Data Article

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

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A B S T R A C T

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 \(-20\,\degree C\) 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 \(\mu\)L) 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

| 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                  |
pattern for the nitrifying sludge, especially, indicated complete failure of the extraction procedure. The gel image of the crude DNA extraction for procedure E occurred almost similar to procedure D with one exception. The crude DNA extract of the activated sludge showed a slight distinct genomic DNA band, however, the background staining indicated the presence of impurities (Fig. 2, G1). Nevertheless, positive PCR amplification was obtained for the crude DNA extract from activated sludge for procedure E (Fig. 2, G2). Surprisingly, positive amplification of the nitrifying sludge was also obtained for both procedure D and E (Fig. 2, F2).

The results of the crude DNA extracts of procedure H and I (method according to [5,6]) are presented in Fig. 3. All crude DNA extracts of procedure H indicate a slight distinct genomic DNA band and higher content of impurities through background staining (Fig. 3, H1). Positive PCR amplification was only obtained for the crude DNA extract of the anaerobic digestion sludge. PCR amplification of
the crude DNA extracts of the activated sludge, Havel River sediment and nitrifying sludge failed (Fig. 3, H2). The quality of crude DNA extracts of procedure I was different between the four environmental samples (Fig. 3, I1). A distinct genomic DNA band without higher content of visible impurities was obtained for the activated sludge. The degree of increased impurities occurred slightly for the crude DNA extracts of the Havel River sediment, but a distinct genomic DNA band was still good visible on the gel image. The crude DNA extract of the anaerobic digestion sludge showed higher content of DNA fragmentation as well as possible impurities in the background of the gel. Besides a distinct DNA band higher background smearing was also visible for the crude DNA extract of the nitrifying sludge. Positive PCR amplification was only obtained for the crude DNA extract of the activated sludge (Fig. 3, I2).

The results of the crude DNA extracts of procedure J are presented in Fig. 4 (method according to [7]). The gel image indicated distinct genomic DNA bands with lower content of background smearing

Fig. 2. Agarose gel electrophoresis of crude DNA (F1 & G1) and universal PCR (F2 & G2) using universal primer set 27f and 1525r. F1 & F2: Procedure D (Shan). G1 & G2: Procedure E (Orsini & Romano-Spica). Lane declaration for all crude DNA and universal PCR gel images: lane 1 to 3 activated sludge; lane 4 to 6 Havel River sediment; lane 7 to 9 anaerobic digestion sludge; lane 10 to 12 nitrifying sludge; M in all gel images: 10 kb MassRuler DNA ladder.
for the activated sludge, Havel River sediment and the nitrifying sludge. A higher degree of possible DNA fragmentation and/or background impurities were observed for the crude DNA extract of the anaerobic digestion sludge (Fig. 4, J1). Positive PCR amplification was obtained from the activated sludge, Havel River sediment and the nitrifying sludge, while the amplification for the anaerobic digestion sludge failed (Fig. 4, J2).

The cost analysis of the ten DNA extraction procedures and the two commercial DNA extraction kits is presented in detail in Tables 2–13. Our cost analysis is based on cost estimation. Therefore a cost range between lowest and highest prices is presented. We assumed that the real extraction price will be in this cost range. The presented results show that every extraction procedure has its specific cost range, which is mainly dependent on the extraction time and therefore also on the cost of the laboratory staff. We calculated the lowest laboratory staff cost ranging between 3.65 € and 5.10 € for procedure J (Table 11), and the highest ranging between 8.68 and 12.15 for procedure A (Table 2).
calculated the lowest cost for the chemicals needed ranging between 0.13 € to 0.31 € for procedure D (Table 5) and the highest cost ranging between 0.47 € to 0.96 € for procedure I (Table 10). The cost for the other consumables such as gloves, tubes and tips were almost similar for all analyzed extraction procedures and extraction kits.

2. Experimental design, materials and methods

The sample preservation, DNA extraction, PCR performance and gel electrophoresis were described elsewhere [1]. For the cost analysis, a cost range was estimated ranging between minimum and maximum prices for all needed consumables. The number of required tubes and tips per extraction was counted. In all equations that follow, an index was included identifying low or high cost calculations, respectively. For clarification, the letter \( x \) represents all low cost calculations and the letter \( y \) represents all high cost calculations. The individual cost per chemical needed for every DNA extraction was calculated either with Eqs. (1) or (2), where \( m_{\text{extraction}} \) is the chemical weight required for a single DNA extraction and \( m_{\text{total fix cost}} \) is the total weight corresponding to the fix cost. The individual cost for additional consumables such as gloves, tubes and/or tips was calculated either with Eqs. (3) or (4).

\[
\text{Chemical costs}_x [\text{€/prep}] = \frac{m_{\text{extraction}} \cdot \text{Fixcost}_x}{m_{\text{total fix cost}}};
\]

\[
\text{Chemical costs}_y [\text{€/prep}] = \frac{m_{\text{extraction}} \cdot \text{Fixcost}_y}{m_{\text{total fix cost}}};
\]

\[
\text{Additional consumable costs}_x [\text{€/prep}] = \frac{\text{Consumbleused}_{\text{extraction}} \cdot \text{Fixcost}_x}{\text{Total consumable fix cost}_x};
\]

\[
\text{Additional consumable costs}_y [\text{€/prep}] = \frac{\text{Consumbleused}_{\text{extraction}} \cdot \text{Fixcost}_y}{\text{Total consumable fix cost}_y};
\]

Fig. 4. Agarose gel electrophoresis of crude DNA (J1) and universal PCR (J2) using universal primer set 27f and 1525r. G1 & G2: Procedure J (Wilson). Lane declaration for all crude DNA and universal PCR gel images: lane 1 to 3 activated sludge; lane 4 to 6 Havel River sediment; lane 7 to 9 anaerobic digestion sludge; lane 10 to 12 nitrifying sludge; M in all gel images: 10 kb MassRuler DNA ladder.
The cost for the lab staff was calculated either with Eqs. (5) or (6). The calculation is based on a total of 12 extractions per staff and the individual extraction time of the tested extraction procedures.

\[
\text{Labstaff}_x [\text{€/prep}] = \left(\frac{\text{Coststaff}_x}{\text{Hour}}\right) \times \frac{12}{\text{extractions}} \times \frac{60}{\text{min}}
\]

\[
\text{Labstaff}_y [\text{€/prep}] = \left(\frac{\text{Coststaff}_y}{\text{Hour}}\right) \times \frac{12}{\text{extractions}} \times \frac{60}{\text{min}}
\]

