Treatment of Sugar Industrial Waste Water by Using Admixtures Are Like Coconut Shell, Orange Peel, Banana Peel and Bleva Leaves

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Abstract— The aim of this work is provide some economic value to the agricultural residues by using them as reinforcements in Polymer composites. The mineral element content of coconut water from three (3) different species was determined in samples gotten form Rivers State. The protein content (i.e. % total protein) was determined as crude protein using the macrokjeldahl Markham distillation method. The values ranged between 0.30-0.40, 0.10-0.20, and 0.49-0.55 for the three different species respectively. Coconut shell has received attribute as a result of its lower density and advanced thermal properties. This paper represents the many grades were cubes, beams, cylinders square measure are casted by replacement mixture. This paper represents the many grades were cubes, beams, cylinders square measure are casted by replacement mixture. Low cost by-product from agricultural, household & industrial sector have been recognized as a sustainable solution for waste water treatment.

Keywords: Sugar Wastewater, Banana Peels, Orange Peels and Coconut Shell

I. INTRODUCTION

India is one of the largest producers and consumers of 22million tons of sugar per annum in the world and about l000L of wastewater is produced for every ton of cane crushed 'Its importance is related to energy contribution in combination with the capacity to sweeten. The discovery of sugarcane, from which sugar is derived, dates back unknown thousands of years. It is thought to have originated in New Guinea, and was spread along routes to South East Asia and India. The process known for creating sugar, by pressing out of the juice and then boiling it into crystals, was developed in India around 500 Before Christ (B.C) Sugars are a major form of carbohydrates and are found in all green plants. They occur in significant amounts in sugarcane and sugar beet. They are also found in lesser quantities in fruits and vegetables. There are three main simple sugars, sucrose, fructose and glucose and the body quickly break down in to these separate substances. Apart from sugar being the cheapest instant source of energy, it has several medical and the rapeutical values, such as treatment of oral rehydration in infants and healing wounds. And also sugar is the best carrier of Vitamin A and E and minerals. Approximately 70% of sugar is produced from sugarcane which is largely grown in tropical countries and 30% of sugar is produced from sugar beet which is grown in temperate zones India is the largest sugar producing country in the world India has been known as the original home of sugar and sugarcane. Presently, about four million hectares of land is cultivation of sugarcane with an average yield of 70 tons per hectare [ll. there are more than 550 installed sugar industries in the country. In India most of the sugar mills are situated in the country side and sugar is mainly produced from sugar cane. Production of sugar from sugarcane is a seasonal operation, depending on the availability of sugarcane, which lasts for about 4-8 months i.e. from October to May Rapid urbanization, industrialization and population growth have led to the severe contamination of most of the fresh water resources with untreated industrial and municipal wastes [31.Demands of clean industrial wastewater to avoid environmental pollution and especially contamination of fresh water resources have become national and international issues [41. The increase in the volume of wastewater discharge in to the environment that pollutes freshwater resources is the result of modification in the manufacturing processes. The sugar industries utilize around 1500-2000L of water and produce about 1000L of wastewater per ton of cane crushed. The sugar manufacturing process produces wastewater which possess high content of organic material and subsequently high Biochemical Oxygen Demand (BOD) which ranges from 1700-6600 mg/L, the Chemical Oxygen Demand (COD) is from 2300-8000 mg/L and the total suspended solids are up to 5000 mg/L and the ammonium content is high As the wastewater from the industry is rich in organic matter, managing the same is a challenging task. The wastewater leads to rapid depletion of dissolved oxygen content in water bodies, rendering them unfit for both aquatic and human uses. If untreated wastewater is discharged on land, decaying organic solid and oil and grease present in the wastewater clog the soil Pores.

II. MATERIAL AND METHODS

A. Banana Peels:

Fresh banana peels are to be collected from domestic wastes, assist availability and transportation was easy. Banana peel contains lipids (1.7%). Proteins (0.9%), crude fibre (31%) and carbohydrates (59%). The various minerals present are potassium (78.10 mg/g), manganese (76.20 mg/g). Sodium (24.30mg/g). Calcium (19.20 mg/g) and iron (0.61 mg/g). The peels were washed several times with tap water and followed by distilled water. The washed material then cut in to small pieces and allowed to dry in a hot air oven at 80'C for 24 hours. The moisture content was lost from it and the colour change was observed from yellow to brownish black. The dried material was finely ground and screened through the sieves of cut size of 150-212micro meter.

