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Evaluation of four protein extraction methods for proteomic analysis of mango peel

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ABSTRACT. The peel of mango (*Mangifera indica* L.) is a special plant tissue that contains many compounds that interfere with protein extraction. A successful separation with Two-dimensional electrophoresis (2-DE) is the key step for proteomic analysis. To evaluate the efficiencies of mango peel protein extraction for 2-DE, four extraction methods were tested: 1) 2-D clean-up kit, 2) trichloroacetic acid/acetone precipitation, 3) phenol extraction, 4) phenol with methanol/ammonium acetate precipitation. The results showed that the phenol with methanol/ammonium acetate precipitation produced the best quality protein extraction and separation. Proteins were separated in 30-70 and >70 kDa ranges better than with the other methods. Acidic proteins had better resolution with fewer horizontal and vertical streaks.

Sixteen proteins were identified by maxtrix-assisted laser desorption/ ionisation time-of-flight tandem mass spectrometry (MALDI-TOF/ TOF-MS/MS). The result demonstrated that each of these four methods can be used to prepare mango peel proteins. The phenol with methanol/ ammonium acetate precipitation was the best choice for proteomic analysis of mango peel.

Key words: Mango peel; Protein extraction; 2-DE; Proteomic analysis; Evaluation