The sum of total costs of chemicals was calculated either with Eqs. (7) or (8). The total costs of all additional consumables needed per extraction was calculated either with Eqs. (9) or (10). The final price per preparation was then calculated either with Eqs. (11) or (12) considering the cost for the lab staff, for all chemicals and additional consumables needed.

\[
\text{Total chemical costs}_x [\text{€/prep}] = \sum \text{Chemical costs}_x
\]

\[
\text{Total chemical costs}_y [\text{€/prep}] = \sum \text{Chemical costs}_y
\]

\[
\text{Total additional consumables costs}_x [\text{€/prep}] = \sum \text{Additional consumable costs}_x
\]

\[
\text{Total additional consumables costs}_y [\text{€/prep}] = \sum \text{Additional consumable costs}_y
\]

\[
\text{Final price}_x [\text{€/prep}] = \text{Lab staff}_x + \sum \text{Chemical costs}_x + \sum \text{Additional consumable costs}_x
\]

\[
\text{Final price}_y [\text{€/prep}] = \text{Lab staff}_y + \sum \text{Chemical costs}_y + \sum \text{Additional consumable costs}_y
\]

2.1. Cost analysis

See Tables 2–13.
Table 2
Cost analysis for DNA extraction procedure A (according to Bourrain et al., 1999).

| Consumables                        | Volumes | Units | Concentration | Volumes /Weight | High costs | Low costs | Low cost | High cost |
|------------------------------------|---------|-------|---------------|----------------|------------|-----------|----------|-----------|
|                                    | Amount  | Unit  | Fix cost (€)  | Amount         | Unit       | Fix cost (€) | per prep | per prep  |
| Gloves (any size)                  | 1 pair  | –     | –             | –              | 50 pair    | 8.20       | 50       | 4.50      | 0.090     | 0.1640    |
| Tubes                             | 1 ml    | 500 pieces | 11.9         | 1000 pieces | 21.90      | 0.1095     | 0.1190    |
| Tips                              | 1 µL    | 500 pieces | 5.40         | 1000 pieces | 8.19       | 0.0082     | 0.0108    |
| lysozyme buffer                   | 0.15 M NaCl | 6.6 mg | 15.84        | 1000 g        | 24.19      | 0.0002     | 0.0002    |
| SDS solution                      | 0.1 M NaCl | 4.4 mg | 15.84        | 1000 g        | 24.19      | 0.0001     | 0.0001    |
| Tris–HCl saturated phenol         | 0.1 M Tris–HCl | 27.9 mg | 93.40       | 1000 g        | 128.00     | 0.0058     | 0.0085    |
| Phenol:Chloroform:Isoamyl (25:24:1) | 1.0 ml | 25% Phenol | 18.00       | 1000 g        | 64.40      | 0.0644     | 0.1800    |
| RNaseA treatment                  | 5.0 µL | 0.2 µg µL-1 | 94.40       | 1000 mg       | 292.00     | 0.0003     | 3.8E-04  |
| Lab staff (per hour)              | 12 min  | –     | –             | –              | –          | –         | –        | –         |
| Lab staff (€/extraction)           | –       | –     | –             | –              | –          | –         | 8.68     | 12.15     |
| Chemicals (€/extraction)           | –       | –     | –             | –              | –          | –         | 0.36     | 0.86      |
| Gloves, tubes, tips (€/extraction) | –       | –     | –             | –              | –          | –         | 0.30     | 0.42      |
| Final price per extraction including extraction time, lab staff and all consumables (€) | – | – | – | 9.34 | 13.43 |
| Consumables                  | Volumes | Units | Concentration | Volumes /Weight | High costs |                  | Low costs |                  | Low cost | High cost |
|-----------------------------|---------|-------|---------------|----------------|------------|------------------|-----------|------------------|---------|-----------|
|                            |         |       |               |                | Amount     | Unit            | Fix cost (£) | Amount          | Fix cost (£) | per Prep (£) per Prep (£) |
| Gloves (any size)           | 1       | pair  | –             |                | 50         | pair            | 8.20       | 50               | 4.50   | 0.0900    | 0.1640    |
| Tubes                       | 3       | –     | –             | 2.0            | mL         | 500 pieces      | 11.90      | 1000             | 21.90 | 0.0657    | 0.0714    |
| Tips                        | 10      | –     | –             | 1000           | µL         | 500 pieces      | 5.08       | 1000             | 7.70   | 0.0770    | 0.1015    |
| Tips                        | 4       | –     | –             | 200            | µL         | 500 pieces      | 5.40       | 1000             | 8.19   | 0.0328    | 0.0432    |
| Tips                        | 1       | –     | –             | 10             | µL         | 1000 pieces     | 27.14      | 2000             | 43.42 | 0.0217    | 0.0271    |
| Silica beads                | 0.1     | mm    | –             | 700            | mg         | 1000 g          | 24.30      | 25000            | 202.00 | 0.0057    | 0.0170    |
| Lysozyme buffer             | 1.25    | mL    | 100 mM Tris   | 15.1           | mL         | 500 g           | 93.40      | 1000             | 128.00 | 0.0019    | 0.0028    |
|                             |         |       | 100 mM sodium EDTA | 46.5       | mg         | 100 g           | 23.50      | 1000             | 59.70  | 0.0028    | 0.0109    |
|                             |         |       | 100 M NaCl    | 109.6          | mg         | 500 g           | 15.84      | 1000             | 24.19  | 0.0027    | 0.0035    |
|                             |         |       | 1% w/v CTAB   | 12.5           | µg         | 100 g           | 22.64      | 1000             | 89.11  | 0.0011    | 0.0028    |
| Lysozyme                    | 0.04    | mL    | 50 mg mL⁻¹    | 2.0            | mg         | 1.0 g           | 23.89      | 10               | 96.04  | 0.0192    | 0.0478    |
| Proteinase K                | 0.01    | mL    | 10 mg mL⁻¹    | 0.1            | mg         | 1.0 g           | 67.68      | 0.5              | 259.62 | 0.0519    | 0.0677    |
| SDS                         | 0.2     | mL    | w/v 20%       | 0.04           | mg         | 100 g           | 16.56      | 1000             | 56.48  | 2.3E-06   | 6.6E-06   |
| Chloroform (1:1 v/v)        | 1.0     | mL    | 100%          | 1.0            | mL         | 500 mL          | 50.62      | 2500             | 100.66 | 0.0403    | 0.1012    |
| Isopropanol (0.6:1 v/v)     | 0.6     | mL    | 100%          | 0.6            | mL         | 1000 mL         | 30.30      | 2500             | 61.70  | 0.0148    | 0.0182    |
| Ethanol                     | 0.5     | mL    | 70%           | 0.375          | mL         | 250 mL          | 47.56      | 2500             | 246.58 | 0.0345    | 0.0666    |
| TE buffer                   | 0.1     | mL    | 10 mM Tris–HCl| 0.12          | mg         | 500 g           | 93.40      | 1000             | 128.00 | 1.6E-05   | 2.3E-05   |
|                             |         |       | 1 mM EDTA     | 0.03           | mg         | 100 g           | 34.08      | 1000             | 245.23 | 7.2E-06   | 1.0E-05   |
| Extracted samples           | 12      | –     | –             | –              | –          | –               | –          | –                | –      | –         |
| Extraction time             | 235     | min    | –             | –              | –          | –               | –          | –                | –      | –         |
| Lab staff (per hour)        | –       | –     | –             | –              | –          | –               | –          | –                | –      | –         |
| Lab staff (£/extraction)    | –       | –     | –             | 35.00          | –          | 25.00           | –          | –                | –      | –         |
| Chemicals (£/extraction)    | 0.17    | –     | –             | –              | –          | –               | –          | –                | –      | –         |
| Gloves, tubes, tips (£/extraction) | 0.29 | –     | –             | –              | –          | –               | –          | –                | –      | –         |
| Final price per extraction including extraction time, lab staff and all consumables (£) | 8.62 | –     | –             | –              | –          | –               | –          | –                | –      | –         |
Table 4
Cost analysis for DNA extraction procedure C (according to Gabor et al. [2]; soft method).

