OCT ACTIVITY AND GLYCATION DAMAGE IN RAT LIVER MITOCHONDRIA

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This work was created following investigations carried out in LBBCV (Laboratoire de Biologie et Biochimie Cellulaire du Vieillissement) at University Paris Diderot – Paris 7. The team of this laboratory studies the mechanisms of posttranslational non-enzymatic modifications of proteins, involved in the pathophysiology of aging. Glycation is one of the mechanisms responsible for the modification of intracellular macromolecules leading to the loss of their structure and function. In previous investigations, ornithine carbamoyltransferase (OCT), the second enzyme of urea cycle, has been identified as one of the markedly glycated proteins in liver mitochondria of senescent rats. The goal of this work was to investigate *in vitro* and *ex vivo* glycation of OCT and the effect of glycation on its function. Purified OCT and mitochondrial matrix extracts were incubated with methylglyoxal, one of the most reactive physiological glycating agents, and submitted to the enzymatic assay and immunochemical analysis. We demonstrated that methylglyoxal modifies OCT both *in vitro* and *ex vivo* and causes rapid and extensive decrease in its enzymatic activity. According to this study, carboxyethyllysine and cross-linked AGEs are formed. We also confirmed that MGO exerts a negative effect on mitochondrial respiration.