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# **Impact of Cellulosic Material Composition on the Physico-mechanical Properties of Polypropylene Biocomposites**

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**ABSTRACT** Application of cellulosic fibers in composites has increased in recent years due to their biodegradability, low cost, low abrasion, low density, and sustainable availability. In this study, the fabrication of polypropylene biocomposites using the by-product of acid hydrolysis of oat hull biomass in its original form and alkaline treated form was investigated. For biocomposite fabrication, the acid treated fiber (ATF) which was the by-product of acidic hydrolysis was used as the biofiber in this work. It was delignified at temperatures of 30°C (D30), 65°C (D65) and 100°C (D100) to provide fibers with different lignin:cellulose ratios. Formulations of biocomposites

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containing 15 to 30% biofiber with or without compatibilizer (maleic anhydride grafted polypropylene) were prepared using twin-screw extrusion followed by compression moulding. Finally, physico-mechanical properties of the materials such as color, density, water absorption, tensile, impact and flexural strength were determined and it was found that fiber composition could significantly affect the properties of the fabricated material.

**Keywords:** Polypropylene, Biocomposite, cellulose, biofiber