

## 复方丹参滴丸对急性心肌缺血大鼠模型的影响

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**中文摘要:**目的:探讨复方丹参滴丸对异丙肾上腺素(ISO)诱导的大鼠急性心肌缺血模型的保护性作用及其与细胞凋亡的相关机制研究。方法:大鼠采用随机数字法分为:正常组、模型组、复方丹参滴丸组(后简称复方组)、盐酸地尔硫卓组。每组大鼠提前给药一周,复方组剂量为 $80 \text{ mg} \cdot \text{kg}^{-1} \cdot \text{d}^{-1}$ ,盐酸地尔硫卓组剂量为 $16 \text{ mg} \cdot \text{kg}^{-1} \cdot \text{d}^{-1}$ ,正常组与模型组每天以相应量的生理盐水灌胃。后采用大剂量颈部皮下注射异丙肾上腺素造模,注射剂量为 $20 \text{ mg} \cdot \text{kg}^{-1} \cdot \text{d}^{-1}$ ,连续注射2 d。正常组每天以相应量生理盐水皮下注射。造模后行右颈总动脉插管检测血流动力学变化,血清检测超氧化物歧化酶(SOD)、丙二醛(MDA)、肌钙蛋白I(TnI)含量变化,取心肌组织常规石蜡切片,苏木精-伊红(HE)染色,观察心肌组织的病理变化,免疫印迹(Western blot)检测凋亡相关蛋白凋亡信号调节激酶1(ASK-1)和caspase-9表达的改变。结果:模型组血流动力学收缩压(SBP)、舒张压(DBP)、动脉平均压(MBP)、心率(HR)、左室收缩峰压(LVSP)、左室舒张末压(LVEDP)、 $+dp/dt_{\text{max}}$ 、 $-dp/dt_{\text{max}}$ 降低明显,与正常组相比均有统计学意义( $P<0.05$ )。模型组与复方组相比,血流动力学指标中除LVEDP和 $+dp/dt_{\text{max}}$ ,其余均有统计学意义( $P<0.05$ )。模型组血清SOD含量与正常组比较明显升高( $P<0.05$ );复方组与模型组相比SOD含量明显升高,有统计学意义( $P<0.05$ )。模型组血清MDA,TnI含量与正常组比较明显升高( $P<0.05$ ),复方组与模型组相比MDA,TnI含量均下降,有统计学意义( $P<0.05$ )。Western blot结果显示模型组中ASK-1,caspase-9蛋白表达量与正常组相比明显增加( $P<0.05$ ),复方组与模型组相比ASK-1,caspase-9蛋白表达量降低,且有统计学意义( $P<0.05$ )。结论:复方丹参滴丸对ISO诱导的大鼠急性心肌缺血模型具有一定的保护性作用,且其作用靶点可能与参与心肌细胞的凋亡信号调节相关。

**中文关键词:**[复方丹参滴丸](#) [急性心肌缺血](#) [异丙肾上腺素](#) [细胞凋亡](#)

### Effect of Compound Danshen Dripping Pills on Acute Myocardial Ischemia in Rat Model

**Abstract:**Objective: To find the protective role of compound danshen dripping pills(CDDP) on acute myocardial ischemia induced by isoproterenol (ISO) in rat, and its apoptosis-related mechanism. Method: Rats were divided into: normal group, model group, compound Danshen Dripping Pill group (referred to as the compound group), the tim Seoul heart group. Rats of each group were in advance administrated for one week, the compound group dose  $80 \text{ mg} \cdot \text{kg}^{-1} \cdot \text{d}^{-1}$ , Tim dongle group dose  $16 \text{ mg} \cdot \text{kg}^{-1} \cdot \text{d}^{-1}$ , the normal group and model group were given normal saline. Subcutaneous injection of large doses of ISO  $20 \text{ mg} \cdot \text{kg}^{-1} \cdot \text{d}^{-1}$  was used to induce model, for two days. The hemodynamics by multichannel physiologic recorder was recorded with PE50 catheter into left ventricle through right arteria carotis. Content changes of superoxide dismutase (SOD), malondialdehyde(MDA), troponin I(TnI) in serum were tested. The myocardial tissue paraffin section was obtained for HE staining to observe pathological changes of myocardial tissue. Expression changes of apoptosis-related proteins apoptosis signal regulating kinase 1(ASK-1) and caspase-9 were detected using Western blot. Result: In model group, hemodynamics of systolic blood pressure(SBP), diastolic blood pressure (DBP), and mean arterial blood pressure(MBP), heart rate(HR), left ventricular systolic pressure(LVSP) and left ventricular end diastolic blood pressure(LVEDP), left ventricular pressure the greatest change in systolic and diastolic rate( $\pm dp/dt_{\text{max}}$ ) were significantly lower compared with the normal group ( $P<0.05$ ). Compared with model group, in the compound group, hemodynamic parameters, in addition to LVEDP and  $+dp/dt_{\text{max}}$ , were statistically significant ( $P<0.05$ ). In model group, serum SOD levels compared with normal group was significantly increased ( $P<0.05$ ); the compound group SOD levels compared with the model group was significantly elevated ( $P<0.05$ ). Serum MDA and TnI in model group were

significantly increased compared with the normal group ( $P<0.05$ ), the compound group compared with the model group, MDA and TnI were decreased statistically ( $P<0.05$ ). Western blot results showed that in the model group, the ASK-1, caspase-9 protein expression was significantly increased compared with the normal group ( $P<0.05$ ), the ASK-1 and caspase-9 protein expression of the compound group were significant decreased compared with the model group ( $P<0.05$ ). Conclusion: CDDP has a protective role on acute myocardial ischemia in ISO-induced rat model, and the target may be involved in myocardial apoptosis associated signal conditioning.

**keywords:** [compound Danshen dripping pill](#) [acute myocardial ischemia](#) [isoproterenol](#) [apoptosis](#)

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