



## Performance evaluation of selected aquatic plants and iron-rich media for removal of PPCPs from wastewater in constructed wetlands

Thammarat Koottatep<sup>a</sup>, Vo Hoang Nhat Phong<sup>a</sup>, Saroj Kumar Chapagain<sup>a,\*</sup>, Atitaya Panuvatvanich<sup>a</sup>, Chongrak Polprasert<sup>b</sup>, Kyu-Hong Ahn<sup>c</sup>

<sup>a</sup>Environmental Engineering and Management, Asian Institute of Technology (AIT), P.O. Box 4 Klong Luang, Pathumthani 12120, Thailand, Tel. +66-2524-5595; Fax: +66-2524-5625; emails: saroj@ait.asia (S.K. Chapagain),

sarojchapagain77@gmail.com (S.K. Chapagain), thamarat@ait.asia (T. Koottatep), phongvobk@gmail.com (V.H.N. Phong), dear\_atitaya@hotmail.com (A. Panuvatvanich)

<sup>b</sup>Faculty of Engineering, Thammasat University, Pathumthani 12120, Thailand, email: pchongrak@gmail.com

<sup>c</sup>Center for Water Resource Cycle, Korea Institute of Science and Technology (KIST), Seoul 136-791, Republic of Korea, email: giant5283@gmail.com

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### ABSTRACT

Excessive use of pharmaceuticals and personal care products (PPCPs) and their release into the water environment have become a major challenge since most of the wastewater treatment options are not equipped to treat these micro-contaminants. Some advanced technologies are reported to be effective for PPCPs treatment in wastewater but cost of those technologies remains as major drawback. Constructed wetlands (CWs) are a low-cost technology for wastewater treatment; however, their performance in term of PPCPs removal has not yet been fully investigated. This study aimed to evaluate the performance of selected aquatic plants and iron-rich media for removal of PPCPs from wastewater. Four aquatic plants were selected in the preliminary testing, where vetiver was recognized to be the most appropriate plant since it responded well to high dose of PPCPs. The experimental results revealed the increased efficiency of PPCPs removal at a low PPCPs dose. The removal of acetaminophen, amoxicillin and  $\beta$ -estradiol were found to be 97.5%–98.4%, 73.7%–92.2% and 75.0%–89.2%, respectively.

*Keywords:* Constructed wetland; Fenton reaction; Pharmaceuticals and personal care products; Iron-rich media

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\* Corresponding author.

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