

Effects of vitamin D deficiency on diabetic nephropathy in rats

Cláudia Silva Souza¹, Heloísa Della Colleta Franscecato¹, Amanda Lima Deluque¹,
Beatriz Magalhães Oliveira¹, Cleonice Giovanni¹, Francisco Jose Albuquerque de Paula²,
Roberto Silva Costa³, Terezila Machado Coimbra¹

¹Department of Physiology of Ribeirão Preto Medical School, University of São Paulo, Ribeirão Preto, São Paulo 14049-900, Brazil

²Endocrinology Laboratory, Department of Internal Medicine of Ribeirão Preto Medical School, University of São Paulo, Ribeirão Preto, São Paulo 14049-900, Brazil

³Renal Pathology Laboratory, Division of Nephrology, Department of Internal Medicine, Ribeirão Preto Medical School, University of São Paulo, São Paulo, 14049-900, Brazil

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Introduction: Diabetic nephropathy (DN) is characterized by renal functional and structural changes that can be exacerbated by the reduction of the renoprotection provided by vitamin D (VitD). Although VitD to be an important tool for glycemic and blood pressure control, the impact of its deficiency on the diabetic kidney disease is still not fully clear. The aimed of the study was to evaluate the influence of VitD deficiency (VitDD) on the DN in rats with type 1 diabetes mellitus (T1DM).

Methods: Twenty-two rats were used in this study. The animals were subjected to a previous treatment for six weeks with a VitD-free diet (VDFD) or standard diet (SD). The T1DM was induced by a single injection of streptozotocin (45 mg/kg, i.p.) and the controls received the same dose of vehicle. The rats were divided into 4 experimental groups: Ctrl VitD, rats fed with SD; Ctrl VitDD, rats fed with VDFD; DM VitD, diabetic

rats fed with SD; DM VitDD, diabetic rats fed with VDFD. Twelve and twenty-four weeks after the induction of T1DM the animals were killed and urine, serum, plasm and renal tissue were collected. Ethics Committee: protocol number 002/2019.

Results: Our data demonstrated a progressive increase in albuminuria and glomerular filtration rate, significant increase in the areas of the glomerular tuft and mesangial, tubulointerstitial fibrosis, ED-1 positive cells (monocyte and macrophage markers) and cell proliferation in DM VitDD rats compared to DM VitD rats.

Conclusion: Our data showed that VitDD rats develop more intense DN than animals fed a VitD-containing diet.

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