

Abstract

Vegetation is known to influence the composition of microbial communities. Bacteria can act as roots symbionts or be involved in the decomposition of plant biomass. They can be influenced by soil chemistry but also by plant exudates. Some plants produce targeted exudates to attract specific bacteria to their roots. Bacteria associate with plants frequently but the effect of plant diversity on bacterial communities on their roots and in the surrounding soil remains unclear. The aim of this work was to describe the relationship between the diversity and community composition of bacteria and the diversity of vegetation in forest and grassland ecosystems. The study areas were selected to represent a gradient of vegetation in Bohemian Forest NP and in White Carpathian flowery grasslands. I hypothesized that the diversity and evenness of bacterial community increase with increasing plant diversity. The composition of bacterial community was characterized by 16S rRNA sequencing. The composition of vegetation was determined by phytocenological relevées and by molecular markers *trnL*. In grassland ecosystem, there was a positive relationship between plant and bacterial diversity only in shoots. The space and vegetation were identified as an important drivers of bacterial community composition in shoots. The soil chemistry was another significant driver of bacterial community composition in roots and soil, the community in soil was further affected also by space. In forest ecosystem, the relationship between plant and bacterial diversity was positive in all habitats - in litter, roots and soil. Vegetation, chemistry and spatial location were identified as important drivers affecting the bacterial community composition in soil and litter. The composition of vegetation seems to be the most important in roots. This thesis should contribute to the understanding of the relationships between diversity of vegetation and diversity and the composition of bacterial communities in grassland and forest ecosystems.

Key words: diversity, bacterial community composition, grassland ecosystem, forest ecosystem, soil, litter, roots, shoots

