A NEW METHOD FOR DETERMINATION OF GLUTATHIONE BY CE-MS

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Glutathione (GSH) is a main component of the cell antioxidant machinery. The glutathione status of a cell (ratio GSH/GSH+GSSG)) is probably one of the most reliable indicators of the cell viability. Due to its interest as a biomarker, literature on glutathione is very extensive under both metabolic and analytical viewpoints. A novel CE-MS method was developed for the concomitant analysis of reduced and oxidized glutathione. Our results showed sensitivity, reproducibility, resolution, and specificity comparable or somewhat superior to that obtained with other detectors. The samples were manipulated without derivatization thus reducing the experimental error. Analyte separation and detection were achieved with a Beckman, model MDQ^{TM}, capillary system and a Thermo Finningan, model LCD ION MAX ADVANCED mass spectrometer with ESI source. The separations were performed in a 95 cm × 50 µm i.d. fused-silica capillary and 1.0 M formic acid used as electrolyte. The method applicability was evaluated with five standard solutions of 0.030–3.52 mM GSH and GSSG. The detection limits (signal-to-noise ratio = 3) found for GSH and GSSG were 6.7 and 4.5 µM, respectively. The linear regression equations were $y = -0.11x + 25.35$ and $y = 0.016x + 40.92$ and the correlation coefficients equal to 0.9943 and 0.9973, respectively. Biological samples have been successfully tested by this method. Support: FAPESP, CNPq, Milênio Redoxoma.

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