Proteomic Analysis of Fatty Acid Effects on Murine Fibroblasts

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Vegetal origin oils from *Copaífera langsdorffii* are successfully used in wounds due to its healing properties. It is a typical plant in Amazonia, and it has in its chemical compounds predominantly: 35.3% oleic acid, 35.7% linoleic acid, 24.9% palmitic acid and 1.1% arachidinic acid. To understand the mechanisms by which these fatty acids affect the healing process, we investigate the effect of oleic, linoleic and palmitic acids on protein expression in murine fibroblasts, the cell responsible for producing the new extracellular matrix. NIH3T3 cells were treated with fatty acids (50µM) during 24 hours and the proteome analysis was made using two-dimensional difference gel electrophoresis (DIGE). Cells treated with oleic, linoleic and palmitic acid showed 24, 22, 16 spots significantly differentially expressed ($p<0.05$), respectively, when compared to control, and 9, 8, 6 of them showed power>0.8, respectively. Nine spots were identified in mass spectrometry using LC/MS/MS, including a-enolase, Eukaryotic translational initiation factor 5A (Eif5A), Far upstream element binding protein 1 (FBP) and transcription factor BTF3. Further experiments, such as Western Blotting, will be performed in order to verify the reliability of the 2D-DIGE analysis. These results indicate that a-enolase, Eif5A, FBP1 and BTF3 are modulated by fatty acids and could have a beneficial effect during wound healing.

Keywords: 2D-DIGE; Fatty acid; Fibroblast; Wound Healing.
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