

## 心筋高エネルギーリン酸化合物の低酸素負荷 による障害と再酸素化による回復

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### Hypoxia induced damage and reoxygenation induced recovery in myocardial high energy phosphates

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**ABSTRACT** We have examined critical factors for a recovery of adenosine triphosphate (ATP) and creatine phosphate (CP) during reoxygenation of the heart. ATP and CP contents of the heart decreased with prolonged periods of hypoxia. Reoxygenation of the heart resulted in a complete recovery of CP after 30 min hypoxia, and a partial recovery after 60 min hypoxia, while ATP contents were partially restored upon reoxygenation. Mitochondrial ability for generating ATP was depressed upon hypoxia, and the reoxygenation did not restore it to the control level. A significant release of creatine phosphokinase from the heart was observed at 60 min-hypoxia and the subsequent reoxygenation, but was not correlated with a depletion in myocardial ATP and CP contents. Hypoxia also induced a significant release of adenine nucleotides from the perfused heart. This was considered critical for a recovery of ATP upon reoxygenation.

抄録 低酸素負荷後、再酸素化した家兎心臓の ATP, CP の回復に極めて重要な要因と考えられるものを検討した。低酸素負荷で心筋 ATP, CP は負荷が長い程減少した。再酸素化で CP の回復は比較的速やかであったが、ATP の回復は部分的であった。クレアチンキナーゼは低酸素負荷で遊離されるが、これは ATP, CP の減少とは関係なく、むしろ、ATP 代謝産物の遊離が有意に関連した。以上の結果は ATP 代謝物が心筋細胞から遊離されることが再酸素化による回復には重要な要因と考えられた。

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