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Influence of Total Phenolics and Tannins on Nitrogen Mineralisation in Soils of Native Oldest Forest from Eastern Mediterranean

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Aim of the study: The aim of this study was to compare the effect of total phenolics and tannins content of litter on nitrogen mineralization in the soil of native oldest pure *Abies bornmuelleriana* (AB) *Fagus orientalis* (FO) and *Pinus nigra*, (PN) communities and mixed *A.bornmuelleriana-P. nigra* (AP) and *A. bornmuelleriana* ve *A. bornmuelleriana - P. nigra - F. orientalis* (APF) forest communities which are in association with them from Eastern Mediterranean.

Material and Methods: Litter and mineral soil (0-5 cm) layers samples were taken by volumetric cores (20x20x20 cm) from three different parts for each sampling sites (100 x 100 cm). Litter taken aboveground each volumetric soil sample was separated by handling and put in to nylon bags. Samples were dried in air in laboratory and homogenized by mill. The concentration of total phenolics and hydrolyzable tannins was measured spectrophotometrically with the Folin-Ciocalteu method in homogenized powders. Nitrogen mineralization in mineral soil layers (0-5 cm) was analyzed continuously over a year by the field incubation method.

Results: A significant difference among communities was found according to secondary metabolites concentrations (total phenolics and tannic acid) of litter layer. *Pinus nigra* (PN) communities showed the highest amounts in both total phenolic compounds and tannic acid. Concentrations of total phenolics in litter correlated positively with soil annual net NH_4^+-N nitrogen production ($r = 0.695$, $p < 0.05$) and, negatively with soil annual net NO_3^--N nitrogen production ($r = -0.821$, $p < 0.05$) in the upper soil layer (0-5 cm). While no significantly correlation was shown between tannic acid and soil NH_4^+-N nitrogen production ($r = 0.168$, $p > 0.05$), significant negative correlation between tannic acid and NO_3^--N nitrogen production ($r = -0.551$, $p < 0.05$) was found. These results indicate that nitrification rate in soil was inhibited with total phenolics and tannins contents of litter layer in forest ecosystems.

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Key Words: Nitrification, Oldest Forest Communities, Litter, Total Phenolic and Tannic Acid