

论著

黄芪甲苷对异丙肾上腺素诱导的乳鼠心肌细胞肥大的保护作用

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摘要 **目的** 探讨黄芪甲苷(AsIV)对异丙肾上腺素(Iso)诱导的乳鼠心肌细胞肥大的保护作用和机制。方法 体外培养的乳鼠心肌细胞分别加入AsIV 3, 10, 30和90 $\mu\text{mol} \cdot \text{L}^{-1}$ 孵育30 min后, 再加入Iso 10 $\mu\text{mol} \cdot \text{L}^{-1}$ 作用48 h。另设AsIV 30 $\mu\text{mol} \cdot \text{L}^{-1}$ 和Iso 30 $\mu\text{mol} \cdot \text{L}^{-1}$ 模型对照组。考马斯亮蓝法测定心肌细胞总蛋白含量; 消化分离法及计算机图像分析系统测量细胞体积; MTT测定细胞存活率; 以Fura-2/AM为荧光探针, 采用Till阳离子测定系统, 观察胞内 $[\text{Ca}^{2+}]_i$ 瞬间变化。**结果** 与正常对照组相比, AsIV 30 $\mu\text{mol} \cdot \text{L}^{-1}$ 对正常心肌细胞无影响; Iso 30 $\mu\text{mol} \cdot \text{L}^{-1}$ 可使心肌细胞总蛋白含量明显增加, 体积明显增大, 心肌细胞内 $[\text{Ca}^{2+}]_i$ 瞬间峰值增大, 同时使心肌细胞存活率降低了48.1% ($P < 0.01$)。与Iso模型组相比, 预加入AsIV 10和30 $\mu\text{mol} \cdot \text{L}^{-1}$ 心肌细胞蛋白质含量明显降低, ASIV 30 $\mu\text{mol} \cdot \text{L}^{-1}$ 组可以恢复达到正常对照组水平; AsIV 3~90 $\mu\text{mol} \cdot \text{L}^{-1}$ 可以拮抗Iso对正常心肌细胞体积增大、细胞内 $[\text{Ca}^{2+}]_i$ 瞬间变化幅度增大的作用; ASIV 3, 10和30 $\mu\text{mol} \cdot \text{L}^{-1}$ 可显著升高细胞存活率 ($P < 0.01$)。**结论** AsIV对Iso诱导的乳鼠心肌细胞肥大有良好的保护作用, 其机制可能与降低 $[\text{Ca}^{2+}]_i$ 有关。

关键词 [黄芪甲苷](#) [异丙肾上腺素](#) [心肌肥大](#)

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Protective effect of Astragalus IV on isoprenaline-induced myocardial hypertrophy

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Abstract

OBJECTIVE To investigate whether Astragalus IV (AsIV) can protect myocardial cells from isoprenaline(Iso)-induced myocardial hypertrophy and possible mechanisms. **METHODS** AsIV 3, 10, 30 and 90 $\mu\text{mol} \cdot \text{L}^{-1}$ was added to cultured myocardial cells 30 min prior to incubation with Iso 10 $\mu\text{mol} \cdot \text{L}^{-1}$ for 48 h. The total protein content was measured by Bradford Protein Assay Kit. Cell size was assayed by computer photograph analysis. The cell viability was assessed by MTT assay. $[\text{Ca}^{2+}]_i$ transient was measured by Till image system by cell-loading Fura-2/AM.

RESULTS Compared with normal control group, AsIV 30 $\mu\text{mol} \cdot \text{L}^{-1}$ did not affect normal cardiomyocyte. The increase of the total protein content, cardiomyocytes size, $[\text{Ca}^{2+}]_i$ transient and the decrease of cell viability in cultured myocardial cells were observed incubated with Iso for 48 h. The survival rate of myocardial cells was decreased of 48.1% in Iso-treated group ($P < 0.01$). Pretreated with ASIV 10 and 30 $\mu\text{mol} \cdot \text{L}^{-1}$ can protect against the increasing of protent content and even recover to the level of normal control group at 30 $\mu\text{mol} \cdot \text{L}^{-1}$ concentration. ASIV 3, 10, 30 and 90 can protent against the increasing of size and $[\text{Ca}^{2+}]_i$ transient amplitude of cardiac myocytes.

ASIV 3, 10 and 30 $\mu\text{mol} \cdot \text{L}^{-1}$ can statistically significant increase cell survival. **CONCLUSION** AsIV has protective effect on cultured cardiac myocytes from hypertrophy induced through inhibiting $[\text{Ca}^{2+}]_i$.

Key words [Astragalus IV](#) [isoproterenol](#) [myocardial hypertrophy](#)

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