

## Serum Polyunsaturated Fatty Acids and Endometriosis.

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### Abstract

Polyunsaturated fatty acids (PUFAs) are fatty acids containing 2 or more double bonds, and they are classified by the location of the last double bond. Omega 3 (n-3) and omega 6 (n-6) PUFAs are obtained through food sources including fatty fish and seed/vegetable oils, respectively, and they are important to a number of physiologic processes including inflammation. Previous work demonstrates suppressive effects of n-3 PUFAs on endometriotic lesions in animal models and decreased risk of endometriosis among women with high n-3 PUFA intake. Thus, we sought to determine the relationship between circulating levels of PUFAs and endometriosis in women. To do this, we performed a cross-sectional study of serum PUFAs and clinical data from 205 women undergoing in vitro fertilization (IVF). Serum PUFAs were measured using liquid chromatography coupled to tandem mass spectroscopy and included n-3 PUFAs such as  $\alpha$ -linolenic acid, eicosapentaenoic acid (EPA), and docosahexaenoic acid and n-6 PUFAs such as linoleic acid and arachidonic acid. Multivariable logistic regression was used to determine relationships between specific and total serum PUFAs and patient history of endometriosis. Women with high serum EPA levels were 82% less likely to have endometriosis compared to women with low EPA levels (odds ratio = 0.18, 95% confidence interval 0.04-0.78).