Application of Appropriate Technology Through the Adsorption of Copper Ions in Chestnut Trees

Kang, MinJi (School: Kangwon Science High School)
Woo, JeongAn (School: Kangwon Science High School)
Kim, Tae Eun (School: Kangwon Science High School)

In this study, we confirmed the copper ion adsorption ability of the chestnut tree and suggested the possibility of making a filter to remove heavy metals from wastewater. Indonesia's Jauapura river is a vital source of water for nearby villages, however, we found that the levels of copper and lead in that river have surpassed the safe limit. Therefore, we wanted to improve water pollution problems through water filters would be possible. Based on this study, we aimed to develop an eco-friendly filter that can be easily used in developing countries with insufficient sewage facilities to help solve their water pollution problems. Through experiments on the copper ion absorption of the chestnut tree, we found that it shows the highest absorption efficiency with steamed chestnut bark at 80? for 9 hours. As a result, we produced a filter and confirmed its absorption ability by making artificial wastewater mixed with lead and copper equal to the concentration of the Jauapura river. Based on the results, we thought that it is possible that the filters can help Jauapura as appropriate technology. In addition, in a follow-up study, we would like to propose a filter use system that makes it easier to use the filter and a treatment method for the filter after water quality improvement.

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