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Data Article

Data on nephroprotective effect of all-trans retinoic acid in early diabetic nephropathy

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ABSTRACT

Data showed in this report are related to the research article entitled “All-trans retinoic acid ameliorates inflammatory response mediated by TLR4/NF-κB during the initiation of diabetic nephropathy” by Sierra-Mondragon et al. (2018) [1]. Diabetic nephropathy (DN) has become the main cause of renal failure. Inflammatory molecules such as cytokines, chemokines and growth factors play a key role in DN-induced renal injury Pichler et al. (2016) [2]. Results illustrate the effect of all-trans retinoic acid (ATRA), an active metabolite of vitamin A, on the renal alterations related to diabetes, among them glomerular and tubular dysfunction, and its effect on renal inflammation in different nephron segments: glomeruli, proximal and distal tubules in an initial stage of DN. Data were obtained by physical-biochemical measurements and Western blot assays performed on isolated glomeruli, proximal and distal tubules from rat kidneys.

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Specifications Table

Subject area	Biology
More specific subject area	Immunology and inflammation
Type of data	Figures and Tables
How data was acquired	Renal function parameters were detected by a spectrophotometric method (Spectrophotometer Infinite M200, Tecan; Männedorf Suiza) and chemiluminescent Western blot were detected in an EC3 Imaging System (UVP Bioluminescence Systems, Cambridge, UK). Protein band densities were quantified by transmittance densitometry.
Data format	Processed data and raw data
Experimental factors	To analyze protective effects of ATRA, 4 experimental groups were evaluated; Control (CTL), Diabetic (DBT), Diabetic rats treated with ATRA (DBT+ATRA) and control rats treated with ATRA (ATRA).
Experimental features	Western blot analyses were performed on isolated glomeruli, proximal and distal tubules of rat kidneys from the four experimental groups.
Data source location	Mexico City, México
Data accessibility	Data are available in this paper

Value of the data

- The data show the nephroprotective effect of ATRA, leading to preservation of renal function by suppressing inflammation, in early stages of streptozotocin-induced diabetes in rats.
- These data are useful as there are few reports on the anti-inflammatory protective effects of ATRA on early DN. The observed beneficial effects might represent a therapeutic alternative to reduce the progression of DN, which is one of the pathologies leading to end stage renal disease worldwide.
- In addition, these data may be relevant for (i) other researchers using ATRA in their studies since at low doses we used (1 mg/kg), it did not show untoward effects and (ii) we provide experimental protocols for isolation of different nephron segments: glomeruli, proximal and distal tubules by Percoll gradients and sieving, without microdissection. The data show the nephroprotective effect of ATRA leading to preservation of renal function by suppressing inflammation in early stages of streptozotocin-induced diabetes in rats.

1. Data

Inflammation plays a central role in the progression of DN that leads to renal failure. Our previous study demonstrated that early diabetic condition has a relationship with inflammatory response mediated by TLR4/NF- κ B signaling in glomeruli and proximal tubules, respectively, *in vivo* [1]; and, these findings are consistent with previous study which reported that inflammatory molecules in DN-induced renal injury [2]. The retinoid system plays a key role in maintaining the normal renal structure and attenuates the development of renal pathological changes [3]. The dataset presented in this paper provides information about the nephroprotective role of ATRA (Figs. 1–3) and its effect on inflammatory molecules induced by diabetes in the kidney (Fig. 4). We analyzed the effects of its administration in isolated nephron segments: glomeruli, proximal and distal tubules to define their intrarenal selectivity in an early stage of experimental DN.

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