

## Endometriosis and Environmental Endocrine Disruptors

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Endometriosis is classically defined as the growth of endometrial glands and stroma at extra-uterine sites. Although it is a common gynecological problem accompanied by chronic pelvic pain, infertility, and adhesion formation, the etiology of this disease is unknown. Endometriosis pathogenesis may involve endocrine and immune dysfunction since uterine endometrial growth is regulated by sex hormones in concert with bioactive mediators produced by uterine immune and endocrine cells. Thus, exposure to environmental toxicants disrupting endocrine and immune responses potentially affect the development and progression of endometriosis.

In this study, we tried to identify the possible association between dioxin like compounds (such as TCDD, PCDDs, PCDFs, and PCBs) and the occurrence and severity of endometriosis using CALUX bioassay method. We analyzed the serum level of dioxin like compounds in the endometriosis patients and control patients with similar symptoms. Among them, adipose tissues of 10 cases were analyzed by high resolution GC/MS for validation of CALUX bioassay. The CALUX TEQs significantly correlated with the total TEQs determined by GC/MS ( $r^2 = 0.96$ ). So we demonstrated that CALUX bioassay is a rapid, sensitive, and

quantitative assay for biomonitoring of dioxin like compounds from small volume of blood. And this study showed statistically significant association between exposure to dioxin like compounds and the occurrence of endometriosis ( $p < 0.003$ ). The mean TEQ of control was 0.146 ug TEQ/L and the mean TEQ of endometriosis was 0.319 ug TEQ/L. After adjusting confounding factor, we found that the higher stage of the endometriosis, the higher level of CALUX TEQ. The TEQs of endometriosis I, II, III, and IV was 0.214 ug TEQ/L, 0.284 ug TEQ/L, 0.353 ug TEQ/L and 0.435 ug TEQ/L, respectively.