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Evaluation and application of an efficient plant DNA extraction protocol for laboratory and field testing

Key words: **DNA extraction; Cellulose filter paper; Field test; GM crops; Chinese medicine ultra-fine powder; Rapid molecular identification**

Research Summary

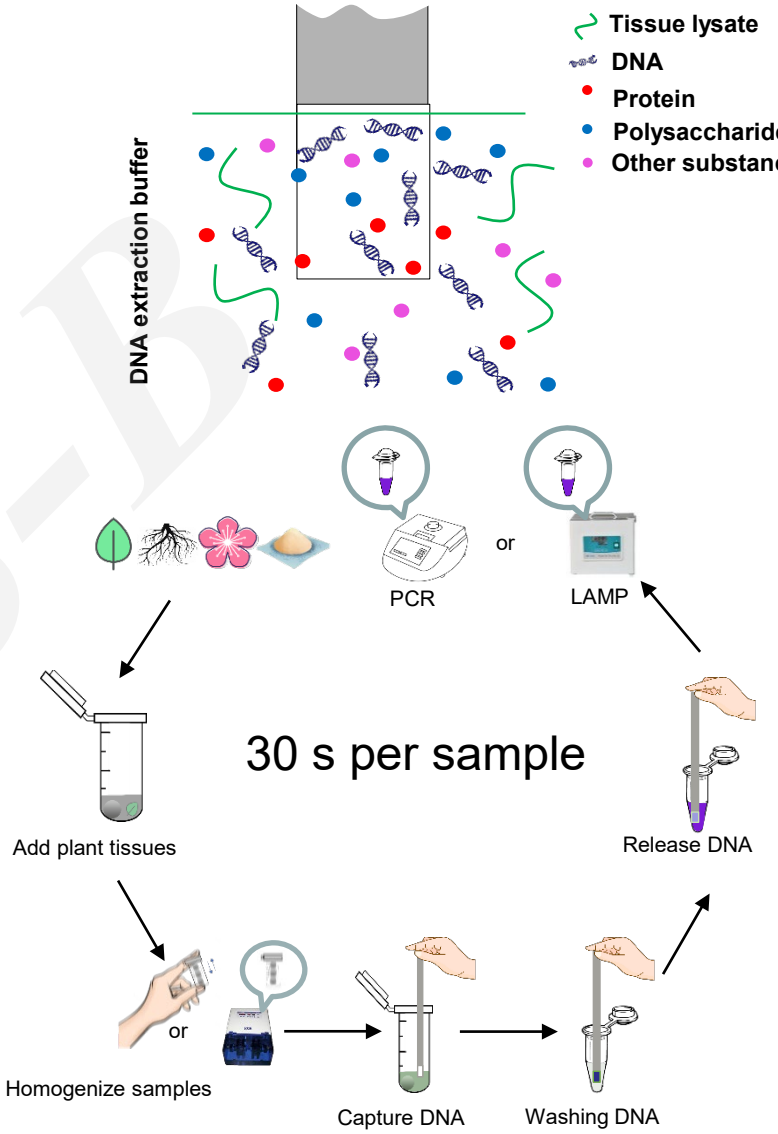
This study developed an optimized DNA extraction method designated as EZ-D based on the filter paper strip purifying DNA protocol and conducted following research:

1. **Comparing the DNA extraction efficiency between EZ-D stick and published filter paper strip**
2. **Comparing EZ-D and CTAB DNA extraction methods**
3. **Evaluating the amplifiability and integrity of the DNA extracted by EZ-D**
4. **Making rapid molecular identification of varieties of plant samples based on the combination of EZ-D and PCR/LAMP**

Innovation points

- **Invented** a simple and rapid plant DNA extraction protocol, EZ-D, which can obtained quality genomic DNA from varieties of plant materials and Chinese medicine powders.

- **Proposed** that the DNA extracted by the EZ-D, can meet the needs of all kinds of molecular identification.



A flowchart of the EZ-D method

Innovation points

A series of figures and tables were generated to summarize the invention, evaluation, and application of the EZ-D DNA extraction protocol.

Figure 1 | The EZ-D stick is more efficient for PCR amplification than the dipstick reported by Zou et al. (2017).

Figure 2 | Molecular identification of DNA components using EZ-D DNA.

Figure 3 | Application of EZ-D to a variety of plant samples.

Figure 4 | Combination of the EZ-D and LAMP methods for DNA detection of transgenic soybean (a) and ultrafine powder samples of Chinese medicines (b) sampled in field conditions.

Table 4 | The concentration and quality of DNA of different samples extracted by the EZ-D method.

Table 5 | Comparison of EZ-D and CTAB DNA extraction methods.