| Consumables          | Volumes | Units | Concentration | Volumes /Weight | High costs | Low costs |
|----------------------|---------|-------|---------------|----------------|------------|-----------|
|                      | Amount  | Unit  | Fix cost (£)  | Amount         | Unit       | Fix cost (£) |
|                      | per Prep (£) | per Prep (£) |
| Gloves (any size)    | 1 pair  | –     | –             | 50 pair         | 8.20       | 4.50      | 0.090     | 0.164 |
| Tubes                | 3       | –     | –             | 500 pieces      | 19.10      | 11.70     | 0.066     | 0.071 |
| Tips                 | 10      | –     | –             | 500 pieces      | 7.40       | 4.57      | 0.077     | 0.102 |
| Tips                 | 4       | –     | –             | 500 pieces      | 5.90       | 3.64      | 0.033     | 0.043 |
| Silica beads         | 1       | –     | –             | 1000 pieces     | 27.14      | 16.32     | 0.022     | 0.027 |
| Lysozyme buffer      | 0.1 mL  | –     | –             | 1000 g          | 24.30      | 15.26     | 0.0057    | 0.0170 |
|                      | 1.25 mL | –     | –             | 500 g           | 93.40      | 59.70     | 0.0019    | 0.0028 |
| Lysozyme             | 0.04 mL | –     | –             | 100 g           | 23.89      | 14.77     | 0.0192    | 0.0478 |
| Proteinase K         | 0.01 mL | –     | –             | 100 g           | 67.68      | 43.18     | 0.0519    | 0.0677 |
| SDS                  | 0.2 mL  | –     | –             | 100 g           | 16.56      | 10.00     | 0.0259    | 0.0351 |
| Chloroform (1:1 v/v)| 0.6 mL  | –     | –             | 1000 mL         | 30.30      | 18.76     | 0.0182    | 0.0261 |
| Isopropanol (0.6:1 v/v)| 1 mL     | –     | –             | 1000 mL         | 47.56      | 29.21     | 0.0280    | 0.0390 |
| Ethanol              | 0.5 mL  | –     | –             | 250 mL          | 30.00      | 18.00     | 0.0148    | 0.0182 |
| TE buffer            | 0.1 mL  | –     | –             | 1000 g          | 7.99       | 5.44      | 0.0178    | 0.0222 |
| Extracted samples    | 12      | –     | –             | 100 g           | 3.48       | 2.11      | 0.0106    | 0.0141 |
| Extraction time      | 230 min | –     | –             | –               | –          | –         | –         | –     |
| Lab staff (per hour) | –       | –     | –             | –               | 35.00      | 25.00     | 0.79      | 1.19  |
| Lab staff (£/extraction) | –     | –     | –             | –               | –         | –         | 7.99      | 11.18 |
| Chemicals            | 0.17    | –     | –             | –               | –         | –         | 0.17      | 0.34  |
| (£/extraction)        | 0.29    | –     | –             | –               | –         | –         | 0.29      | 0.41  |
| Gloves, tubes, tips (£/extraction) | –     | –     | –             | –               | –         | –         | 0.29      | 0.41  |
| Final price per extraction including extraction time, lab staff and all consumables (£) | 8.45 | –     | –             | –               | –         | –         | 8.45      | 11.93 |
Table 5
Cost analysis for DNA extraction procedure D (according to Shan et al. [3]).

