セレネートのラット脂肪組織リポタンパク質リパーゼ活性増強作用

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Increase in Lipoprotein Lipase Activity in Isolated Rat Adipose Tissue by Selenate

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ABSTRACT Sodium selenate (selenate), as well as insulin, increased the lipoprotein lipase (LPL) activity in isolated rat fat pads in a time-and dose-dependent manner. The increase effect of selenate was not additive to that of insulin. The action of selenate and insulin was decreased by amiloride and disappeared when Ca^{2+} was omitted from the incubation medium. Loading of a chelator of intracellular Ca^{2+} to the fat pads also greatly inhibited the action of selenate. The maximal increase in inositol 1,4,5-trisphosphate (IP_3) content was observed with a 30-s incubation of the fat pads with selenate. Dibutyryl cyclic AMP, 3-isobutyl-1-methylxanthine, carbonyl cyanide m-chlorophenylhydrazone, tunicamycin, and monensin all inhibited the increase effect of selenate on LPL activity to various extents. These results suggest that selenate increases the LPL activity via amiloride- and monensin-sensitive processes, involving the Ca^{2+} mobilization linked to a rapid increase in the IP_3 content in fat pads.

ラット脂肪組織にセレネートを反応させると組織中のリポタンパク質リパーゼ（LPL）活性が、時間および濃度依存的に増強された。この作用発現には細胞内外のCa^{2+}の存在が必須であった。イノシトール三リン酸含量は、反応後30秒間で最大値を示した。糖鎖形成阻害剤や脱共役剤によってセレネートの作用は抑制された。これらの結果から、セレネートのLPL活性増強作用の一部は、細胞内Ca^{2+}濃度の増加と糖鎖形成過程の促進作用を介して発現する事が示唆された。