

**ADSORPTION OF METHYLENE BLUE BY ULTRASONIC
ASSISTED-PHOSPHORIC ACID ACTIVATED CARBON
FROM *ARECA CATECHU* HUSK**

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ABSTRACT

ADSORPTION OF METHYLENE BLUE BY ULTRASONIC ASSISTED- PHOSPHORIC ACID ACTIVATED CARBON FROM ARECA CATECHU HUSK

The production of activated carbon from agricultural waste is one of the most environmentally friendly solutions by converting agricultural waste into valuable material. In this study, a waste biomass of *Areca catechu* husk will be used as a precursor for preparation of activated carbon by ultrasonic assisted chemical activation using phosphoric acid, H_3PO_4 as activating agent. *Areca Catechu* husks are converted into activated carbon to remove methylene blue in aqueous solution. This *Areca Catechu* husk will undergo carbonization process by dried at temperatures $700^\circ C$ for 2 hours and cooled before washed using phosphoric acid to activate a pore surface. Activated carbons are tested for porosity and adsorption. Different adsorption experiments, such as adsorbent dosage, contact of time, and initial concentrations of methylene blue that influenced the adsorption capacity of the activated carbon. The optimum adsorbent dosage of activated carbon of *Areca Catechu* husk was 0.06g. which gives 92.6% of methylene blue dye color removal at 100mg/L within 60 minutes. The optimum time of activated carbon of *Areca Catechu* husk was 180 minutes which gives 88.6% of methylene blue color removal at 100mg/L. This activated carbon *Areca Catechu* husk is suitable to remove all types of cation dyes. The result from proximate analysis shows that the activated carbon of *Areca Catechu* husk has low bulk analysis, low ash content and higher iodine number that very suitable for adsorption applications. Finally, activated carbon of *Areca Catechu* husk can be produced inexpensively as the demand from commercial activated carbon market.