

Reorganization of a novel vimentin-associated protein in 3T3-L1 cells during adipose conversion

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摘要

Abstract

We have found that the antibody A2, a marker for the capsule of steroidogenic lipid droplets, reacts with an intermediate filament-associated protein, P200, in 3T3-L1 preadipocytes. Supporting evidence came from the colocalization pattern of P200 with vimentin in double label experiments. The association of P200 with vimentin was further confirmed by its copurification with vimentin after high salt extraction and colocalization of these two proteins in high salt-extracted and vinblastine-treated cells. In preadipocytes this protein was distributed on the vimentin filament network. At the early stage of adipose conversion, this protein was found to encircle nascent lipid droplets ranging from 0.1 to 0.2 micron, accompanied with a decreased distribution on the vimentin filament system. This infers a possible translocation of P200 from the vimentin filaments to the droplet surface. Meanwhile, the vimentin filaments remained in a normal distribution in the cytoplasm and were apparently not associated with the nascent droplet. The association of vimentin filaments to droplet surfaces became prominent in lipid droplets larger than 0.2 micron, forming a typical vimentin cage. Immunogold staining also confirmed the translocation of P200 immunoreactivity from the droplet surface to the vimentin cage. The relocation of P200 from the cytoplasmic vimentin filaments to the droplet surface prior to the formation of the vimentin cage, as well as the reorganization of this protein in the vimentin cage, suggests a stabilizing role in the lipid droplet formation and an inducing function of this protein in the formation of the vimentin cage