

Retinol Palmitate Counteracts Oxidative Injury During Experimental Septic Shock

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Abstract

Introduction: Retinols seem to be of clinical importance in ameliorating the clinical consequences of septic shock. These beneficial effects of retinols are suggested to be due to an antioxidant property. The present study was undertaken in order to confirm or rule out such an effect of retinol palmitate (RP) in experimental septic shock by measuring F_2 -isoprostanes and a major prostaglandin $F_{2\alpha}$ metabolite as indicators of oxidative injury and inflammatory response, respectively. **Materials and Methods:** Fourteen anaesthetised pigs were randomly given an injection of RP ($2.300 \text{ IU} \times \text{kg}^{-1}$) or the corresponding volume of vehicle. All pigs received a continuous infusion of *E. coli* endotoxin ($10 \mu\text{g} \times \text{kg}^{-1} \times \text{h}^{-1}$). Blood samples were analysed for lipid peroxidation products (8-iso-PGF_{2 α}), indicating free radical induced oxidative injury and 15-keto-dihydro-PGF_{2 α} indicating cyclooxygenase-mediated inflammatory response). **Results:** Significantly elevated levels of 8-iso-PGF_{2 α} were seen at 3, 5 and 6 hours of endotoxaemia in the vehicle + endotoxin group as compared to RP + endotoxin group. Endotoxin induced cyclooxygenase-mediated inflammatory response was not affected by RP. **Conclusions:** This study is the first one to show that RP counteracts oxidative injury rather than inflammatory response in experimental septic shock. These results may be of importance for the understanding of some beneficial effects of RP during endotoxaemia (i.e. improved systemic haemodynamics and reduced serum levels of endotoxin). Our results may explain the therapeutic effects of nutrients rich in caroten/retinols used in some clinical studies.

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