B. Orange Peels:

Orange peel powder was selected as adsorbent for carbon dioxide. Oranges were collected from local market, and peeled. Peels were washed thoroughly to remove dirt, dried and powdered. The powder was analyzed for chemical composition, structure and surface area. Original powder used for the capture of carbon dioxide. Carbon was made from the powder with the help of 98% H SO .The yield of reaction was 66.3% with concentrated h2so4and orange peel powder to produce carbon. The continuous experiments were carried out for different weight of the material, and different flow rate of gas.

C. Bilva leaves:

Collected from Nearby Home.

1) The Mixed Adsorbent:

Plays a vital role reducing cost of the treatment process. The adsorbents are mixed in a homogeneous proportion in a batch mode with the adsorbents to be used. The study involves using the above adsorbents and converting them to mixed activated carbons. The material which can be employed for preparing mixed adsorbents includes Silica gel, Laterite, Bauxite, Dolomite etc which are even the byproducts of industrial process and are usually discarded like bauxite (aluminium ore) and so on.

D. Coconut Shell:

The coconut fruit is a fibrous drupe consisting of a thin hard skin (exocarp), a thick layer of fibrous monocarp (husk), and the hard endocarp (shell), the white endosperm (kernel) and the large cavity filled with liquid (water) when immature. The exocarp is usually green, sometimes bronze. The fruit shape vary from elongated to spherical and weigh between 850 to 370g when mature[1]. The water is a clear liquid found in the interior of coconut. In a healthy and undamaged coconut, the water is sterile. Its sodium and potassium content makes it an ideal drink for rehydration. The characteristics of the coconut water changes as the coconut ages. A very young coconut (i.e. about 3-5 months, before the endosperm begins to form), has tasteless water that is somewhat astringent. Water from a mature coconut is slightly salty to the taste, but when the coconut grows well on land.

E. De-Hydrated Method:

The collected peels were cut into small pieces, washed with distill water to remove dirt and suspended impurities and then dried for 48 hours in an oven at 100°C to remove the moisture content from the peels. After the drying process, the peels were removed from the oven and kept in the desiccators for 30 minutes. The desiccators contains calcium chloride ($CaCl_2$) which is used to cool and maintain a dry environment and then the peels are ground to fine powder and sieve through 600µm, 425µm, 300µm for different particle size. These dehydrated peels were directly used as biosorbents in the experimental investigations.

F. Carbonization Method:

The collected peels were cut into small pieces, washed with distil water to remove dirt and suspended impurities and then dried for 48 hours in an oven at 100°C to remove the moisture content from the peels. After the drying process, the peels were removed from the oven and kept in the desiccators for 30 minutes and then the dried peels ke o carbon. After that the peels were removed, cooled and ground to fine powder and sieve through 600µm, 425µm, 300µm for different particle size.

G. Procedure for analysis of waste water:

No	PARAMETERS	METHOD
01	pH	pH meter
02	Colour	Spectrophotometer
03	Suspended solids	Differential weight method
04	Turbidity	Turbid meter
05	COD	Open reflux titrimetric method
06	BOD5	Winkler's method

Table 5: Standard analytical methods

III. CONCLUSION

- Adsorption is one of the economic methods that can be employed in the industries for the treatment of effluence (waste water).
- The current study can be conducted in continuous and column study.
- The adsorbent dosage which is being used in homogeneous proportion (1:1) may be varied that is the proportion of activated carbon and laterite can be varied and can be used efficiently in column mode.
- For further industrial purpose, sum trenches or other structures built and adsorbents can be placed in them and can be used efficiently for treatment purpose with controlling flow of effluents.
- The exhausted activated carbon can be recovered efficiently by some chemical cations for further usage.

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