

Effect of polyunsaturated fatty acids on secretory phospholipase A2 type IIa in ectopic endometrial cells.

[Khanaki K](#)¹, [Motavalizadeh Ardekani A](#)², [Ghassemzadeh A](#)³, [Shahnazi V](#)³, [Sadeghi MR](#)², [Darabi M](#)⁴, [Mehdizadeh A](#)⁴, [Saremi A](#)⁵, [Soleimani-Rad J](#)³, [Imani AR](#)⁶, [Nouri M](#)³, [Rahimipour A](#)⁷.

Abstract

BACKGROUND:

Endometriosis is a common chronic inflammation which leads to infertility and chronic pelvic pain in affected women. Secretory phospholipase A2 type IIa (sPLA2IIa) is an acute phase reactant that is markedly increased in inflammatory disorders.

OBJECTIVE:

To assess the effects of ω -3 and ω -6 polyunsaturated fatty acids (PUFAs) administration in endometrial cells culture on sPLA2IIa level and cell survival comparing homolog ectopic versus eutopic endometrial cells from endometriosis patients.

MATERIALS AND METHODS:

In this experimental study, ectopic and eutopic endometrial tissue samples obtained from 15 endometriosis patients were immediately frozen. After thawing and tissue digestion, mixed stromal and endometrial gland cells were cultured for 8 days in three different culture media; balanced ω -3/ ω -6, high ω -3 and high ω -6 PUFAs ratio. Cell survival was measured using 2, 3-bis (2-methoxy-4-nitro-5-sulfophenyl)-5-(phenylamino) carbonyl-2H- tetrazolium hydroxide (XTT) method and sPLA2IIa level assessed with ELISA technique.

RESULTS:

The sPLA2IIa level was significantly higher in the ectopic endometrial cell culture compared to the eutopic group for each of the three matched treatments (balanced, high ω -3 and high ω -6). Also the sPLA2IIa level in the ectopic endometrial cell group was remarkably increased by each of the three PUFAs treatments compared to control condition ($p < 0.05$, $p < 0.01$, $p < 0.05$ respectively). Cell survival in the eutopic group was significantly decreased by high ω -6 culturing compared to control medium ($p < 0.05$).

CONCLUSION:

The increase in sPLA2IIa level in ectopic endometrial cells by fatty acid treatments (especially high ω -3), strengthens the hypothesis that PUFAs stimulate secretion of cytokines leading to increased sPLA2IIa level.