Dapagliflozin Alone or Combined with Ramipril Improves Hyperglycemia, Hypertension, and Prevents Kidney Complications and GFR Decline in the Nephrectomized SDT Fatty Rat Model of Diabetic Nephropathy

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OBJECTIVES & METHODS

Combination of sodium glucose cotransporter 2 inhibitor (SGLT2i) and angiotensin converting enzyme inhibitor (ACEi) represents a potential therapeutic strategy to prevent diabetic nephropathy progression to end stage renal disease (ESRD). Here we evaluated SGLT2i dapagliflozin (DAPA) alone or combined with ACEi ramipril (RAMI) in the uni-nephrectomized Spontaneously Diabetic Torii (SDT) fatty rat. This hypertensive/obese/type 2 diabetic model develops advanced renal complications and >50% glomerular filtration rate (GFR) decline within 10 weeks. One week after unilateral nephrectomy, SDT fatty rats were put on a chow diet with 0.3% salt and were treated without (CTRL) or with DAPA 1mg/kg/day alone or with DAPA + RAMI both at 1mg/kg/day in the diet for 10 weeks.

RESULTS

1 A 10-week dapagliflozin treatment does not alter GFR but significantly improves kidney complications in Unx SDT fatty rat under 0.3% salt

Dapagliflozin in combination with ramipril further reduces hypertension and better prevents severe GFR decline, as compared to dapagliflozin alone.

CONCLUSION

In the 10-week nephrectomized SDT fatty rat, DAPA alone prevents kidney complications, while the combination with RAMI adds benefits by better delaying GFR decline. Our data suggest that SGLT2i/ACEi combination prevents progression to ESRD.

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