

The anti-inflammatory impact of omega-3 polyunsaturated Fattyacids during the establishment of endometriosis-like lesions.

[Attaman JA](#)¹, [Stanic AK](#), [Kim M](#), [Lynch MP](#), [Rueda BR](#), [Styer AK](#).

Abstract

PROBLEM:

The anti-inflammatory impact of three polyunsaturated fatty acids (3-PUFA) in endometriosis is incompletely understood. The effect of 3-PUFA on endometriosis-like lesions is evaluated as a potential anti-inflammatory treatment target.

METHOD OF STUDY:

Wild Type (WT) and transgenic Fat-1 mice (high levels of endogenous 3-PUFA) were utilized in a uterine tissue transplant endometriosis model. Experimental donor×host pairs included: WT×WT (WW), WT×Fat-1 (WF), and Fat-1×Fat-1 (FF). Cytokine content (IL-1 β , IL-2, IL-4, IL-6, IL-10, IL-12, IL-17A, IFN- γ , TNF- γ , MCP-1 and RANTES) and immunocellular composition in lesions was determined.

RESULTS:

Intralesion IL-6 in WF hosts was 99-fold lower than WW hosts (P=0.03). Compared to WW host lesions, Cox-2 levels were decreased in WF [1.5-fold (P=0.02)] and FF [1.2-fold (P=0.01)] host lesions, respectively, and intralesion VEGF expression was increased [1.8-fold; P=0.02 (WF) and 1.5-fold; P=0.01 (FF)]. Lesions in FF hosts demonstrated reduced phosphohistone 3 expression (70%; P=0.03) compared to WW control hosts.

CONCLUSIONS:

Systemic host 3-PUFA levels influence immune, angiogenic, and proliferative factors implicated in the early establishment of endometriosis.