

スギの植林が環境中の金属元素動態を変える Plantation of *Cryptomeria japonica* might alter dynamics of metal element

太田 民久^{1*}; 申 基澈¹; 日浦 勉²
OHTA, Tamihisa^{1*}; SHIN, Ki-cheol¹; HIURA, Tsutomu²

¹ 総合地球環境学研究所, ² 北海道大学 苫小牧研究林

¹Research Institute for Humanity and Nature, ²Tomakomai Research Station, Hokkaido University

In this study, we found dynamics of many metallic elements in catchment areas may be altered by plantation of *Cryptomeria japonica*.

Organisms can alter nutrient dynamics in ecosystems via physiological results such as respiration, decomposition and excretory processes. Many studies have established importance of the alteration of nutrient dynamics by organisms in ecosystems. Especially, dynamics of carbon, nitrogen and phosphorus can be altered by physiological responses of organisms. However, there are few studies that focused on effects of organisms on dynamics of metallic elements in ecosystems.

Our previous studies showed that the vegetation in catchment area might alter calcium concentration in the soils and water of streams, and affect the community structure of invertebrates in soils and streams. In these studies, we observed that concentration of exchangeable calcium in the Japanese cedar (*C. japonica*) plantations is about three times higher than in the evergreen broad-leaved forests. This might indicate *C. japonica* has characteristics that alter dynamics of metallic elements in soil. We focused on organic acids extracted from roots of tree because some studies showed root exudation of organic acids could elute materials in soil particles and base-rocks.

We conducted field survey and a pot experiment in Wayakama Experimental Forest of Hokkaido University. And we determined the reason why the elevation of calcium concentration in plantation of *C. japonica* occurs. In consequences, our results showed plantation of *C. japonica* might increase exchangeable metallic ion in soils through increased supply of organic acids to soil systems. And the some eluted metallic ions might be supplied to streams.

キーワード: 河川, 土壌, 金属イオン, スギの植林, 有機酸

Keywords: stream, soil, metallic ion, plantation of *Cryptomeria japonica*, organic acids