リソソームカテプシンB及びHの諸性質とそれらの細胞内プロセシング

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Biochemical Properties and Intracellular Processing of Lysosomal Cathepsins B and H

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Lysosomal cysteine proteinases of cathepsins B and H were isolated to a homogeneous state from rat liver by employing Sephadex G-75, DEAE-Sephacel, CM-Sephadex, and Mono S column chromatography. Each of the purified cathepsins B and H was demonstrated to be composed of a mixture of a single-chain form and the processed two-chain form upon SDS-PAGE. To investigate the proteolytic maturation of lysosomal cathepsins B and H, turnover kinetics of these enzymes were studied by comparing the specific radioactivities of the incorporated [^{3}H]leucine into either the single-chain form or two-chain form *in vitro*. The specific radioactivity derived from each protein band of lysosomal cathepsin H in SDS-PAGE at 1,3,6,12,24 and 48h after the injection of a radiolabel showed that the peak of specific radioactivity of the single-chain form of cathepsin H appeared at 6h and that after 6h, the radiolabel was sequentially incorporated into the two-chain form, while the radiolabel in the single-chain form started to gradually decrease, suggesting that the single-chain form was processed to generate the mature enzyme after the enzyme was incorporated into lysosomes. In contrast, in the case of cathepsin B, the appearance of a radiolabel in the single-chain form or in the two-chain form was observed almost concomitantly without time lag, indicating that the processing of cathepsin B occurred very rapidly in the lysosomes.

ラット肝よりリソソームカテプシンB及びHを精製し、それらの諸性質について調べた。次にそれら両酵素のプロセシングについて検討した。その結果は、生合成されたカテプシンHはリソソームへ移行後、プロ一型より成熟型に徐々にプロセシングされた。これに反して、カテプシンBのプロセシングはリソソームで急速に行われることが明らかになった。

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