ライソゾームのカテプシンDの培養肝細胞における生合成とプロセシング

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Biosynthesis and Processing of Lysosomal Cathepsin D in Primary Cultures of Rat Hepatocytes

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To investigate the intracellular transport and maturation of lysosomal cathepsin D, we carried out an pulse-chase analysis with (35 S)methionine in the primary cultures of rat hepatocytes. Cathepsin D was initially synthesized as a proenzyme of 45kDa. The proenzyme was subsequently processed, becoming a mature emzyme of 43kDa. The proenzyme and mature enzyme showed complete susceptibility to endoglycosidase H treatment, suggesting the presence of high mannose type oligosaccharide chains. The effects of tunicamycin and chloroquine were also investigated. In the presence of tunicamycin the 42.5kDa unglycosylated precursor polypeptide appeared in the cell, and this protein was exclusively secreted from the cells without undergoing proteolytic processing. These results support the notion that the oligosaccharide moieties are of importance in addressing the lysosomal hydrolases to the lysosomes. However, in the presence of chloroquine, proteolytic processing of the proenzyme was prevented, and the enhanced release of proenzyme from the cells was observed. These results indicate that the processing of proenzyme to mature enzyme would take place in the lysosomes.

初代培養肝細胞において、ライソゾーム酵素であるカテプシンDの４５KDaのプロ蛋白から、４３KDaの成熟蛋白への変換場所はライソゾーム顆粒内であること、

また本酵素のライソゾームへの移行にはオリゴ糖鎖が関与していることをつきとめた。

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