PDF - COMPARISM OF CARBON PRODUCTION FROM CORNCOB, GROUNDNUT SHELL AND COCONUT SHELL - researchcub.info**ABSTRACT**
The studies oncharacterization of different type of adsorbent such as coconut shell activatedcarbon, activated carbon from groundnut and activated carbon from corncob hasbeen performed. The characterization of the adsorbents includes estimation ofvarious parameters such as bulk density, BET surface area, SEM, porosity, pH,iodine number and methylene blue number. Surface area of adsorbents was foundby BET surface area analyzer. The pore structure of activated carbon wasobserved through SEM analysis. The porosity and pore volume was estimated usingmercury porosimeter. The adsorbent that showed best surface properties was usedfor adsorption of methylene blue dye. Adsorption capacity of the activatedcarbon was determined to access its maximum potential for methylene blueremoval.

CHAPTERONE
INTRODUCTION
1.1BACKGROUND OF THE STUDY
The increase inpopulation has boosted the growth of different industries leading to dischargeof pollutants into the water bodies. Among those industries textile, food,cosmetic, paper industries lead to discharge of dye that needs immediateattention. Colour in the water results from various organic chemicals that preventthe sunlight to penetrate affecting the aquatic system. Aquatic organisms andplants are affected due to the release of toxic organic chemicals (Gupta,2012).

Various methods toaddress this issue has been published by many researchers such as sedimentationwith clarification, coagulation and flocculation, chemical oxidation,filtration using membranes, adsorption, biodegradation etc. For example amongthese adsorption is a well established technology to deal with dye removal.Methylene blue dye has been used in most of the industries and its removal is amatter of great concern. Low cost adsorbents such as coir pith, sawdust, fruitshell, banana pith, pea nut hull, wheat barn etc has been employed (Chandran etal, 2012). However the use of carbon produced form some agricultural residualsas an adsorbent is greatly sorted as a result of its adsorption capacity(Yadav, 2013).

Carbon produced fromagricultural residuals such as corncob, ground shell, coconut etc is a form ofcarbon processed to have small, low-volume pores that increase the surface areaavailable for adsorption or chemical reactions (Vadivelan,2011). The productionof carbon from these agricultural residuals is special type of carbonaceoussubstance. They have highly crystalline form and extensively developed internalpore structure. Due to activation, internal pore network is created whichimparts certain surface chemistries (functional groups) inside each particle.Thus carbon gets its unique characteristics leading to high surface area, porosityand greater strength.

The adsorptivity ofthe adsorbent depends on both the size of the molecule being adsorbed and thepore size of the adsorbent. The organic material which has high carbon contentis used as the raw material for the synthesis of the carbon. There are manycheap, easily available sources used for carbon production such as groundnutshell, corncob, coconut shell wheat husk, straw, palm fiber, rubber wood sawdust, and palm fiber etc. carbon is used in the abatement of hazardous contaminants,treatment of municipal and industrial waste water, as catalyst or catalystsupport in medicine, and the recovery of valuable metals (Vadivelan and Kumar,2010).

Thus the aim of thisresearch is to investigate and show comparison of carbon produced from corncob,groundnut shell and coconut shell.

1.2AIM AND OBJECTIVES OF THE STUDY
This work tends tostudy the comparison of carbon production from agricultural residuals such ascorncob, groundnut shell and coconut shell. Finding the best among them.Therefore, the specific objectives are as follows;

1. To examine thecharacterization of carbon produced from corncob, groundnut shell and

coconutshell
2. Compare thecharacteristics of the three; corncob, groundnut shell and coconut shellcarbon.
3. To find out thebest carbon that is produced which is the best over the other two for adsorptionprocess.

1.3JUSTIFICATION OF THE STUDY

Carbon productionfrom concob, groundnut shell and coconut shell are processed to have small,low-volume pores that increase the surface area available for adsorption orchemical reactions. Carbon can be used in gas purification, decaffeination,gold purification, metal extraction, water purification, medicine, sewagetreatment, air filters in gas masks and respirators, filters in compressed airand many other applications. Also, carbon adsorption has numerous applicationsin removing pollutants from air or water streams both in the field and inindustrial processes.

Furthermore, carbon(charcoal) is an allowed substance used by organic farmers in both livestockproduction and wine making. In livestock production it is used as a pesticide,animal feed additive, processing aid, nonagricultural ingredient anddisinfectant. In organic winemaking, carbon is allowed for use as a processingagent to absorb brown color pigments from white grape concentrates.

The project work iscentered on activated carbon of agricultural product using corncob, groundnutand coconut shell. The scope of the work also covers adsorption, activatedcarbon development and characteristics of activated carbon.

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