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POMC and orexin mRNA expressions induced by anticipation of a corn-oil emulsion feeding are maintained at the high levels until oil ingestion

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ABSTRACT

We investigated the gene expression dynamics of several hypothalamic neuropeptides associated with appetite regulation when rats are anticipating being fed a corn-oil emulsion. For 5 days at the same hour each day, rats were fed 5% corn oil emulsified with 0.3% xanthan gum or the vehicle for 20 min. On Day 6, the 5% corn oil emulsion or the vehicle (Vehicle) was presented to the rats, some of which (Oil-intake) were allowed to eat it and some of which (Oil-anticipation) were kept from eating it. Despite waiting a corn-oil, the mRNA levels of proopiomelanocortin (POMC), a β-endorphin precursor, and orexin showed increases, and high levels of mRNAs of POMC and orexin were maintained for 30 min after the corn-oil was placed before the rats, and only gradually decreased through 150 min. However, the mRNA levels of POMC and orexin in the hypothalamus were decreased within 30 min after starting to ingest the corn-oil emulsion. These results suggest that POMC and orexin mRNA expression was induced by the anticipation in rats after learning the palatability of 5% corn oil emulsion, and the induced mRNA expression based on the anticipation was maintained for at least for 30 min as the rats eagerly waited for ingestion.

[PDF (636K)] [References]

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