is suggested to be involved in the pathogenesis of the disease (22, 25). Therefore, our finding that adiponectin suppressed IL-1β-induced production of the proinflammatory molecules may explain, in part, why adiponectin levels are decreased in women with endometriosis. The inverse association between blood adiponectin levels and endometrial cancer risk (18, 19) might also be relevant to the antiinflammatory effect of adiponectin, given that inflammation is a possible promoting factor of carcinogenesis (43).

In addition to the expression of AdipoR1 and AdipoR2, we detected the expression of adiponectin in endometrial tissue. The expression levels are highest in the early proliferative phase. In light of the antifibrotic properties of adiponectin reported in the liver (44), it can be speculated that the increase in the early proliferative phase might be a protective response for fibrosis-free repair of the endometrium after shedding. However, because the expression levels of adiponectin in the endometrium were far below those in the adipose tissue (data not shown), a physiological implication of locally produced adiponectin in the endometrium is uncertain. Nevertheless, the increase in AdipoR1 and AdipoR2 levels in the implantation period is suggested to enhance adiponectin actions in the endometrium, considering that serum adiponectin levels do not show significant variation during the menstrual cycle (17).

In summary, we detected the increased expression of AdipoR1 and AdipoR2 in the human endometrium in the implantation period. In addition, adiponectin induced AMPK phosphorylation and suppressed IL-1β-induced secretion of IL-6, IL-8, and MCP-1 in cultured endometrial cells, suggesting that adiponectin may play physiological and pathological roles in the endometrium.

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