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Soil organic matter degradation by ectomycorrhizal fungi

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Ectomycorrhizal (ECM) fungi play a key role in nutrient cycling in boreal forests. Especially plant growth-limiting nutrients such as nitrogen (N) and phosphorus (P) are known to be taken up efficiently by ECM fungi and transferred to their plant hosts. However, most N and P in soils are not readily available for uptake by mycelia since they are mostly present in organic molecules such as amino acids, proteins and chitin or they are enclosed in, bound to or embedded in intact cell walls, lignin, etc. Hence, in order for ECM fungi and plants to gain access to these mineral nutrients, a broad spectrum of more or less complex organic molecules must be broken down. Recent studies suggest the involvement of Fenton-type reactions in the degradation mechanisms of soil organic matter (SOM) employed by ECM fungi. To investigate the chemical modifications introduced by ECM fungi to SOM in more detail, modifications of the main SOM components – lignin, cellulose, proteins (BSA), chitin and pectin – were studied with Fourier-Transform Infrared Spectroscopy (FTIR) in degradation experiments with the ECM fungi *Paxillus involutus* and *Suillus luteus*.