

Case study - Artificial Soil

Artificial soil studies reveal domain-specific preferences of microorganisms for the colonisation of different soil minerals and particle size fractions.

Michael Hemkemeyer, Geertje J. Pronk, Katja Heister, Ingrid Kogel-Knabner, Rainer Martens & Christoph C. Tebbe. *FEMS Microbiol Ecol.* 2014. Vol 90.

Overview

- **Keywords:** Artificial soils; soil minerals; soil particle size fractions; soil microbial diversity; terminal restriction fragment length polymorphism
- **Aim of the study:** Analyse the importance of different mineral compositions for the diversity of soil microorganisms application quantitative PCR
- **Sample name:** Artificial soil
- **Material:** FastPrep-24™ instrument, FastDNA™ Spin Kit for Soil containing Lysing Matrix E
- **Buffer:** Sodium Phosphate buffer and MT buffer supplied with the FastDNA™ Spin Kit for Soil

Protocol and Parameters

DNA was extracted with the FastDNA™ Spin Kit for Soil using the FastPrep-24™ instrument according to the manufacturer's instructions, using following modifications:

1. Volumes of sodium phosphate buffer and supplied 'MT-buffer' were adjusted to 950 and 120 µL, respectively.
2. Bead-beating was run twice for 45 s at a speed of 6.5 m/s.
3. The samples were then centrifuged for 5 min at 14,000 x g and room temperature.
4. The DNA bound to the binding matrix of the FastDNA™ Spin Kit was washed twice with 1 mL 5.5 M guanidinthiocyanate to remove coextracted contaminants.
5. After elution of DNA with 100 µL distilled water, this step was repeated using the eluate.

Conclusion

- The combination of FastDNA™ Spin Kit for Soil and the FastPrep-24™ instrument provide a **high quality of gDNA**.
- The qPCR results revealed that the mineral composition and the particle size fractions have specific and different selective effects on soil samples.

Successful sample preparation using the MP Biomedicals FastPrep® product line has been highlighted in thousands of scientific articles. To access articles and other materials, visit www.mpbio.com/FastPrepLibrary.

www.mpbio.com



21F0615-2