
淀川水系における抗インフルエンザ薬タミフル及びその活性代謝物、リレンザ、アマンタジンの存在実態と環境動態の解明

Occurrence and Environmental Fate of Anti Influenza Drugs, Oseltamivir and Oseltamivir Carboxylate, Zanamivir and Amantadine, in the Yodo River System, Japan



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この度は、平成 23 年度日本水環境学会博士研究奨励賞(オルガノ賞)最優秀賞の授与を賜り、誠にありがとうございます。オルガノ(株)、ご選考賜りました先生方ならびに学会関係者の皆様方に厚くお礼申しあげます。

本研究では、近年水環境中での存在が報告され、環境に対する影響への関心が社会的に高まってきているタミフルやリレンザ等の抗インフルエンザ薬成分について、環境水試料を対象とした高感度な多成分同時分析法を開発し、淀川水系を対象として下水処理場や河川における存在実態や下水処理場での除去率の把握を初め、物質収支による河川環境中での減衰の評価、負荷源の推定など、その環境動態を世界に先駆けて明らかにしました。また、大規模な新型インフルエンザパンデミック発生時における環境中の濃度予測を行い、環境リスク評価およびリスク削減に向けた対策の提案を試みました。

本賞の受賞を励みとして、水環境中に存在する抗インフルエンザ薬成分の問題について、有用な知見を今後とも得ることができるよう、より一層の努力を重ねていきたいと思っております。

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Detection and Minimization of Micro-Organic Pollutants in Phosphorus Recovery from Urine

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First of all, I would like to express my sincere thanks to the Japan Society on Water Environment (JSWE) and Organo prize (2011). I am also extending my sincere thanks and appreciation to the committee and audiences who attended my presentation and selected me. Thank you very much.

The purposes of this research are to select the representatives of pharmaceuticals and hormones by classification methods, to develop an analytical method for detection of the pharmaceuticals and hormones in struvite recovered from urine, to assess the effects of storage time on the amount of pharmaceuticals and hormones in struvite recovered from urine and to discuss on appropriate techniques for minimization of amount of pharmaceutical compounds in struvite recovered from urine.

Phosphorus (P) was recovered from urine via struvite production. The amount of micro-organic pollutants in struvite was investigated. After the production of struvite, the results showed that only tetracycline, erythromycin, and norfloxacin remained in struvite, especially, tetracycline remained in struvite with quite high amount. The effects of storage time on quality of P recovery and amount of pharmaceuticals contained in struvite from synthetic and human urine were investigated. It was found that 5-day storage time is an optimum condition for struvite formation with low pharmaceutical amounts and high P recovery efficiency. With these results, the application will lead to the better sanitation, improving P recovery efficiency from human urine, and agricultural development not only in megacities but also other areas in Asian countries.

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