

### Skim milk drastically improves the efficacy of DNA extraction from Andisol, a volcanic ash soil.

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#### Introduction

The challenge with extractions from soil is isolating DNA or RNA without contamination by humic acids or other PCR inhibitors. Effective, efficient sample preparation is critical to successful downstream results.

DNA extraction from Andisol, a volcanic ash soil, is known to be very difficult because this soil has a complex matrix, including allophane as a clay mineral. Soil properties such as high clay content contribute to high adsorption of DNA to soil particles.

#### Overview

**Keywords:** Environmental DNA, microbial community analysis, molecular methods, unculturable microorganisms.

**Aim of the study:** Improvement of DNA extraction from volcanic ash soil

**Application:** PCR

**Sample name:** Andisol

**Sample type:** Volcanic ash soil

**Material:** FastPrep-24™ instrument, FastDNA™ Spin Kit for Soil, skim milk (carrier minimizing adsorption of nucleic acids to soil)

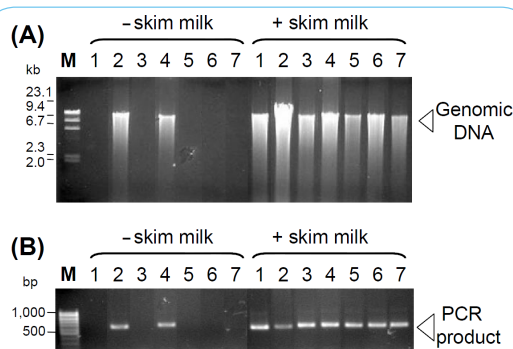


Fig. 2. Agarose gel electrophoresis of DNA and PCR products extracted from sample soils (1-7). FastPrep was used for extracting DNA from soils (A). PCR products from these extracts were amplified with bacterial 16S rDNA universal primer set (338f and 907r) (B) when amended with (+) or without (-) 40 mg of skim milk  $g^{-1}$  soil. Numbers show soil samples listed in Table 1. M: Molecular marker (A:  $\lambda$ -Hind III digest, B: 100 bp ladder).

#### Conclusion

- DNA could successfully be extracted from Andisol soil samples with the FastDNA™ Spin Kit for Soil and the addition of 40 mg of skim milk per gram of soil sample. PCR products of the expected size were amplified from all extracts with skim milk.
- Resultant extracts were suitable for PCR and no other purification procedures were needed.

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](http://www.mpbio.com/FastPrepLibrary).



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