Chemical Composition of Small Diameter Wild Acacia Mangium Species

ABSTRACT

Acacia mangium is an exotic species grows wildly and widely planted in Malaysia, as an effort for reforestation and also known to be used in pulp and paper industries. The objectives of this study is to determine 5 chemical composition (extractives, holocellulose, α-cellulose, hemicellulose and lignin) in 2 different parts (wood and bark) from 3 different portions (bottom, middle and top) of small diameter wild Acacia mangium. Samples were collected from Jeli, approximately 10 kilometers from Universiti Malaysia Kelantan (UMK), Jeli Campus, Kelantan with diameter around 5-8 cm. Samples were then grounded using laboratory grade mill into powder form for chemical composition analysis. All analyses were done according to Technical Association of the Pulp and Paper Industry (TAPPI) standard method, except for hemicellulose which is the data collected through equation. All the data and results were statistically analyzed using two-way ANOVA and Tukey's Post Hoc test. Results acquired reveals that extractives content was highest in bark part from bottom portion (15.03%). Highest holocellulose percentage can be found in wood part of top portion (85.99%) and the highest of α-cellulose content is in wood partfrom top portion (49.84%), meanwhile the highest of hemicellulose content can be found in wood part from top portion (36.15%). Lignin percentage is the highest in bark part of bottom portion (31.18%). This study has determined small diameter wild Acacia mangium as a useful alternative resource in pulp and paper industries.