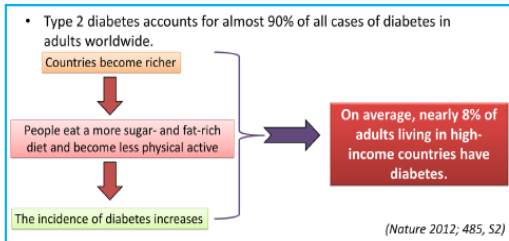




# First stages of diabetes type 2 effects in the bladder; to which extent antioxidant treatment can be beneficial for the bladder tissue?

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## Introduction



### Diabetes-associated bladder dysfunction

**Symptoms of diabetes**

- Increased urination
- Fatigue
- Weight changes
- Neuropathy
- Thirst
- Hunger
- Peripheral vascular disease
- Hypertrophy
- Bleeding
- Stroke
- Coronary heart disease

1. Diabetic bladder dysfunction (DBD) is found in more than 80% of individuals with diabetes.

2. DBD or diabetic cystopathy has been classically described as:

- decreased bladder sensation,
- poor contractility and
- increased post-void residual urine.

(J Urol. 2009;182: S8)

**Oxidative stress in diabetes**

Oxidative stress plays a significant role in the development of diabetic complications.

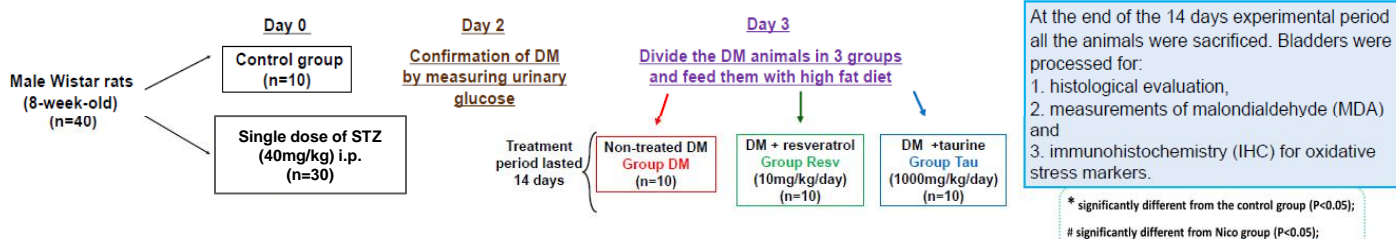
Diabetic cystopathy has been proved to be associated with oxidative damage of smooth muscle cells, and results in protein damage and activation of apoptotic pathways that may contribute to a deterioration in bladder function.

(BJU Int. 2011; 107:1676)

### Objectives

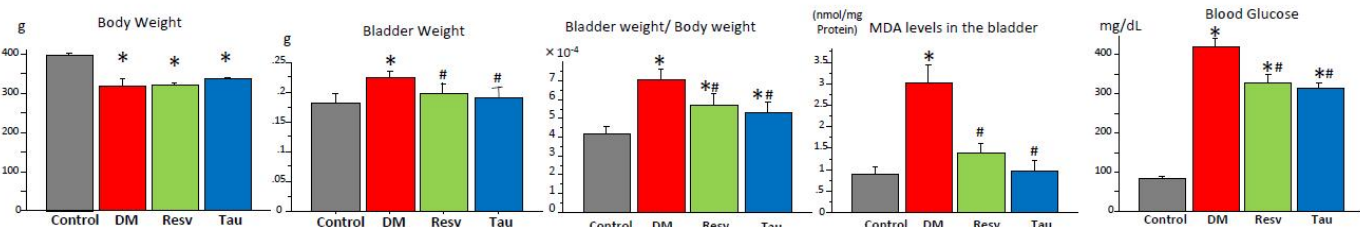
In the current study we aimed to create a short-period diabetes type-2 model in order to investigate oxidative stress-related alterations in the bladder in the initiation of the disease. Additionally antioxidant treatment with resveratrol or taurine was provided in order to examine whether it is possible to prevent these alterations in the very beginning of the disease.