| Consumables          | Volumes | Units  | Concentration | Volumes /Weight | High costs | Low costs | Low cost | High cost |
|----------------------|---------|--------|---------------|----------------|------------|-----------|----------|-----------|
|                      | Amount  | Unit   | Fix cost (€)  | Amount         | Unit       | Fix cost (€) | per Prep (€) | per Prep (€) |
| Gloves (any size)    | 1 pair  | –      | –             | –              | –          | 8.20      | 45.0     | 0.0900    | 0.1640    |
| Tubes                | 3       | –      | –             | 50 pair        | 2.0 mL     | 500 pieces | 11.90    | 21.90     | 0.0657    | 0.0714    |
|                      | 1000    | µL     | 500 pieces    | 2.0 mL         | 500 pieces | 5.08      | 7.70     | 0.0616    | 0.0812    |
|                      | 2       | µL     | 500 pieces    | 2.0 mL         | 500 pieces | 5.40      | 8.19     | 0.0164    | 0.0216    |
|                      | 1       | µL     | 1000 pieces   | 2.0 mL         | 1000 pieces| 27.14     | 43.42    | 0.0217    | 0.0271    |
| TENP Puffer          | 0.4 mL  | –      | 50 mM Tris    | 2.42 mg        | 500 g      | 93.40     | 128.00   | 0.0003    | 0.0005    |
|                      | 100 mM NaCl | 2.34 mg | 500 g | 34.08 | 100 g | 245.23 | 0.0006 | 0.0008 |
|                      | 10 mM NaCl | 2.34 mg | 500 g | 15.84 | 100 g | 24.19 | 0.0001 | 0.0001 |
|                      | 10 mg mL-1 PVP | 4.00 mg | 100 g | 45.30 | 100 g | 224.00 | 0.0009 | 0.0018 |
| SDS                  | 50 µL   | w/v 20% | 10.0 µg | 10 | 500 g | 16.56 | 56.48 | 5.6E-07 | 1.7E-06 |
| CTAB Puffer          | 0.5 ml  | 0.7 M NaCl | 20.5 mg | 500 g | 15.84 | 100 g | 24.19 | 0.0005 | 0.0006 |
|                      | 10% CTAB | 1.0 % | 100 g | 22.64 | 100 g | 89.11 | 4.5E-06 | 1.1E-05 |
| KH2PO4               | 0.25 ml | 240 mM | 8.16 mg | 250 g | 19.66 | 100 g | 56.66 | 4.6E-07 | 0.0006 |
| Phenol:Chloroform:isoamyl (25:24:1 v/v) | 1.0 ml | 100 mM Tris | 12.1 mg | 500 g | 93.40 | 100 g | 128.00 | 0.0016 | 0.0023 |
|                      | Phenol | 0.5 g | 100 g | 18.00 | 1000 g | 64.40 | 0.0322 | 0.0900 |
|                      | Chloroform | 0.48 ml | 500 g | 50.62 | 2500 ml | 100.66 | 0.193 | 0.486 |
|                      | Isoamyl | 0.02 ml | 25 ml | 13.92 | 1000 ml | 108.00 | 0.0022 | 0.0111 |
| Chloroform:isoamyl (24:1 v/v) | 1.0 ml | Chloroform | 0.96 ml | 500 g | 50.62 | 2500 ml | 100.66 | 0.0387 | 0.0972 |
|                      | 1.0 % | 1.0 | 1000 ml | 30.30 | 2500 ml | 61.70 | 0.0247 | 0.0303 |
| TE buffer            | 0.1 ml  | 10 mM Tris–HCl | 0.12 mg | 500 g | 93.40 | 100 g | 128.00 | 1.6E-05 | 2.3E-05 |
|                      | 1.0 mM EDTA | 0.03 mg | 100 g | 34.08 | 1000 g | 245.23 | 7.2E-06 | 1.0E-05 |
| Extracted samples    | 12      | –      | –             | –              | –          | –         | –        | –         |
| Extraction time      | 210 min | –      | –             | –              | –          | –         | –        | –         |
| Lab staff (per hour) | –       | 35.00  | –             | 25.00          | –          | –         | 7.29     | 10.21     |
| Lab staff (€/extraction) | –       | –      | –             | –              | –          | –         | 0.13     | 0.31      |
| Chemicals (€/extraction) | –       | –      | –             | –              | –          | –         | 0.26     | 0.37      |
| Gloves, tubes, tips (€/extraction) | –       | –      | –             | –              | –          | –         | 7.67     | 10.88     |
| Final price per extraction including extraction time, lab staff and all consumables (€) | –       | –      | –             | –              | –          | –         | 7.67     | 10.88     |
Table 6
Cost analysis for DNA extraction procedure E (according to Orsini and Romano-Spica [4]).

| Consumables          | Volumes | Units | Concentration | Volumes /Weight | High costs Amount | Unit Fix cost (€) | Low costs Amount | Unit Fix cost (€) | Low cost per Prep (€) | High cost per Prep (€) |
|----------------------|---------|-------|---------------|-----------------|------------------|------------------|-----------------|------------------|------------------------|------------------------|
| Gloves (any size)    | 1 pair  | –     | –             | –               | 50 pair          | 8.20             | 50 pair          | 4.50             | 0.0900                  | 0.1640                 |
| Tubes                | 2       | –     | 2.0 mL        | 500 pieces      | 11.90            | 1000 pieces      | 21.90           | 0.0438           | 0.0476                 |
| Tips                 | 9       | –     | 1000 µL       | 500 pieces      | 5.08             | 1000 pieces      | 7.70            | 0.0693           | 0.0914                 |
| Tips                 | 3       | –     | 200 µL        | 500 pieces      | 5.40             | 1000 pieces      | 8.19            | 0.0246           | 0.0324                 |
| Tips                 | 0       | –     | 10 µL         | 1000 pieces     | 27.14            | 2000 pieces      | 43.42           | 0.0000           | 0.0000                 |
| Wash solution        | 1.0     | mL    | 50 mM Tris–HCl| 500 g           | 93.40            | 1000 g           | 128.00          | 0.0008           | 0.0011                 |
|                      |         |       | 25 mM EDTA    | 100 g           | 34.08            | 1000 g           | 245.23          | 0.0018           | 0.0025                 |
|                      |         |       | 0.1% w/v SDS  | 100 g           | 16.56            | 1000 g           | 56.48           | 5.6E-08          | 1.7E-07                 |
|                      |         |       | 0.1% w/v PVP  | 100 g           | 45.30            | 1000 g           | 224.00          | 2.2E-07          | 4.5E-07                 |
| Lysis buffer         | 0.1     | mL    | 50 mM Tris–HCl| 500 g           | 93.40            | 1000 g           | 128.00          | 7.8E-05          | 1.1E-04                 |
|                      |         |       | 25 mM EDTA    | 100 g           | 34.08            | 1000 g           | 245.23          | 1.8E-04          | 2.5E-04                 |
|                      |         |       | 3% w/v SDS    | 100 g           | 16.56            | 1000 g           | 56.48           | 1.7E-06          | 5.0E-06                 |
|                      |         |       | 1.2% w/v PVP  | 100 g           | 45.30            | 1000 g           | 224.00          | 2.7E-06          | 5.4E-06                 |
| Extraction buffer    | 0.8     | mL    | 10 mM Tris–HCl| 500 g           | 93.40            | 1000 g           | 128.00          | 0.0012           | 0.0018                 |
|                      |         |       | 1 mM EDTA     | 100 g           | 34.08            | 1000 g           | 245.23          | 0.0001           | 0.0001                 |
|                      |         |       | 0.3 M NaOAc   | 100 g           | 22.47            | 1000 g           | 56.30           | 0.0011           | 0.0018                 |
|                      |         |       | 1.2% PVP      | 100 g           | 45.30            | 1000 g           | 224.00          | 2.2E-06          | 4.3E-06                 |
| Phenol:Chloroform    | 1.0     | mL    | Phenol        | 100 g           | 18.00            | 1000 g           | 64.40           | 0.0322           | 0.0900                 |
| (1:1 v/v)            |         |       | Chloroform    | 500 mL          | 50.62            | 2500 mL          | 100.66          | 0.0201           | 0.0506                 |
| Sodiumacetate        | 0.08    | mL    | 3 M           | 250 g           | 22.47            | 1000 g           | 56.30           | 0.0011           | 0.0018                 |
| Isopropanol          | 0.9     | mL    | 100%          | 1000 mL         | 30.30            | 2500 mL          | 61.70           | 0.0222           | 0.0273                 |
| Ethanol              | 2.0     | mL    | 70%           | 250 mL          | 47.56            | 2500 mL          | 246.58          | 0.1381           | 0.2663                 |
| TE buffer            | 0.1     | mL    | 10 mM Tris–HCl| 500 g           | 93.40            | 1000 g           | 128.00          | 1.6E-05          | 2.3E-05                 |
|                      |         |       | 1.0 mM EDTA   | 100 g           | 34.08            | 1000 g           | 245.23          | 7.2E-06          | 1.0E-05                 |
| Extracted samples    | 12      | –     | –             | –               | –                | –                | –               | –                | –                      |
| Extraction time      | 150 min | –     | –             | –               | –                | –                | –               | –                | –                      |
| Lab staff (per hour) | –       | 35.00 | –             | 25.00           | –                | –                | –               | –                | –                      |
| Lab staff (€/extraction) | -    | 5.21  | 7.29          | 0.22            | 0.44             | 0.23             | 0.34             | 5.65             | 8.07                   |
| Chemicals (€/extraction) | - | 0.22  | 0.44          | 0.23            | 0.34             | 5.65             | 8.07             |                  |                       |
| Gloves, tubes, tips (€/extraction) | - | 0.22  | 0.44          | 0.23            | 0.34             | 5.65             | 8.07             |                  |                       |
| Final price per extraction including extraction time, lab staff and all consumables (€) | - | 5.21  | 7.29          | 0.22            | 0.44             | 0.23             | 0.34             | 5.65             | 8.07                   |
Table 7
Cost analysis for DNA extraction procedure F (according to Singka et al., 2012).

