THE PROTECTIVE EFFECT OF CARVEDILOL IN ACUTE RENAL FAILURE IN RATS

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Abstract

Acute renal failure (ARF) has been experimentally induced in rats using 50% glycerol in saline (10 ml/kg I.M.). The protective activity of carvedilol on the induced ARF was examined at a dose of 2.25 mg/kg B. W. The drug was administered orally, once daily for 3 consecutive days.

The results have revealed that the injection of glycerol was able to induce a significant (P<0.05) elevation in serum levels of urea nitrogen, creatinine, Na+ and K+ ions. In addition to the marked elevation of renal tissue contents of nitrite (NO₂⁻) and nitrate (NO₃⁻) compared to the normal values in the control animals.

The carvedilol pretreatment of rats with ARF resulted in a pronounced reduction in serum levels of urea, creatinine, Na+ and K+ ions reaching approximately to the normal values of control rats. The NO₂⁻ and NO₃⁻ renal tissue contents were also decreased in a similar manner reaching a comparable levels to the control values.

The results highlighted the important role of NO in ARF, and the possible mechanism of carvedilol as a renoprotective agent through its modification to the renal NO contents.

Introduction

There is increasing evidence that the endothelial derived relaxing factor (NO) is synthesized in the kidney and plays a crucial role in regulation and renal hemodynamics and excretory function (Bachman and Mundel, 1992).

Carvedilol is a multiple action drug, that has been introduced to the market for the treatment of