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CHARACTERIZATION OF NEW D-BETA-ASPARTATE CONTAINING PROTEINS IN A LENS-DERIVED CELL LINE

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Although proteins are generally composed of L-alpha-amino acids, biologically uncommon D-beta aspartic acid (Asp)-containing proteins have been reported in various tissues from elderly individuals.

Our previous study indicated that the N/N1003A cell line, derived from rabbit lens, includes D-beta-Asp containing proteins of ~50 kDa by Western blot analysis of a 2D-gel using a polyclonal antibody that is highly specific for D-beta-Asp containing proteins.

In this study, we identified the D-beta-Asp containing proteins by matrix-assisted laser desorption/ionization time-of-flight mass spectrometry and the Mascot online database searching algorithm.

The results indicate that one of these 50 kDa proteins is an enolase showing homology with Tau-crystallin. Other D-beta-Asp containing proteins, which we have recently discovered include lamin A/C, cytoplasmic NADP⁺-dependent isocitrate dehydrogenase, fructose-bisphosphate aldolase A, aldose reductase, L-lactate dehydrogenase A or calponin H2, phosphoglycerate mutase 1, phosphatidylethanolamine-binding protein, alpha-B-crystallin and peptidyl-prolyl cis-trans isomerase A (PPlase).