

Elateriospermum tapos Supplementation in dams ameliorating obesity development and stress hormone level among adult male offspring

ABSTRACT

Maternal obesity is a metabolic disorder described by chronic inflammation and an increase of stress hormones, influencing non-communicable diseases in offspring. *Elateriospermum tapos* has the potential as an antioxidant and inhibitor of lipids (pancreatic lipase) and carbohydrates (α -amylase and α -glucosidase) which are beneficial to combat obesity and diabetes. This study aimed to investigate the effect of *E. tapos* supplementation in obese rats prior to pregnancy on the dam and male offspring body weight and the level of stress hormones—adrenocorticotrophic hormone (ACTH) and corticosterone (CORT). Thirty female Sprague Dawley rats were used in this study. Six rats were assigned to a normal diet (DND) group fed with a standard chow diet. The remaining rats were fed with a high-fat and cafeteria diet (HFCD) to generate obesity for five weeks. The obese rats were further divided into four groups (n = 6/group); dams negative control group (DNC, normal saline), dams positive control group (DPC, 200 mg/kg body weight of orlistat), dams treatment 1 group (DTX1, 200 mg/kg BW of *E. tapos* seed) and dams treatment 2 group (DTX2, 200 mg/kg BW of *E. tapos* shell). The treatment was given for six weeks daily before mating. At weaning, male offspring were designated into six groups according to their dam's group (n = 6/group) and continued with the cafeteria diet except for the control group. The offspring were culled at 12 weeks of age for blood sample collections. DTX2 and their male adult offspring showed significantly lower body weight compared to DNC and their male offspring. Male offspring from DTX2 also showed significantly low ACTH and CORT levels compared to male offspring from the DNC group and a comparable level with the DND group. *E. tapos* shell supplementation was effective in reducing the development of obesity and suppressed stress through the regulation of ACTH and CORT release in male adult offspring.

Keyword: Maternal obesity; Offspring; High-fat diet; Cafeteria diet; Stress hormone