| Consumables                          | Volumes | Units | Concentration | Volumes /Weight | Amount | Unit | Fix cost (%€) | Amount | Unit | Fix cost (%€) | Low cost per Prep (%€) | High cost per Prep (%€) |
|--------------------------------------|---------|-------|---------------|----------------|--------|------|---------------|--------|------|---------------|------------------------|------------------------|
| Gloves (any size)                    | 1 pair  | –     | –             | –              | 50 pair | 8.20 | 50 pair | 4.50   |      |               | 0.900                  | 0.1640                 |
| Tubes                                | 4       | –     | 1.5 ml        | 500 pieces     | 500 pieces | 8.20 | 1000 pieces | 14.90  |      |               | 0.0596                 | 0.0656                 |
| Tips                                 | 12      | –     | 1000 µl       | 500 pieces     | 500 pieces | 5.08 | 1000 pieces | 7.70   |      |               | 0.0924                 | 0.1218                 |
| Tips                                 | 2       | –     | 200 µL        | 500 pieces     | 500 pieces | 5.40 | 1000 pieces | 8.19   |      |               | 0.0164                 | 0.0216                 |
| Glass beads 0.1 mm                   | 0.5 g   | –     | –             | 500 pieces     | 500 pieces | 15.84 | 1000 pieces | 24.19  |      |               | 0.0002                 | 0.0003                 |
| CTAB extraction buffer (1:1 v/v) 10% w/v (CTAB in NaCl) to KH$_2$PO$_4$ | 0.7 M NaCl  | 10.2 mg | 100 g   | 1000 g | 100 g | 22.64 | 1000 g | 89.11  |      |               | 2.2E-07                 | 5.7E-07                 |
|                                      | 2.5 µg  | –     | –             | 500 pieces     | 500 pieces | 24.30 | 250000 g | 202.00 |      |               | 0.0404                  | 0.1215                 |
|                                      | 0.1 mm  | –     | –             | 1000 g         | 250000 g | 0.42  | 1000 g | 56.66  |      |               | 0.0005                 | 0.0006                 |
|                                      | 0.5 mL  | –     | –             | 1000 g         | 1000 g | 64.40 | 1000 g | 64.40  |      |               | 0.0322                  | 0.0900                 |
|                                      | 8.2 mL  | –     | –             | 1000 g         | 1000 g | 56.66 | 1000 g | 56.66  |      |               | 0.0005                 | 0.0006                 |
| Phenol:Chloroform:Isoamyl (25:24:1 v/v) | –      | –     | –             | –              | –      | –    | –            | –      |      |               | –                      | –                      |
| Chloroform:Isoamyl (24:1 v/v)        | 0.5 mL  | –     | –             | 1000 g         | 1000 g | 56.66 | 1000 g | 56.66  |      |               | 0.0007                 | 0.0011                 |
| Sodium acetate (0.1:1 v/v)           | 0.05 mL | –     | –             | 1000 g         | 1000 g | 56.66 | 1000 g | 56.66  |      |               | 0.0007                 | 0.0011                 |
| Isopropanol (0.6: 1 v/v)             | 0.3 mL  | –     | –             | 1000 g         | 1000 g | 56.66 | 1000 g | 56.66  |      |               | 0.0007                 | 0.0011                 |
| Ethanol                              | 1.5 mL  | –     | –             | 1000 g         | 1000 g | 56.66 | 1000 g | 56.66  |      |               | 0.0007                 | 0.0011                 |
| TE buffer                             | 0.1 mL  | –     | –             | 1000 g         | 1000 g | 56.66 | 1000 g | 56.66  |      |               | 0.0007                 | 0.0011                 |
| Extracted samples                     | 12      | –     | –             | –              | –      | –    | –            | –      |      |               | –                      | –                      |
| Extraction time                       | 195 min | –     | –             | –              | –      | –    | 35.00 | –      | 25.00 | –            | –                      | –                      |
| Lab staff (per hour)                  | –       | –     | –             | –              | –      | –    | 35.00 | –      | 25.00 | –            | –                      | –                      |
| Lab staff (%€/extraction)             | –       | –     | –             | –              | –      | –    | 35.00 | –      | 25.00 | –            | –                      | –                      |
| Chemicals (%€/extraction)             | –       | –     | –             | –              | –      | –    | 35.00 | –      | 25.00 | –            | –                      | –                      |
| Gloves, tubes, tips                   | –       | –     | –             | –              | –      | –    | 35.00 | –      | 25.00 | –            | –                      | –                      |
| Final price per extraction including extraction time, lab staff and all consumables (%€) | –       | –     | –             | –              | –      | –    | 35.00 | –      | 25.00 | –            | –                      | –                      |
### Table 8
Cost analysis for DNA extraction procedure G (according to Saxony State Method).

