3-O12-3

Ecological aspects of ammonia fungi in serpentine soil

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Purpose: Serpentine soils are usually toxic to many plant taxa which limit their diversity comparing with those on adjacent non-serpentine soils. Ammonia fungi distributed widely from subarctic to tropical forests and colonize on the forest floors immediately after an enrichment disturbance by a large input of ammonium-nitrogen. Ammonia fungi have been recorded from various habitats, but no ecological studies of them have been done in serpentine soil. The aim of our study is to elucidate ammonia fungi in serpentine soil by comparison of mycobiota, and biomass and morphological features of their reproductive structures appeared on the serpentine and non-serpentine soils.

Methods: We applied urea (800 g/m^2) in spring on the floors of ever green broad-leaved forests inhabited on both soils in Chiba Prefectures, Japan, and examined fungi occurred on the urea plots.

Results and Conclusions: Dominant saprobic and ectomycorrhizal ammonia fungi collected from both soils were similar. It suggests that serpentine soil does not affect mycobiota of ammonia fungi. Among them, occurrence frequency and biomass of basidiomata of an ectomycorrhizal ammonia fungus *Hebeloma spoliatum* in the serpentine soil was significantly smaller than those in non-serpentine soil. The basidiomata of *H. spoliatum* appeared on the serpentine soil formed significantly shorter stipes with smaller pilei than those in non-serpentine soil. The result was more remarkable in stipes. This is the first report about morphological differentiation of fungi in serpentine soil. The ecological aspects of ammonia fungi in the serpentine soil would be caused by its physico-chemical properties.