of polymerisation was carried out using cellulase activity. The degree of polymerisation of cellulose refers to the number of glucose units in a chain and significantly affects the physical and chemical properties of the polymer [1, 2]. In this study, cotton fibre samples with different degrees of cellulose polymerisation were selected and subjected to the action of a cellulase mixture to assess their degradation. The effect of the cellulase, at a given concentration and specific pH and temperature conditions [3], was determined by the changes observed in the structure and morphology of the cellulose fibres using electron microscopy and FTIR techniques.

The results showed a significant correlation between the degree of polymerisation of cellulose and its rate of enzymatic degradation, suggesting that the degree of polymerisation of cellulose plays an important role in its susceptibility to enzymatic degradation. Understanding how different degrees of polymerisation affect the response of cellulose to enzymatic action is essential for the development and process optimisation of biotechnological applications such as the modification of cellulosic textile materials.

**Keywords:** *cellulose, textile, cellulases, macromolecule, biotechnology.*

**ACKNOWLEDGEMENT:** *Authors are grateful for the financial support by Conselleria de Innovación, Universidades, Ciencia y Sociedad Digital, Generalitat Valenciana, Spain on the project reference CIGE/2022/44 for Emerging Groups.*

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