High ω-3:ω-6 fatty acids ratio increases fatty acid binding protein 4 and extracellular secretory phospholipase A2IIa in human ectopic endometrial cells.


Abstract

BACKGROUND: Endometriosis, a common chronic inflammatory disorder, is defined by the atypical growth of endometrium-like tissue outside of the uterus. Secretory phospholipase A2 group IIa (sPLA2-IIa) and fatty acid binding protein 4 (FABP4) play several important roles in the inflammatory diseases.

OBJECTIVE: Due to reported potential anti-inflammatory effects of ω-3 and ω-6 fatty acids, the purpose of the present study was to investigate the effects of ω-3 and ω-6 polyunsaturated fatty acids (PUFAs) on fatty acid binding protein 4 and extracellular secretory phospholipase A2IIa in cultured endometrial cells.

MATERIALS AND METHODS: Ectopic and eutopic endometrial tissues obtained from 15 women were snap frozen. After thawing and tissue digestion, primary mixed stromal and endometrial epithelial cell culture was performed for 8 days in culture mediums supplemented with normal and high ratios of ω-3 and ω-6 PUFA. sPLA2-IIa in the culture medium and FABP4 level was determined using enzyme immuno assay (EIA) technique.

RESULTS: Within ectopic endometrial cells group, the level of cellular FABP4 and extracellular sPLA2-IIa were remarkably increased under high ω-3 PUFA exposure compared with control condition (p=0.014 and p=0.04 respectively).

CONCLUSION: ω-3 PUFAs may increase the level of cellular FABP4 and extracellular sPLA2-IIa in ectopic endometrial cells, since sPLAIIa and FABP4 may affect endometriosis via several mechanisms, more relevant studies are encouraged to know the potential effect of increased cellular FABP4 and extracellular sPLA2-IIa on endometriosis.