Effects of prednisolone on adriamycin-induced nephropathy in rats

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Chronic kidney disease (CKD) is characterized by progressive and chronical kidney dysfunction. Although CKD can be categorized into various types based on pathogenesis, adriamycin (ADR) -induced nephrotic syndrome is considered to be a classical rat model of CKD. By administration of ADR, glomerular filtration barrier damage and subsequent massive proteinuria are induced. In this study, we tried to prepare an ADR-induced nephropathy model in rats (Experiment 1) and to validate the usefulness of the model by administration of prednisolone (Experiment 2). In experiment 1, ADR was administered intravenously to Crlj:WI rats at 3, 5 or 10 mg/kg. Only the 3 mg/kg group, 2 mg/kg of ADR was additionally administered 15 days after the first ADR administration. 24hr-urine and blood were collected once weekly for 6 weeks for urinalysis and blood chemistry-analysis. Results indicated that ADR at 5 mg/kg was found to be suitable for induction of the nephropathy model rats. Therefore, in experiment 2, ADR was administered at 5 mg/kg, and prednisolone was administered orally at 1 or 5 mg/kg once a day for 35 days. Prednisolone was observed to be effective on dysfunction of the kidney by urinalysis and blood chemistry-analysis, indicating that ADR-induced nephropathy model is useful in evaluation of developing therapeutic drugs under the present experimental condition.