



## Exercise Biochemistry Review

---

Proceedings of IBEC 2018, Beijing, China, October 23-25  
PO-197

### Effects of aerobic exercise training on F13A-mediated energy metabolism in mice

Yangwenjie Wang, Ying Zhang  
Graduate School of Beijing Sport University

**Objective** Apelin, an adipokine and also a myokine, is involved in energy metabolism. F13A is an analog of apelin-13. In this study, we aim to investigate the effect of aerobic exercise on F13A-mediated energy metabolism in mice.

**Methods** 20 C57BL/6J wild mice were randomly divided into 4 groups (n:5), namely saline control group (SC), saline exercise group (SE), F13A control group (FC), and F13A exercise group (FE). Mice were intraperitoneally injected with F13A (0.2  $\mu\text{mol}/\text{kg}/\text{day}$ ) or saline (15  $\mu\text{l}/\text{kg}/\text{day}$ ). Mice in the exercise group underwent 60 min/day treadmill running at a speed of 15 m/min with a slope of 5°. After 2 weeks, the maximal oxygen uptake was measured and the running speed was adjusted to 20 m/min. The treadmill running continued 4 weeks. The mice were individually housed in a Comprehensive Lab Animal Monitoring System (Columbus Instruments, Columbus, OH, USA) between the 3<sup>rd</sup> and 4<sup>th</sup> week of training with free access to food and water.  $\text{O}_2$  consumption ( $V_{\text{O}_2}$ ),  $\text{CO}_2$  production ( $V_{\text{CO}_2}$ ) and respiratory exchange ratio (RER) during a 24-h period were measured after 24h of acclimatization. Glucose oxidation (in  $\text{g}/\text{min}/\text{kg}^{0.75} = [(4.545 \times V_{\text{CO}_2}) - (3.205 \times V_{\text{O}_2})] / 1000$ ), and lipid oxidation (in  $\text{g}/\text{min}/\text{kg}^{0.75} = [1.672 \times (V_{\text{O}_2} - V_{\text{CO}_2})] / 1000$ ) were calculated.

**Results** F13A alone increased glucose oxidation ( $P < 0.01$ , vs SC group). Exercise plus F13A caused a significant decline in RER ( $P < 0.01$  vs FC and  $P < 0.05$  vs SE group), glucose oxidation ( $P < 0.001$  vs FC and  $P < 0.05$  vs SE group), whereas it increased lipid oxidation ( $P < 0.05$  in comparison with FC group). Exercise alone has no influence on 4 groups.

**Conclusions** These findings suggest that 4 weeks aerobic exercise can regulate F13A reduce RER in mice, with a decrease of glucose oxidation and an increase of lipid oxidation in vivo.