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Data Article

Data on DNA gel sample load, gel electrophoresis, PCR and cost analysis

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ABSTRACT

The data presented in this article provide supporting information to the related research article “Comparison of ten different DNA extraction procedures with respect to their suitability for environmental samples” (Kuhn et al., 2017) [1]. In that article, we compared the suitability of ten selected DNA extraction methods based on DNA quality, purity, quantity and applicability to universal PCR. Here we provide the data on the specific DNA gel sample load, all unreported gel images of crude DNA and PCR results, and the complete cost analysis for all tested extraction procedures and in addition two commercial DNA extraction kits for soil and water.

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Specifications Table

Subject area	Biology
More specific subject area	Molecular Biology
Type of data	Tables, figures, equations
How data was acquired	Bio View Biostep transilluminator
Data format	Raw and analyzed

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Experimental factors	Sample were preserved at -20°C before DNA extraction
Experimental features	DNA extraction, universal PCR, DNA visualization, cost analysis
Data source location	Cottbus, Germany
Data accessibility	Data is within this article

Value of the data

- The data on the gel sample load are valuable to serve as indirect control for DNA quantification with fluorescence stain called PicoGreen.
- This data provide additional gel images of crude DNA and PCR of the tested DNA extraction procedures.
- The cost analysis of the DNA extraction procedures provided are valuable for further economical comparison.

1. Data

Table 1 presents the DNA sample load (in μL) necessary to visualize the crude DNA on the agarose gels. Different DNA loads were used in order to achieve comparable DNA concentrations ranging between 250 and 300 ng on the gel. Higher DNA loads were necessary for visualization on the agarose gels, especially for the crude DNA extracts from the Havel River sediment (procedure A, D, F, G, and H).

The visual DNA quality control of crude DNA extracts and PCR of procedures B, C, D, E, H, I and J is presented in Figs. 1–4. The results for crude DNA extracts and PCR amplification of procedure B and C (method according to [2]) were almost similar. In both cases, intensive fragmentation was found for crude DNA extracts of the activated sludge and no distinct genomic DNA band was visible (Fig. 1, D1 & E1). The crude DNA of the sediment and anaerobic digestion sludge indicated a good quality with lower content of impurities, while the quality of the crude DNA for the nitrifying sludge was lower. A higher content of impurities was visible on both gel images. Positive PCR amplification was only feasible for the anaerobic digestion sludge and showed a very good quality of the amplicon (Fig. 1, D2 & E2).

The results for the crude DNA extracts of procedure D and E (method according to [3,4]) were also almost similar (Fig. 2, F1 & G1). For procedure D, no distinct genomic DNA band was visible on the agarose gel but instead, fragmentation and higher content of undefined impurities (Fig. 2, F1). The

Table 1

Sample load in μL on the agarose gel for visualization of crude DNA extracts.

Extraction protocol according to first author		Origin of samples			
		Activated sludge	Havel River sediment	Anaerobic digestion sludge	Nitrifying sludge
A	Bourrain	4	15	5	8
B	Gabor harsh	2	8	5	8
C	Garbor soft	2	8	5	15
D	Shan	4	12	10	20
E	Orsini/Spica	4	8	6	15
F	Singka	4	12	15	15
G	Soya method	1	20	3	15
H	Tabatabaei	2	10	12	8
I	Tresse	1	6	6	10
J	Wilson	2	4	12	8

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