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• 中文摘要

細胞內脂肪滴表面的蛋白質，多數具有調節脂質代謝之功能。然而細胞內脂質代謝之機轉及運送途徑仍有許多未知，所以本研究擬探討是否仍有其他的脂肪滴表面蛋白質存在，以及其功能爲何。本實驗取材自大白鼠腎上腺細胞與脂肪細胞，分別分離出細胞內之脂肪滴，利用電泳與免疫轉漬方法分析脂肪滴表面的蛋白質。結果發現，不論是從腎上腺細胞或脂肪細胞分離出的脂肪滴中皆有肌動蛋白存在。經二次電泳與免疫轉漬方法證實爲貝他型肌動蛋白。進一步培養腎上腺皮質細胞，並利用免疫螢光染色法觀察細胞內貝他型肌動蛋白分佈的位置，結果顯示貝他型肌動蛋白除了架構成肌動蛋白絲之外，同時也分佈於脂肪滴表面。另以 FITC-phalloidin 標示法證實脂肪滴表面的肌動蛋白爲顆狀。此外，利用藥物 Dibutyryl cAMP，促使脂質水解，而後觀察脂肪滴的形態以及其表面肌動蛋白分佈位置的變化。實驗結果發現，以 Dibutyryl cAMP 刺激，脂肪滴會隨著刺激時間的增加而變小，原本位於脂肪滴表面的肌動蛋白會脫落游離在胞質中。推測脂肪滴表面的貝他型肌動蛋白可能具有幫助脂質運送的功能。

• 英文摘要

Several lipid droplet-associated proteins are involved in regulating intracellular lipid metabolism. However, the molecular basis of the acute hormonal regulation and mechanism of lipolysis in cells remains unclear. In this study, intracellular lipid droplets were isolated from rat adrenocortical cells and adipocytes. The lipid droplet-associated proteins were analyzed by electrophoresis and Western blotting. We found that actin was copurified with both lipid droplet preparations. According to the data of two dimentional electrophoresis and Western blot, lipid droplet-associated actin was confirmed as beta isoform. Immunofluorescence with anti-beta-actin antibody showed that beta-actin not only constructed the stress fibers, but also located on the surface of lipid drolplet. In addition, FITC-phalloidin staining displayed lipid droplet-associated

actin was globular type. To investigate the interaction between beta-actin and intracellular lipid droplets, the redistribution of beta-actin was examined by administration of dibutyryl cAMP. After treatment of dibutyryl cAMP to stimulate lipolysis, lipid droplets were decrease in size. Immunofluorescence revealed that the number of stress fibers was decrease and beta-actin was translocated from the surface of lipid droplets into cytosol in cultured adrenocortical cells. These data demonstrated that lipid droplet-associated globular beta-actin might facilitate intracellular lipid transport during lipolysis.