| Consumables          | Volumes | Units | Concentration | Volumes /Weight | High costs | Low costs | Low cost | High Cost |
|----------------------|---------|-------|---------------|-----------------|------------|-----------|----------|-----------|
|                      | Amount  | Unit  | Fix cost (€)  | Amount  | Fix cost (€)  | per Prep (€) | per Prep (€) |
| Gloves (any size)    | 50 pair | pair  | 8.20          | 50 pair | 4.50         | 0.0900     | 0.1640    |
| Tubes                | 1000 pieces | pieces | 11.90         | 1000 pieces | 8.80         | 0.1490     | 0.0575    |
| Tips                 | 1000 pieces | µL   | 5.08          | 1000 pieces | 7.39         | 0.1001     | 0.1320    |
| Tips                 | 1000 pieces | µL   | 5.40          | 1000 pieces | 8.19         | 0.0082     | 0.0108    |
| Extraction buffer    | 1000 pieces | µL   | 27.14         | 1000 pieces | 43.42        | 0.0217     | 0.0271    |
| RNase A              | 100 mg | mg   | 22.64         | 1000 mg | 89.11        | 1.18E-06   | 4.5E-06   |
| Chloroform           | 100 mL | mL   | 50.62         | 2500 mL | 100.66       | 0.0302     | 0.0759    |
| Precipitation solution| 100 mL | mL  | 50.62         | 2500 mL | 100.66       | 0.0302     | 0.0759    |
| NaCl                 | 100 g  | g    | 89.11         | 1000 g  | 128.00       | 0.0016     | 0.0023    |
| Chloroform           | 100 mL | mL   | 15.84         | 1000 mL | 24.19        | 0.0001     | 0.0001    |
| Isopropanol (0.6:1 v/v) | 100 mL | mL   | 15.84         | 1000 mL | 24.19        | 0.0001     | 0.0001    |
| Ethanol              | 100 mL | mL   | 24.19         | 1000 mL | 45.58        | 0.0001     | 0.0001    |
| TE buffer            | 10 mL  | mL   | 34.08         | 10 mL   | 54.08        | 0.0001     | 0.0001    |
| Extracted samples    | 10 mL  | mL   | 34.08         | 10 mL   | 54.08        | 0.0001     | 0.0001    |
| Extraction time      | 175 min| min   | 35.00         | 25.00   |   \     | 6.08      | 8.51      |
| Lab staff (per hour) | 35.00  |   \ | 35.00         | 25.00   |   \     | 6.66      | 9.43      |

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## Table 9
Cost analysis for DNA extraction procedure H (according to Tabatabaei et al. [5]).

| Consumables          | Volumes | Units | Concentration | Volumes /Weight | High costs | Low costs | Low cost | High cost |
|----------------------|---------|-------|---------------|----------------|------------|-----------|----------|-----------|
|                      | Amount  | Unit  | Fix cost (€)  | Amount         | Unit       | Fix cost (€)| per Prep (€)| per Prep (€) |
| Gloves (any size)    | 1 pair  | –     | –             | –              | –          | –         | –        | –         |
| Tubes                | 3       | –     | –             | 50 pair         | –          | 8.20      | 50 pair  | 4.50      | 0.0900    | 0.1640    |
| Tips                 | 12      | –     | –             | 500 pieces      | 11.90      | 1000 pieces| 21.90    | 0.0657    | 0.0714    |
| Tips                 | 1       | –     | –             | 500 pieces      | 5.08       | 1000 pieces| 7.70     | 0.0924    | 0.1218    |
| Tips                 | 0       | –     | –             | 1000 pieces     | 5.40       | 1000 pieces| 8.19     | 0.0082    | 0.0108    |
| EDTA                 | 0.4 ml  | 0.5 EDTA | 58.4 mg | 100 g | 34.08 | 1000 g | 245.23 | 0.0143 | 0.0199 |
| Lysis buffer         | 0.4 ml  | 10 mM Tris | 0.48 mg | 100 g | 93.40 | 1000 g | 128.00 | 0.0001 | 0.0001 |
|                     | 1 mM EDTA | 0.12 mg | 100 g | 34.08 | 1000 g | 245.23 | 3.0E-05 | 4.0E-05 |
|                     | 2 mg mL-1 Lysozyme | 0.80 mg | 10 g | 23.89 | 1000 g | 96.04 | 0.0077 | 0.0191 |
| SDS                  | 0.05 ml | 10% w/v | 0.005 mg | 100 g | 16.56 | 1000 g | 56.48 | 2.8E-07 | 8.3E-07 |
| Phenol:Chloroform (1:1 v/v) | 0.8 ml | Phenol | 0.4 g | 100 g | 18.00 | 1000 g | 64.40 | 0.0258 | 0.0720 |
| Sodium acetate       | 0.08 ml | 3 M | 19.7 mg | 250 g | 22.47 | 1000 g | 56.30 | 0.0011 | 0.0018 |
| Isopropanol          | 0.9 ml  | 100% | 0.9 mg | 1000 mL | 30.30 | 2500 mL | 61.70 | 0.0222 | 0.0273 |
| Ethanol              | 1.5 ml  | 70% | 1.05 mg | 250 mL | 47.56 | 2500 mL | 246.58 | 0.1036 | 0.1998 |
| TE buffer            | 0.1 ml  | 10 mM Tris–HCl | 0.12 mg | 100 g | 34.08 | 1000 g | 245.23 | 3.0E-05 | 4.1E-05 |
|                     | 1.0 mM EDTA | 0.03 mg | 500 g | 93.40 | 1000 g | 128.00 | 3.7E-06 | 5.5E-06 |
| Extracted samples    | 12      | –     | –             | –              | –         | –         | –        | –         |
| Extraction time      | 210 min | –     | –             | –              | –         | –         | –        | –         |
| Lab staff (per hour) | –       | –     | –             | 35.00          | –         | 25.00     | –        | –         |
| Lab staff (€/extraction) | 7.29 | –     | –             | –              | –         | –         | –        | –         |
| Chemicals (€/extraction) | 0.19 | –     | –             | –              | –         | –         | –        | –         |
| Gloves, tubes, tips (€/extraction) | 0.26 | –     | –             | –              | –         | –         | –        | –         |
| Final price per extraction (€) | 7.74 | –     | –             | –              | –         | –         | –        | –         |
### Table 10
Cost analysis for DNA extraction procedure I (according to Tresse et al. [6]).

