

# CAFFEINE AND DICLOFENAC ADSORPTION ON FIQUE BAGASSE BIOCHAR

Yaned Milena Correa-Navarro<sup>1,2\*</sup>, Juan Carlos Moreno-Piraján<sup>2</sup>, Liliana Giraldo<sup>3</sup>

<sup>1</sup> Departamento de Química, Universidad de Caldas, Manizales, Colombia

<sup>2</sup> Departamento de Química, Universidad de los Andes, Bogotá, Colombia

<sup>3</sup> Departamento de Química, Universidad Nacional de Colombia, Bogotá, Colombia

\* E-mail: ym.correa@uniandes.edu.co

**Keywords:** Carbonous material, emerging contaminants, remotion of pollutants.

In recent decades a group of compounds called emerging contaminants (EC) have been detected in different aquatic environments. Caffeine (CFN) and diclofenac (DCF) are considered an EC, and has been found in various studies on surface water and wastewater around the world. For environmental decontamination biochar obtained from agricultural residues is a carbonous solid with potential use in remotion of pollutants.

Baggase fique biochar obtained at different pyrolysis conditions were evaluated by their caffeine and diclofenac adsorption capacity, also, the effects of pH, time and initial CFN and DCF concentration were determined. Besides that, the carbonous materials were characterized with the physicochemical techniques: surface area analysis, infrared spectroscopy, elemental analysis, scanning electron microscopy, thermogravimetric analysis, Boehm titration, and zero point charge. Bagasse fique biochar pH effects were minimal, but time and initial adsorbate concentration was an influential parameter in adsorption capacity.

## Acknowledgments

Authors thank the Faculty of Ciencias of Universidad de los Andes for the partial funding through the project INV-2018-33-1283 and Universidad de Caldas for studies commission.

## References

1. Mohan, D., Sarswat, A., Ok, Y.S., Pittman, C.U. Jr. Organic and inorganic contaminants removal from water with biochar, a renewable, low cost and sustainable adsorbent--a critical review. *Bioresour Technol.* 2014; 160:191-202.
2. Yang, Y., Ok, Y.S., Kim, K.-H., Kwon, E. E. & Tsang, Y. F. Occurrences and removal of pharmaceuticals and personal care products (PPCPs) in drinking water and water/sewage treatment plants: A review. *Sci Total Environ.* 2017; 596–597: 303–320.