A Study on Purification Method of Expired Medication Through Biofilm Sponge Manufacturing

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Water pollution has worsened due to thoughtless treatment of expired medication, causing problems such as neutralization and abnormal behavior of fish, and we found solution in fish to solve this problem. It was hypothesized that fish living in rivers polluted by expired medication would have acquired bacteria that could decompose expired medication. As a result of analysis through various data, the type of medicine to be used in the study was determined. It hypothesizes that in contaminated water-quality, fish live with the decomposition ability of bacteria in the body, finds such bacteria, and biofilm sponge was selected as a research topic. Bacteria were collected from eight guppy individuals and pure separation was performed. After that, 21 combinations were created by combining two types. The decomposition ability was measured using five combinations that succeeded in pure separation. The measurement method adopted a method of measuring the absorbance of the benzene ring wavelength. As a result of adding a combination of Y1F and AZ to the contraceptive pill(Mybora), the optical density decreased over time. And after selecting the most effective combination, molecular identification was performed. After that, a sponge with bead-shaped biofilm is manufactured in consideration of the river environment with a flow velocity. Finally, we used an AI analysis program to predict the result of combining more than three bacteria. In conclusion, we confirmed that our hypothesis was correct and developed biofilm sponge that decomposes expired medication.

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