| Consumables       | Volumes | Units  | Concentration | Volumes /Weight | High costs | Low costs | Low cost | High cost |
|-------------------|---------|--------|----------------|----------------|------------|-----------|----------|----------|
|                   | Amount  | Unit   | Fix cost (€)   |                 | per Prep   | per Prep  |          |          |
|                   |         |        |                |                |            |           |          |          |
| Gloves (any size) | 1 pair  | –      | –              | 50 pair         | 8.20       | 4.50      | 0.0900   | 0.1640   |
| Tubes             | 3 –     | –      | 2.0 mL         | 500 pieces      | 11.90      | 21.90     | 0.0657   | 0.0714   |
|                   | 4 –     | –      | 1.5 mL         | 500 pieces      | 8.20       | 14.90     | 0.0596   | 0.0656   |
| Tips              | 14 –    | –      | 1000 µL        | 500 pieces      | 5.08       | 7.70      | 0.1078   | 0.1421   |
| Tips              | 4 –     | –      | 200 µL         | 500 pieces      | 5.40       | 8.19      | 0.0328   | 0.0432   |
| Tips              | 1 –     | –      | 10 µL          | 1000 pieces     | 27.14      | 43.42     | 0.0217   | 0.0271   |
| TEN buffer        | 0.7 mL  | 100 mM Tris | 8.48 mg | 500 g | 93.40 | 100 g | 128.00 | 0.0011  | 0.0016   |
|                   |         | 100 mM EDTA | 20.45 mg | 100 g | 34.08 | 100 g | 245.23 | 0.0050  | 0.0070   |
|                   |         | 100 mM NaCl | 4.09 mg | 500 g | 15.84 | 100 g | 24.19 | 9.9E-05 | 1.3E-04  |
|                   |         | 5 mg mL-1 | 3.5 mg | 1.0 g | 23.89 | 10 g | 96.04  | 0.0336  | 0.0836   |
| SDS               | 0.035 mL | 20% w/v | 0.007 mg | 100 g | 16.56 | 100 g | 56.48  | 4.0E-07 | 1.2E-06 |
| Proteinase K      | 0.01 mL | 20 mg mL-1 | 0.2 mg | 100 mg | 67.68 | 500 mg | 259.62 | 0.1038  | 0.1354   |
| Silica beads      | –       | ID 0.1 mm | 250 mg | 1000 g | 24.30 | 25000 g | 202.00 | 2.0E-03 | 0.0061   |
| Silica beads      | –       | ID 0.5 mm | 250 mg | 1000 g | 25.23 | 20000 g | 227.18 | 0.0028  | 0.0063   |
| Silica beads      | 2 beads | ID 6.0 mm | 69 mg  | 500 g  | 34.20 | 1000 g | 12.35  | 0.0009  | 0.0047   |
| Ammoniumacetate   | 0.145 mL | 10 M     | 111.8 mg | 250 g | 15.30 | 1000 g | 45.29  | 0.0051  | 0.0068   |
| RNase A           | 0.005 mL | 1 mg mL-1 | 0.005 mg | 250 mg | 94.40 | 1000 mg | 292.00 | 0.0015  | 0.0019   |
| Phenol:Chloroform:Isoamyl (25:24:1 v/v) | 1.5 mL | 25' Phenol | 0.75 g | 100 g | 18.00 | 1000 g | 64.40  | 0.0483  | 0.1350   |
|                   |         | 24' Chloroform | 0.72 ml | 500 ml | 50.62 | 2500 ml | 100.66 | 0.0290  | 0.0729   |
|                   |         | 1' Isoamyl  | 0.03 ml | 25 ml  | 13.92 | 1000 ml | 108.00 | 0.0032  | 0.0167   |
| Chloroform:Isoamyl (24:1 v/v) | 0.7 mL | 24' Chloroform | 0.672 ml | 500 ml | 50.62 | 2500 ml | 100.66 | 0.0271  | 0.0680   |
|                   |         | 1' Isoamyl  | 0.028 ml | 25 ml  | 13.92 | 1000 ml | 108.00 | 0.0030  | 0.0156   |
| Sodiumacetate (1:10 v/v) | 0.07 mL | 3 M     | 17.2 mg | 250 g | 22.47 | 1000 g | 56.30  | 0.0010  | 0.0015   |
| Ethanol (2:1 v/v) | 1.4 mL | 98%     | 1.37 ml | 250 ml | 47.56 | 2500 ml | 246.58 | 0.1353  | 0.2610   |
| Ethanol           | 1.0 mL | 70%     | 0.7 ml  | 250 ml | 47.56 | 2500 ml | 246.58 | 0.0690  | 0.1332   |
| TE buffer         | 0.1 mL | 10 mM Tris–HCl | 0.12 mg | 100 g | 34.08 | 1000 g | 245.23 | 3.0E-05 | 4.1E-05  |
|                   | 1.0 mM EDTA | 0.03 mg | 500 g  | 93.40  | 1000 g | 128.00 | 3.7E-06 | 5.5E-06  |
| Extracted samples | 12 –    | –      | –              | –              | –          | –        | –       | –        |
| Extraction time   | 170 min | –      | –              | –              | –          | –        | –       | –        |
| Lab staff (per hour) | –      | –      | –              | –              | –          | –        | –       | –        |
| Lab staff (€/extraction) | –      | –      | –              | –              | –          | 5.90     | 8.26    |          |
| Chemicals (€/extraction) | 0.47 | –      | –              | –              | –          | 0.47     | 0.96    |          |
| Gloves, tubes, tips (€/extraction) | 0.38 | –      | –              | –              | –          | 0.38     | 0.51    |          |

