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Effects of *Ilex paraguariensis* (yerba mate) on the hypothalamic signalling of insulin and leptin and liver dysfunction in adult rats overfed during lactation.

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Abstract

***Ilex paraguariensis* (yerba mate)** has a beneficial effect in the management of obesity. Here, we studied the effects of **yerba mate** on hypothalamic changes in leptin and insulin signalling, oxidative stress and liver morphology and metabolism in postnatal early overfeeding (EO) Wistar rats. To induce EO, the litter size was reduced to three pups per dam, and litters with 10 pups per dam were used as a control (10 litters each). On postnatal day (PN) 150, EO offspring were subdivided into EO and EO+**mate** groups (10 animals each), which were treated with water or **mate** tea [1 g/kg body weight (BW)/day, by gavage], respectively, for 30 days. The C offspring received water. On PN180, **yerba mate** treatment prevented BW gain and reduced total body fat, visceral fat and food intake in comparison with the EO group. Leptin and insulin signalling in the hypothalamus measured by Western blotting was reduced only in the EO group. **Yerba mate** treatment had a greater impact on insulin signalling normalization. In the liver, **yerba mate** treatment normalized antioxidant enzyme activities and, consequently, decreased lipid peroxidation, determined by malondialdehyde content. In addition, the steatosis level and the liver triglyceride content were also restored. Thus, for the first time, **yerba mate** was demonstrated to increase antioxidant defences and improve liver metabolism in adult rats that were overfed during lactation, possibly through improvements in the hypothalamic action of insulin. These findings may be important for the treatment of obesity-related disorders.

KEYWORDS: *Ilex paraguariensis* ; fat liver; insulin; leptin; programmingPMID: 27609670 DOI: [10.1017/S2040174416000519](https://doi.org/10.1017/S2040174416000519)

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