

## 家兔甲状腺機能亢進症発生時の心筋筋原 線維ATPaseの変化

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### Changes in Cardiac Myofibrillar ATPase Activity during Development of Hyperthyroidism in the Rabbits

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**ABSTRACT** This study examined changes in cardiac myofibrillar ATPase activity during the development of hyperthyroidism and the relationships between changes in myofibrillar ATPase activity and hemodynamic parameters in rabbits. Calcium-stimulated, magnesium-dependent ATPase (Ca-ATPase) activity of cardiac myofibrils exhibited about a 30% increase after the first week of treatment with excess desiccated thyroid tissue powder (thyroid-treatment) and did not show further increase during thyroid-treatment. Development of cardiac hypertrophy and increases in systolic and diastolic blood pressure were dependent upon prolonged periods of thyroid-treatment lasting from 3 days to 4 weeks, whereas the maximal increase (about 55%) in heart rate was seen after the first week of thyroid-treatment. The elevated level lasted throughout subsequent thyroid-treatment. Lineweaver-Burk plots showed an increase in  $K_m$  and  $V_{max}$  values for Ca-ATPase activity of myofibrillar preparation from the thyrotoxic hearts of treated animals. Increased Ca-ATPase activity was correlated with thyroid-induced changes in heart rate. Propranolol partially reduced the thyroid-induced increase in Ca-ATPase activity and heart rate, suggesting participation of beta-adrenoceptors in the thyroid-induced increases of Ca-ATPase activity and heart rate.

抄録 実験的甲状腺機能亢進の家兔における心筋筋原線維カルシウムATPase活性の変化と病態時に変化する血行動力学的変動との関連を検討した。カルシウムATPase活性はこの病態下では増加し、それは心拍数の増加と関連があった。 $\beta$ -ブロッカーであるプロプラノロールはこの両者の増加を抑制した。この結果は甲状腺機能亢進の病態発生にアドレナリン $\beta$ -作動性機序の関与が示唆された。

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