Final price per extraction including extraction time, lab staff and all consumables (€): 6.75  9.73
| Consumables          | Volumes | Units  | Concentration | Volumes | /Weight | High costs | Low costs | Low cost per Prep | High cost per Prep |
|----------------------|---------|--------|---------------|---------|---------|------------|-----------|------------------|-------------------|
|                      | Amount  | Unit   | Fix cost (€)  | Amount  | Unit   | Fix cost (€) | Amount  | Unit   | Fix cost (€) |
| Gloves (any size)    | 1 pair  | –      | –             | 50 pair | –      | 8.20       | 50 pair  | –      | 4.50     | 0.0900  | 0.1640 |
| Tubes                | 3       | –      | 2.0 ml        | 500 pieces | 11.90 | 1000 pieces | 21.90 | 0.0657 | 0.0714 |
| Tips                 | 9       | –      | 1000 µl       | 500 pieces | 5.08  | 1000 pieces | 7.70  | 0.0693 | 0.0914 |
| Tips                 | 4       | –      | 200 µl        | 500 pieces | 5.40  | 1000 pieces | 8.19  | 0.0328 | 0.0432 |
| Tips                 | 1 -     | –      | 10 µl         | 1000 pieces | 27.14 | 2000 pieces | 43.42 | 0.0217 | 0.0271 |
| TE buffer            | 0.567 mL | 10 mM Tris | 0.09 mg | 100 g | 34.08 | 100 g | 245.23 | 0.0002 | 0.0002 |
|                      | 1.66 mg | –      | 10 mM EDTA    | 500 g  | 93.40 | 1000 g | 128.00 | 0.0002 | 0.0003 |
| SDS                  | 0.03 mL | 10% w/v | 0.003 mg | 100 g | 16.56 | 1000 g | 56.48 | 7.1E-04 | 5.0E-07 |
| Proteinase K         | 0.003 mL | 20 mg mL-1 | 0.06 mg | 100 mg | 67.68 | 500 mg | 259.62 | 0.0312 | 0.0406 |
| NaCl                 | 0.1 mL  | 5 M    | 29.22 mg      | 500 g  | 15.84 | 1000 g | 24.19 | 7.1E-04 | 9.3E-04 |
| CTAB/NaCl            | 0.08 mL | 0.7 M NaCl | 3.3 mg | 500 g | 15.84 | 1000 g | 24.19 | 0.0001 | 0.1037 |
| Chloroform:isoamy    | 1.0 mL  | 24° Chloroform | 0.96 mL | 500 mL | 50.62 | 2500 mL | 100.66 | 0.0387 | 0.0972 |
| (24:1 v/v)           | 1° Isomyl | 0.04 mL | 25 mL | 13.92 | 1000 mL | 108.00 | 0.0043 | 0.0223 |
| Phenol:Chloroform:isoamy | 0.9 mL  | 25° Phenol | 0.45 g | 100 g | 18.00 | 1000 g | 64.40 | 0.0290 | 0.0810 |
| (25:24:1 v/v)        | 24° Chloroform | 0.432 mg | 500 mL | 50.62 | 2500 mL | 100.66 | 0.0174 | 0.0437 |
| Isopropanol (0.6: 1 v/v) | 0.3 mL | 100% | 0.3 mL | 1000 mL | 30.30 | 2500 mL | 61.70 | 0.0074 | 0.0091 |
| Ethanol              | 0.5 mL  | 70%    | 0.35 mg       | 250 mL | 47.56 | 2500 mL | 246.58 | 0.0345 | 0.0666 |
| TE buffer            | 0.1 mL  | 10 mM Tris-HCl | 0.12 mg | 100 g | 34.08 | 1000 g | 245.23 | 3.0E-05 | 4.1E-05 |
| Extracted samples    | 12      | –      | –             | 500 g  | 93.40 | 1000 g | 128.00 | 3.7E-06 | 5.5E-06 |
| Extraction time      | 105 min | –      | –             | –      | 35.00 | –      | 25.00  | –     | –       |
| Lab staff (per hour) | –       | –      | –             | –      | –     | –      | –     | –     | –       |
| Lab staff (€/extraction) | –     | –      | –             | –      | –     | –      | –     | –     | –       |
| Chemicals (€/extraction) | –     | –      | –             | –      | –     | –      | –     | –     | –       |
| Gloves, tubes, tips  | (€/extraction) | –     | –             | –      | –     | –      | –     | –     | –       |

Final price per extraction including extraction time, lab staff and all consumables (€) 4.09 5.98
Table 12
Cost analysis for FastDNA SPIN Kit for Soil.

| Consumables       | Volumes | Units | Concentration | Volumes /Weight | High costs | Low costs | Low cost | High cost |
|-------------------|---------|-------|---------------|-----------------|------------|-----------|----------|-----------|
|                   | Amount  | Unit  | Fix cost (€)  | Amount          | Unit       | Fix cost (€) | per Prep | per Prep  |
|                   | per Prep |        |               | per Prep        |            |           | (€)      | (€)       |
| Gloves (any size) | 1       | pair  | –             | 50              | pair       | 8.20      | 4.50     | 0.090     | 0.164     |
| Tips              | 12      | 1000  | µl            | 500             | pieces     | 5.08      | 7.70     | 0.092     | 0.122     |
| Tips              | 4       | 200   | µL            | 500             | pieces     | 5.40      | 8.19     | 0.033     | 0.043     |
| Tips              | 1       | 10    | µl            | 1000            | pieces     | 27.14     | 43.42    | 0.022     | 0.027     |
| Test Kit          | 12      | –     | –             | 50              | extractions| 390.00    | 820.00   | 8.20      | 7.80      |
| Extracted samples | –       | –     | –             | –               | –          | –         | –        | –         |
| Extraction time   | 45      | min   | –             | –               | –          | –         | –        | –         |
| Lab staff (per hour) | 35.00  | –     | –             | 25.00           | –          | 1.56      | 2.19     |           |           |
| Lab staff (€/extraction) | 1.56 | –    | –             | –               | –          | 8.20      | 7.80     |           |           |
| Chemicals (€/extraction) | 0.24 | –    | –             | –               | –          | 0.24      | 0.36     |           |           |
| Final price per extraction including extraction time, lab staff and all consumables | 10.00 | –    | –             | –               | –          | 10.34     |          |           |
### Table 13
Cost analysis for DNeasy power water kit.

| Consumables          | Volumes | Units | Concentration | Volumes /Weight | Amount | High costs | Low costs | Low cost | High cost |
|----------------------|---------|-------|---------------|-----------------|--------|------------|-----------|----------|-----------|
|                      |         |       |               |                 |        | Unit Fix cost (€) | Amount (€) | per Prep (€) | per Prep (€) |
| Gloves (any size)    | 1       | pair  | –             | –               | 50     | pair 8.20 | 50 pair 4.50 | 0.090 | 0.164 |
| Tips                 | 12      | 1000  | µl            | 500             | pieces 5.08 | 1000 pieces 7.00 | 0.092 | 0.122 |
| Tips                 | 4       | 200   | µL            | 500             | pieces 5.40 | 1000 pieces 8.19 | 0.033 | 0.043 |
| Tips                 | 1       | 10    | µl            | 1000            | pieces 27.14 | 2000 pieces 43.42 | 0.022 | 0.027 |
| Test Kit             | -       | -     | -             | -               | -      | -          | -         | -        | -         |
| Extracted samples    | 12      | -     | -             | -               | -      | -          | -         | -        | -         |
| Extraction time      | 40      | min   | -             | -               | -      | -          | -         | -        | -         |
| Lab staff (per hour) | -       | -     | -             | -               | -      | -          | -         | -        | -         |
| Lab staff (€/extraction) | -   | -     | -             | -               | -      | -          | -         | -        | -         |
| Chemicals (€/extraction) | -   | -     | -             | -               | -      | -          | -         | -        | -         |
| Gloves, tubes, tips (€/extraction) | -   | -     | -             | -               | -      | -          | -         | -        | -         |
| Final price per extraction including extraction time, lab staff and all consumables (€) | -   | -     | -             | -               | -      | -          | 12.25 | 13.47 | -         |

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Transparency document. Supporting information

Transparency document associated with this article can be found in the online version at https://doi.org/10.1016/j.dib.2017.11.082.

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