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Optimization of DNA extraction from seeds and fresh leaf tissues of wild marigold (*Tagetes minuta*) for polymerase chain reaction analysis

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ABSTRACT. *Tagetes*, a genus of flowering marigolds in the family Asteraceae (Compositeae), is reported to be a medicinal plant with hypotensive, spasmolytic, anti-inflammatory, antimicrobial, and antifungal properties. *Tagetes minuta* characteristically contains high concentrations of essential oils, flavonoids, polyphenols, and polysaccharides that interfere with DNA, causing erroneous or no PCR products. We tested and modified various standard protocols in an effort to isolate high-quality DNA from different plant tissues of *T. minuta*. We used sun-dried, shade-dried and fresh-leaf tissues, as well as seeds for DNA analysis. The DNA obtained from seeds and fresh-leaf tissues with a modified cetyltrimethylammonium bromide buffer protocol was of good quality, with no colored pigments and contaminants. We were able to obtain good quality DNA from fresh leaf tissues without using liquid nitrogen. A relatively large amount of DNA was also extracted from the sun- and shade-dried tissues, but its quality was not as good as that from seeds. The DNA extracted from seeds and fresh leaves was successfully amplified by PCR using arbitrary RAPD primers. The same protocol

will probably be useful for extracting high-molecular weight DNA from other plant materials containing large amounts of secondary metabolites and essential oils.

Key words: DNA; Essential oil; PCR amplification; RAPDs; *Tagetes minuta*

