Response to Comment on: Kim et al. (2010) Hypothalamic Angptl4/Fiaf Is a Novel Regulator of Food Intake and Body Weight. Diabetes;59:2772–2780

Min Seon Kim

I thank Wilkinson et al. (1) for their helpful comments on our article (2). As they summarized well in their review article (3), many adipokines including leptin, resistin, and Angptl4/Fiaf are expressed in the brain, although their biological functions remain to be established. Supporting our study, Wilkinson and colleagues (4,5) previously demonstrated the expression of Agnptl4/Fiaf in the mouse hypothalamus and hypothalamic neuronal cells.

In our study (2), hypothalamic Angpt4/Fiaf protein levels were actively regulated by nutrient availability and physiological appetite regulators such as leptin and insulin. By contrast, Agnptl4/Fiaf mRNA levels were not much changed by 24-h fast in the previous study by Wilkinson et al. (4). Similar results were found in our own study (2) and are presented in supplementary data. These findings suggest a possibility that the altered metabolic condition may influence hypothalamic Agnptl4/Fiaf expression through post-transcriptional mechanisms. Indeed, we have shown that the ratio of full-length and truncated Angptl4/Fiaf was increased by administration of leptin and insulin, indicating that leptin and insulin may inhibit degradation of full-length Angptl4/Fiaf into biologically less effective fragments.

Previous studies by Wilkinson and colleagues (6,7) showed that traumatic and ischemic brain injuries elevated Angpt4/Fiaf mRNA levels in the cortex, hippocampus, thalamus, and pituitary glands . These findings lead us to speculate that hypothalamic Angpt4/Fiaf might be upregulated in brain injury models and result in anorexia and weight loss. Therefore, it will be worthwhile to test a role for hypothalamic Angpt4/Fiaf in disease-related body weight regulation.

ACKNOWLEDGMENTS

No potential conflicts of interest relevant to this article were reported.

REFERENCES

1. Wilkinson M, Brown RE, Imran SA, Ur E. Comment on: Kim et al. (2010) Hypothalamic Angptl4/Fiaf is a novel regulator of food intake and body weight (Letter). Diabetes 2011;60:e1. DOI: 10.2337/db10-1348
2. Kim HK, Youn BS, Shin MS, Namkoong C, Park KH, Baik JH, Kim JB, Park JY, Lee KU, Kim YB, Kim MS. Hypothalamic Angptl4/Fiaf is a novel regulator of food intake and body weight. Diabetes 2010;59:2772–2780
3. Wilkinson M, Brown R, Imran SA, Ur E. Adipokine gene expression in brain and pituitary gland. Neuroendocrinology 2007;86:191–209
4. Wiesner G, Morash BA, Ur E, Wilkinson M. Food restriction regulates adipose-specific cytokines in pituitary gland but not in hypothalamus. J Endocrinol 2004;180:R1–R6
5. Brown R, Imran SA, Wilkinson M. Lipopolysaccharide (LPS) stimulates adipokine and socs3 gene expression in mouse brain and pituitary gland in vivo, and in N-1 hypothalamic neurons in vitro. J Neuroimmunol 2009;209:96–103
6. Brown R, Thompson HJ, Imran SA, Ur E, Wilkinson M. Traumatic brain injury induces adipokine gene expression in rat brain. Neurosci Lett 2008;432:73–78
7. Wiesner G, Brown RE, Robertson GS, Imran SA, Ur E, Wilkinson M. Increased expression of the adipokine genes resistin and fasting-induced adipose factor in hypoxic/ischaemic mouse brain. Neuroreport 2006;17:1195–1198

From the Department of Internal Medicine, College of Medicine, University of Ulsan, Seoul, Songpa-ku, Republic of Korea.
Corresponding author: Min Seon Kim, mskim@amc.seoul.kr.
DOI: 10.2337/db10-1457