

## Negligible Influence of High Fat Diet Feeding on Lower Urinary Tract Function in Mice

**Introduction and Objective:** Some epidemiological studies support the view that metabolic syndrome has a risk factor for lower urinary tract (LUT) symptoms, but little has been demonstrated in terms of influence of metabolic syndrome on LUT function. In the present study, we investigated the possible changes in LUT function in mice fed high fat diet (HFD).

**Materials and Methods:** Thirty-two male C57BL/6J mice at 4 weeks old were divided into 2 different feed groups; normal diet (ND) and HFD (n=16 each), and feeding ND or HFD was started at 5 weeks old, respectively. The body weight and blood glucose level were measured every 4 weeks until 25 weeks, and voiding frequency/volume (FV) relations (for 24 hours) every 4 weeks until 21 weeks. At 25 weeks, cystometry (CMG), isolated detrusor muscle strip function, blood pressure and heart rates were measured. After the experiments, the serum fat level was measured.

**Results:** The body weight and blood glucose level of the HFD group were significantly higher than those of the ND group after 9 weeks old. In FV measurements, the mean voided volume was not significantly different between the two groups, although voiding frequency, total voided volume, and water intake volume in the HFD group were significantly lower than those in the ND group. At 25 weeks the mean heart rate in the HFD group was significantly higher than that in the ND group, but no significant difference in the blood pressure was observed. None of the cystometric parameters analyzed (basal pressure, micturition threshold, micturition pressure, bladder capacity, voided volume and residual volume) showed significant differences between the two groups. The contractile response to either carbachol or high  $K^+$  was not significantly different, whereas the response to electrical field stimulation was significantly higher in the HFD group. Also in the HFD group, the mean total cholesterol level was significantly higher.

**Conclusions:** The present results suggest that HFD-feeding for 20 weeks in mice unlikely affects bladder function even though this induced diabetes, dyslipidemia and tachycardia. Further studies with a longer follow-up are needed to determine the influence of metabolic syndrome on LUT function.