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SYNTHESIS AND CHARACTERIZATION OF ACTIVATED CARBON OBTAINED FROM THE AÇAI PIT (*Euterpe Oleracea*) FOR ADSORING ENVIRONMENTAL CONTAMINANTS.

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Abstract:

Active charcoal, or activated carbon, is a high porosity adsorbent used to treat effluents contaminated by various chemicals. Açaí stone biomass, a common waste in the Brazilian Amazon, from the disposal of organic material in production points of the “açaí wine” in the city of Belém, was used for the production of activated carbon. The material collected in a free fair in the city of Belém, went through the washing process to remove impurities, drying, grinding and manual maceration, sieving in a screen with 64 mesh opening. After reduction, the activating agent was impregnated by chemical method. Analysis shows that the acai stone contains a high percentage of carbon. Afterwards the characterization by X-Ray Diffraction (XRD) and Scanning Electron Microscopy (SEM) was performed, which indicate a high carbon concentration in the structure and the high porosity of the synthesized material. Finally, the analysis of the adsorption in batch and duplicate system, with stirring in methylene blue dye solution, obtaining the average adsorption between 62 and 64% in addition to the high speed to reach equilibrium, if compared to both active charcoal commercial values as from the literature.

The present results suggest that the activated charcoal obtained from the acai stone biomass presents porosities of interest at macro level and presents an amorphous structure, as observed in its X-Ray Diffractogram. The average percentage adsorbed by activated charcoal produced was more efficient when compared to the percentage adsorbed by commercial active charcoal. However, dye removal under the studied conditions can still be considered low compared to other literature. Therefore, the studies continue to enhance the results with adjustments in the coal preparation conditions and the variables in adsorption tests.

Keywords: Active charcoal. Açaí biomass. Characterization.