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Licorice flavonoids suppress abdominal fat accumulation and increase in blood glucose level in obese diabetic KK-A(y) mice.

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Licorice, the root of the *Glycyrrhiza* species, is one of the most frequently employed botanicals in traditional medicines. In this study, we investigated the effects of hydrophobic flavonoids from *Glycyrrhiza glabra* LINNE on abdominal fat accumulation and blood glucose level in obese diabetic KK-A(y) mice. In order to enrich a fraction of hydrophobic flavonoids, licorice flavonoid oil (LFO) was prepared by further extracting licorice ethanolic extract with medium-chain triglycerides (MCT), and adjusting the concentration of glabridin, the major flavonoid of licorice, to 1.2% in oil. KK-A(y) mice aged 6 weeks were assigned to 5 groups (n=6 each), and fed a high-fat diet containing 0 (control), 0.5%, 1%, or 2% LFO, or 0.5% conjugated linoleic acid (CLA) for 4 weeks. Compared with the control, body weight gain and weights of abdominal adipose tissues were suppressed ($p<0.05$) by feeding the diet containing 2% LFO, and blood glucose levels after 2 and 4 weeks were suppressed by all of the diets containing LFO. Although CLA feeding suppressed ($p<0.05$) body weight gain, it increased ($p<0.05$) blood glucose level after 2 weeks compared with the control level. Furthermore, LFO and licorice ethanolic extract stimulated human adipocyte differentiation in vitro. These results indicate that licorice hydrophobic flavonoids have abdominal fat-lowering and hypoglycemic effects, possibly mediated via activation of peroxisome proliferator-activated receptor-gamma (PPAR-gamma).

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MeSH Terms, Substances

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