

## ORGANELLAR PROTEOMICS: ANALYSIS OF PROTEINS PRESENT IN CASTOR BEAN (*Ricinus communis*) LEUCOPLASTS

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Castor beans store lipids (triacylglycerides - TAG) in the endosperm of seeds. The fatty acids required for TAG synthesis are synthesized in an endosperm organelle, the leucoplasts. The seed oil is a major castor bean product that due to its unique properties has a wide industrial application, being recently used as raw material for biodiesel production. Then, an effort to screen enzymes that are present in the metabolic pathway of fatty acids synthesis will have great importance in castor bean biotechnology projects. This work aimed both at the isolation of leucoplasts (a specialized plastid) and at a high-throughput screening of its proteins by proteomics analysis. Plastids from the endosperm of developing castor oil seed at stage 4 (20 days after anthesis – DAA) were isolated by differential and Percoll density gradient centrifugation. Using two-dimensional electrophoresis (2D-PAGE) the protein patterns enrichments were compared. Proteomic reference maps that were highly reproducible within the pH of 3-10 and 4-7 were obtained. Various spots were selected based on quantity or relative volume and rate of expression. The spots were removed from the 2-D gels, processed, and subjected to mass spectrometry in tandem (MALDI-TOF-TOF). Mascot and non-redundant NCBI were used as a search engine and database, respectively. Some strategies like peptide mass fingerprinting (PMF) and non-processed data search (MS/MS ion search) were employed for protein identification. Key enzymes that belong to the anabolic pathway of fatty acids in leucoplasts, e.g. beta-ketoacyl-ACP synthase, 3-ketoacyl-ACP dehydratase, were identified. *CNPq, CAPES, FAPERJ, FUNCAP, FINEP, UFC e UFRJ.*

Key words: castor bean, leucoplasts, mass spectrometry, organelle proteome and two-dimensional gel electrophoresis