## Methods

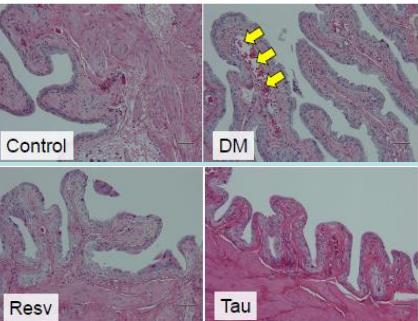


## Results

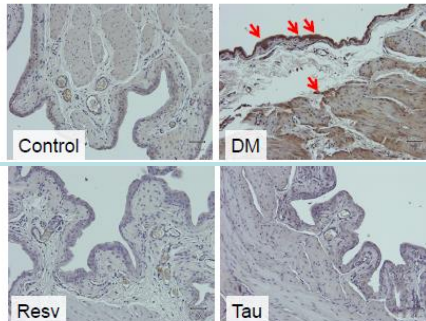
### 1. General Features of the animals and MDA levels in the bladder



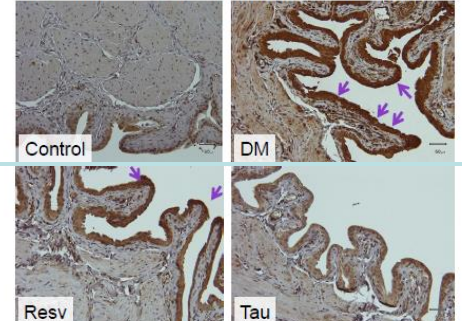
2. Histology of the bladder of all groups (magnification x200; bar: 50µm) / Hematoxylin-Eosin staining



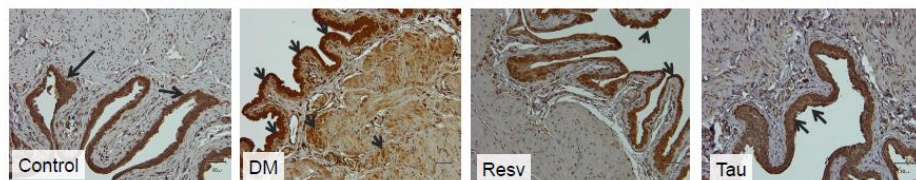
3. MDA expression and localization in the bladder (magnification x200; bar: 50µm) / Lipid peroxidation marker



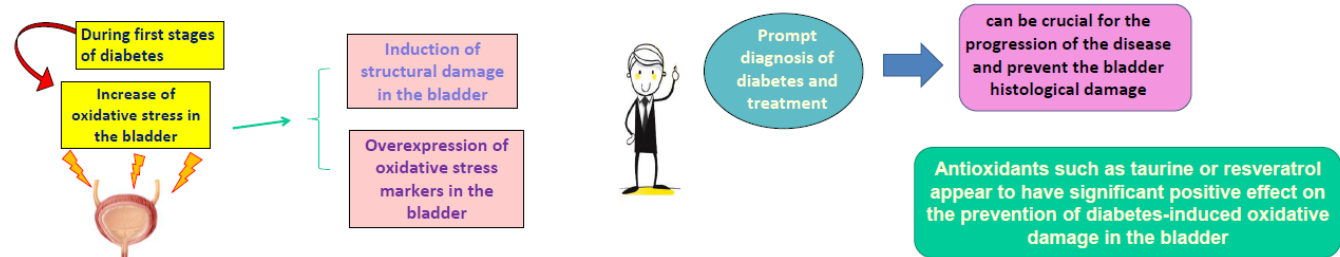
4. 4-HNE expression and localization in the bladder (magnification x200; bar: 50µm) / Lipid peroxidation marker



5. 8-OHdG in the bladder (magnification x200; bar: 50µm) / DNA oxidative stress marker



## Conclusions



## REFERENCES

- Scully T. Diabetes in numbers. Nature 2012; 485; S2
- Daneshgari F, Leiter EH, Liu G, Reeder J. Animal models of diabetic uropathy. J Urol. 2009;182:S8-13
- Kanika ND, Chang J, Tong Y, Tiplitsky S, Lin J, Johannes E, Tar M, Chance M, Christ GJ, Melman A, Davies KD. Oxidative stress status accompanying diabetic bladder cystopathy results in the activation of protein degradation pathways. BJU Int. 2011; 107:1676-84.