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Data Article

Diabetes alters vascular mechanotransduction data: Pressure-induced regulation of mTor and associated signaling in the rat inferior vena cava

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ABSTRACT

Diabetes is a multifaceted disease with various etiologies. The complexity of this pathology creates a myriad of factors that must be considered when addressing surgical outcomes and prognosis. Of vital importance to cardiovascular surgery is the viability of homographic vein grafts. Due to the fact, diabetic patients have a higher rate of vein graph failure, a greater understanding of the effect diabetes has on vascular mechano-transductive response is critical to improving patient prognosis. This article represents data regarding a study published in Cardiovascular Diabetology (Rice et al., 2006) [1] and Open Journal of Endocrine and Metabolic Diseases (Rice et al., 2015) [2] with the purpose of evaluating the effect of pressurization on rat inferior venae cavae (IVC). Here we provide the information about the method and processing of raw data related to our prior publish work and Data in Brief articles

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(Rice et al., Submitted for publication) [3,4]. The data contained in this article evaluates the contribution of mTor signaling and associated proteins. IVC from lean and obese animals were exposed to a 30 min perfusion of 120 mm Hg pressure and evaluated for changes in expression and phosphorylation of mTor, p70s6k, GSK3β, and 4EBP-1.

Specifications Table

Subject area	*Biology*
More specific subject area	*Cardiovascular diabetic surgical tissue response*
Type of data	*graph, figure*
How data was acquired	*immunoblotting*
Data format	*analyzed*
Experimental factors	*IVC mounted vessels were subjected to 120 mm Hg of pressure for 30 min. Protein was then isolated from tissue for western blot analysis.*
Experimental features	*IVC obtained from Lean and Obese male Zucker rats were used in this experiment*
Data source location	*Data is presented In this article*
Data accessibility	*Data is presented in this article and is related to articles published and in review* [1–4]

Value of the data

- The data presented in this Brief is vital to understanding the effect of diabetes on tissue.
- This data gives insight into the how diabetes alters tissue response to stimuli.
- The data can provide comprehensive analysis of the effect of diabetes on vascular signaling in vein transplant surgery.
- These data provides a more thorough understanding of the mTor involvement in pressure mediated signaling in both diabetic and lean IVC.

1. Data

1.1. mTor

To determine the effect of pressurization of inferior vena cava (IVC) from diabetic male obese syndrome-X Zucker (OSXZ) diabetic and nondiabetic male normal lean Zucker (LNZ) animals we evaluated the expression of mechanistic target of rapamycin (mTor) [5,6]. IVCs obtained from the OSXZ control group showed a significant higher level of mTor expression when compared to the LNZ control animals ($37 \pm 3.0\%$ $p < 0.05$). Pressurization resulted in a significant decrease in mTor in the LNZ IVC ($24 \pm 1.7\%$ $p < 0.05$) and OSXZ IVC ($31 \pm 3.0\%$ $p < 0.05$) (Fig. 1-A). Compared to LNZ controls mTor basal phosphorylation at serine 2448 demonstrated no significant difference in the OSXZ IVC. Pressurization of the IVC resulted in a significant decrease in the phosphorylation of mTor in the LNZ IVC ($46 \pm 2.7\%$ $p < 0.05$) and the OSXZ IVC ($22 \pm 3.1\%$ $p < 0.05$) (Fig. 1-B). The ratio of p-mTor to mTOr demonstrated a significant decrease in the basal levels of p-mTor to mTOr in the OSXZ IVC ($29 \pm 2.2\%$