

## **Saffron extract and crocin reduced biomarkers associated with obesity in rats fed a high-fat diet**

### **ABSTRACT**

**Introduction:** This study aimed to investigate the effect of saffron extract and crocin on blood biomarkers associated with obesity using the rat model. **Methods:** Obesity was induced by feeding a high-fat diet to 42 male Sprague-Dawley rats for 12 weeks, after which they were equally distributed into seven groups. Three groups served as controls namely, normal diet (ND), high-fat diet (HFD), and high-fat diet plus orlistat (HFD + ORL), while the remaining four treatment groups consisted of HFD added low or high dose (40 and 80 mg/kg/day) of either saffron extract or crocin in the food. At the end of 8 weeks, blood samples were collected by cardiac puncture for biochemical analysis. **Results:** Obese rats treated with a high dose of saffron extract and crocin showed significantly lower plasma glucose levels (5.26 and 5.67 mmol/L respectively) than the HFD rats (6.92 mmol/L). Saffron extract and crocin at a high dose showed significantly lower levels of plasma insulin (3.97 and 3.88 ng/mL respectively) compared to HFD control (5.41 ng/mL). Adiponectin levels significantly increased in obese rats fed saffron extract and crocin at high doses (7.44 and 7.92  $\mu$ g/mL respectively) compared to HFD control (5.34  $\mu$ g/mL). Ghrelin level significantly increased from 419.10 to 284.10 pg/mL, while leptin level significantly decreased from 8.08 to 5.68 ng/mL for the high dose crocin groups compared to HFD control. No significant differences in plasma serotonin levels were found among the groups. **Conclusion:** Saffron extract and crocin show potential in reducing blood biomarkers associated with obesity as well as anti-inflammatory and regulatory potential of adipocytokines in an animal model.

**Keyword:** Crocin; High-fat diet; Obesity; Orlistat; Saffron