

Authentication of Citrus Fruit Species (Aurantioideae, Rutaceae) Based on Chloroplast DNA Sequence.

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This study focuses on chloroplast DNA (cpDNA) and nuclear ribosomal DNA (nrDNA) sequences, specifically the RNA polymerase C2 (rpoC2) gene spacer region, to solve issues in reliably recognizing and classifying citrus species. The work focuses on five Citrus species (*Citrus aurantifolia*, *Citrus sinensis*, *Citrus hystrix*, *Citrus grandis*, and *Atalantia ceylanica*) and identifies Single nucleotide variants (SNVs) and indels in the rpoC2 gene, establishing a credible genetic marker for species distinction. Development of a rapid and accurate method for identifying and classifying citrus fruit species in the subfamily Aurantioideae (Rutaceae) based on chloroplast DNA (cpDNA) sequences. Plant samples are collected and primers are designed after DNA is extracted using the Cetyl trimethyl ammonium bromide (CTAB) technique. The study uses modern techniques such as cpDNA sequencing and nrDNA analysis. Ultimately, this research has the potential to elevate the quality, safety, and marketability of citrus fruits and their derivatives, benefiting producers and consumers alike.

Keywords: *Citrus species; Genetic analysis; Molecular markers; DNA seque*