

Protein profiling during mesocarp development in oil palm fruit.

ABSTRACT

This study was aimed at investigating the overall protein profiles of oil palm fruit during the mesocarp tissue development by means of isoelectric focusing (IEF) and two-dimensional gel electrophoresis (2-DE). Total protein was extracted from different stages of fruit development (namely, 5, 12, 15, 17, and 20 weeks after anthesis [WAA]) from *Elaeis guineensis* Jacq. Teñera and *E. oleifera* (17 WAA). The IEF separation was carried out on pH values ranging from 4.0-8.0. Changes in the patterns of protein after IEF were observed during mesocarp development and between the two species. The analysis of oil palm mesocarp gave rise to a protein map, comprising approximately 150 spots that were detectable by silver staining following high resolution 2-DE, with a pH range of 4.5-8.0 and a mass range of 8-100 kDa. Meanwhile, twenty five spots of protein showing variations in their intensity during the development of the mesocarp, with their pI ranging from 4.5-7.8 and Mr 20-85 kDa, were analyzed. Continuous but non-uniform disappearance of some proteins and formation of new proteins were observed at the early stages of mesocarp development and during certain periods of oil synthesis and fruit ripening. The results of this study indicate that developing mesocarp revealed significant changes in the protein profiles during fruit development. However, further studies are still required to identify the proteins that are differentially expressed during fruit development.

Keyword: *Elaeis guineensis*; *Elaeis oleifera*; Mesocarp; Oil palm; Two-dimensional gel electrophoresis (2-DE).