

森林溪流内における落葉分解の進行に伴う微生物群集構造の変遷

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Successional changes of microbial community structures on decaying leaves in forest streams

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森林溪流の生態系において、落葉は重要な有機物源である。落葉は難分解性物質を多く含むため、微生物（菌類と細菌）による分解作用が、より高等な生物の栄養摂取のための媒介役を果たしている。これまで微生物の研究は顕微鏡観察や培養に基づいて行われてきたが、実験室において培養できないものも多く、個々の微生物種の実地での動態は不明瞭のままであった。しかし、近年急速に進歩した DNA 技術により、環境中の特定の時点での微生物相を直接捉えることが可能となった。本研究は、青葉山の2溪流において落葉分解実験を行い、DNA を用いた系統的解析手法により、日数経過に伴う菌類と細菌の群集構造の変化を追跡した。その結果、微生物群集構造は、落葉の樹種による差は小さく、次第に河床の微生物相へと近似していった (Fig.1)。

Leaf litter is a major component of organic matter inputs to many forest streams. The microbes (fungi and bacteria) are responsible for a significant fraction of total litter decomposition in streams and much of their biomass is transferred to higher trophic levels. Detection of microbes had long been achieved through microscopy and cultivation. However, recent progresses of molecular techniques based on DNA have offered the potential for more-accurate and -efficient methods for characterizing microbial communities, including unculturable components. We undertook leaf-decomposing experiments in two streams located in Aobayama hill to trace the succession of fungal and bacterial communities on leaves. Statistical analysis of both fungal and bacterial communities showed that there were no significant differences in the leaves of the two tree species. Also, it seems that microbial assemblages on the leaves have gradually become similar to community of the sediment (Fig. 1).

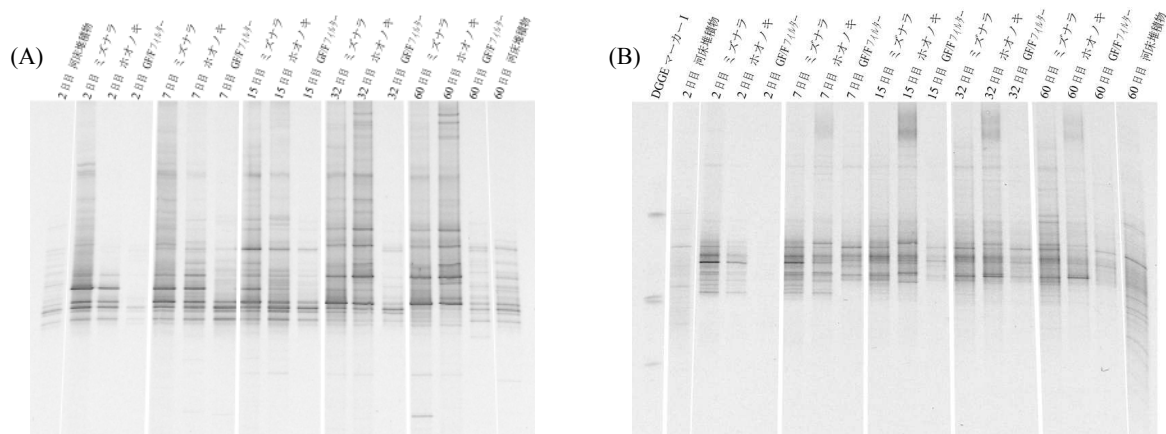


Figure 1. The community successions of fungi (A) and bacteria (B) during stream exposure.