



## Study on adsorption of terramycini hydrochloride from aquaculture wastewater using modified activated carbon fiber

Xiaocai Yu\*, Hang Yang, Jinghua Liu, Liping Wang, Meichen Guo

*College of Marine Science and Environment, Dalian Ocean University, Dalian 116000, China, Tel. 86 13842606059; email: 978404210@qq.com (X. Yu), Tel. 86 18041156682; email: yanghang951012@163.com (H. Yang), Tel. 86 07392719366; email: 593809434@qq.com (J. Liu), Tel. 86 18975486999; email: 2727619686@qq.com (L. Wang), Tel. 86 18973999269; email: 1146176981@qq.com (M. Guo)*

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### ABSTRACT

Activated carbon fiber (ACF) was modified by sulfuric acid impregnation method and used as an adsorbent for terramycini hydrochloride (TH). The structural and chemical properties of modified activated carbon fiber were characterized by SEM, FTIR, EDS and BET analysis methods. Six factors (namely, modification time, dosage of ACF, initial concentration of TH, adsorption time, pH value and interfering ion) were screened to study their effects on the adsorption of TH onto modified ACF. A 16 full factorial design was employed for optimizing the adsorption condition. The removal of TH reached 93% under the optimal condition: modification time of 45 min, solution pH of 6, adsorbent dose of 0.6 g L<sup>-1</sup>, 3 h of reaction time and 15 mg L<sup>-1</sup> of initial concentration of TH. The dosage of adsorbent had the most positive effect on the removal of TH. The adsorption kinetic data were fitted well by pseudo-second order model. The adsorption isotherm data were favored to Langmuir model with the maximum adsorption capacity of 99.3 mg g<sup>-1</sup>. The regeneration of saturated modified ACF was studied using NaOH as the regeneration reagent. The present work shows that the modified ACF was a good adsorbent for TH removal from aquaculture wastewater.

*Keywords:* Activated carbon fiber; Adsorption; Antibiotic

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\* Corresponding author.