

**Remodulation effect of *Elateriospermum tapos* yoghurt on metabolic profile of maternal obesity induced cognitive dysfunction and anxiety-like behavior in female offspring—an in vivo trial on Sprague Dawley rats**

**ABSTRACT**

Pre-pregnancy weight gain induces dysregulation in the metabolic profile of the offspring, thereby serving as a key factor for cognitive decline and anxiety status in the offspring. However, early probiotic supplementation during the gestational period is linked with improved metabolic health. At the same time, a natural plant known as *Elateriospermum tapos* (*E. tapos*) is proven to improve cognition and modulate the stress hormone due to its high concentration of flavonoids. However, the effects of medicinal plant integrated probiotics in F1 generations warrants further investigation. Thus, this study aimed to study the effect of *E. tapos* yoghurt on the maternal obesity induced cognitive dysfunction and anxiety in female offspring. In this study, female Sprague Dawley rats were fed with normal chow (n = 8) or high fat diet (n = 40) across pre-pregnancy, gestation, and weaning. The treatment with different concentrations of *E. tapos* yoghurt (5, 50, and 500 mg/kg/day) were initiated in the obese dams upon post coitum day 0 up to postnatal day 21 (PND 21). Female offspring were weaned on PND 21 and body mass index, waist circumference, lee index, behavior, metabolic parameter, and antioxidant status were analyzed. The result shows that the female offspring of the 500 mg/kg *E. tapos* yoghurt supplemented group shows a decreased level of insulin, fasting blood glucose, cholesterol, triglycerides, LDL, low fat tissue mass with a high level of HDL, and an increased level of antioxidant status in the hypothalamus. The behavioral assessment proves that the female offspring of the 500 mg/kg *E. tapos* yoghurt supplemented group exhibits a high recognition index on novel object/place with low anxiety-like behavior in an open field test. In conclusion, our data signify the beneficial effect of early intervention in obese dams on the transgenerational impact on female offspring's metabolic profile, cognitive performance, and anxiety-like behavior.