PROJECT REPORT

ON

BIOCHAR V/S CARBON: A COMPARATIVE ANALYSIS

Submitted By:

Dr. Ashwani Kumar
HoD, Faculty of Bioscience
Shri Ram College, Muzaffarnagar

Submitted To:

JAIN CARBON INDUSTRIES, MUZAFFARNAGAR

2016 - 2017

CERTIFIED

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Principal
Shri Ram College
Muzaffarnagar

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JAIN CARBON INDUSTRIES

MANUFACTURERS OF : ALL TYPES OF ACTIVATED CARBON & CARBON BLACK

Head Office : 31, State Bank Colony, Jansath Road, New Mandi, Muzaffarnagar-251 001 (U.P.)
Works : Vill. Silajuddi, Distt. Muzaffarnagar (U.P.)
Mobile : 9412211935 ✦ e-mail : jaincarbon@yahoo.com

Ref.: J-KP/ 2016-17/ 33

Date: 17.01.2017

To

Dr Ashwani Kumar
Head, Department of Biosciences
Shri Ram College, Muzaffarnagar

Subject: Sanction of funds for Research Project "Biocher v/s Carbon: A Comparative Analysis".

Dear Sir,

Please refer to our letter dated 02.01.2017 and submission of your synopsis on the above subjected project.

We are pleased to sanction Rs. 10,000/- as the expenses to be incurred on the Project. You are requested to complete the work within stipulated period.

Thanks & regards,

For Jain Carbon Pvt. Ltd.
Muzaffarnagar

Copy to:-

1. Principal, Shri Ram College, Muzaffarnagar.

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GOEL RAKESH & CO.
CHARTERED ACCOUNTANTS

57-A, Agarwal Market, First Floor
,Mahavir Chowk,
Muzaffarnagar (U.P) – 251001
Phone No. 0131-2622405

Utilization Certificate

S.N.	Detail of sanction of Fund with Project name and Duration	Amount
1.	90-Days project on Activity of Biochar V/s Carbon: A Comparative Analysis, Date of Sanction of Fund- 02.01.2017 as per Sanction Letter	10000.00/-
	TOTAL	10000.00/-

It is Certified that out of Rs. 10000.00/- (Ten Thousands Only) of grants sanctioned by Jain carbons (P) Limited, Muzaffarnagar during the year 2016-17 in favor of **Shri Ram College, Muzaffarnagar**, a sum of Rs. 10000.00 has been utilized for the purpose of the project for which it was sanctioned and that the balance of Rs. Nil remaining unutilized at the end of the year has been surrendered. The Extra amount (If any) is met out by Shri Ram College.

2. Certified that we have satisfied our self that the conditions on which the grant was sanctioned have been duly fulfilled/are being fulfilled and that we have exercised the following checks to see that the money was actually utilized for the purpose for which it was sanctioned.

Kinds of checks exercise-

1 Checking of cash book
2 Checking of payment vouchers.
3 Checking of expenses bills.

For Shri Ram College

Secretary
Place: Muzaffarnagar
Date: 17.05.2017

For Goel Rakesh & Co.
Chartered Accountants

Rakesh Kumar Goel
(Proprietor)
M.NO. : 071858
FRN : 003374C

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Objectives of the study

This study was conducted on the effectiveness of black carbons (activated carbon and biochar) for enhanced removal of trace organic carbons (TrOC) present in wastewater. The water sample taken in this study was from Kali Nadi and samples of black carbons were provided by the Jain Carbon Industries, Muzaffarnagar. The major objectives were: .

1. To compare adsorption properties of Biochar and Activated Carbon.

2. Differences between bulk density and mechanical hardness of Biochar and Activated Carbon.

Duration of Study

One year (January 2016 to December 2017)

Sanctioned Amount of Project

Rs. 10,000/-

Supervisor

Dr. Ashwani Kumar, HoD, Faculty of Bioscience, Shri Ram College

Students engaged in project

2 students were involved in research and data collection for the project.

Expenditure

Head	Number of units	Amount (in Rs.)
Manpower	2 students	2 x 2000 = 4000.00
Consumables	Analytical Kits, Chemicals etc.	6000.00
	Total	**10000.00**

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Study Methodology

A. Laboratory tests

Black Carbons (BCs)

2 samples of Biochar (Wood based and Wheat based) and 1 sample of Activated carbon was provided by the Jain Carbon Industries for testing purposes. Activated Carbon was also used as Control.

Wastewater

Sample of Kali Nadi was collected from Shamli bypass area of Muzaffarnagar. This water was also used for irrigation and agriculture purpose.

Batch experiments

Goal To identify commercially available biochars that represent a realistic range of performance in model verification, in an effort to provide a wider range of biochars that can be used for stormwater management.

Monitoring

Kinetics and capacity of the BCs and the TrOC concentration in the effluent was monitored.

Column Experiment

Sand + biochar layer of height 12 cm packed in the column. Water sample was used to assess performance of the media layer.

Results

Experimental results were used to simulate models that can predict these results:

- Biochar retained more TrOC effectively as compared to BN - biochar
- Biochar and AC can both degrade 2,4-D and DDT (common pesticides).
- Biochars were capable of absorbing 50-100% of toxic organic chemical contaminants as compared to commercial ACs, making it a viable and cost effective option for use in local water treatment and eco-sanitation.

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Conclusion

All blends of biochar showed variable removal efficiencies. Adsorption of pollutant over the biochar media depends on contact time and sorbate type. Removal efficiencies can be increased with increase in sorbate dosage and biochar modification.

Both AC and biochar can be used for wastewater management. However, choosing the most appropriate media would depend on the physical and chemical properties of the media blend and the target pollutant in the proposed site. The media blend directly impacts the removal efficiency and the overall life cycle of the stormwater management system. Beyond implementation, operations and maintenance costs are also driven by the media blend's properties.

(Dr. Ashwani Kumar)
Project Supervisor

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