

Conference Series LLC Joint International Event on
5th European Immunology & Innate Immunity
July 21-23, 2016 Berlin, Germany

Effects of ellagic acid on vaginal innate immunity

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Ellagic acid is a phenolic phytochemical found in fruits such as pomegranates and strawberries. This study aimed to investigate the *in vitro* effects of ellagic acid on vaginal innate immunity. Vaginal epithelial cell culture was performed in the presence or absence of ellagic acid. Expression of human beta defensin 2 (hBD2), secretory leukocyte protease inhibitor (SLPI) was determined at both transcriptional and translational levels. Expression of various cytokines and chemokines including IL-2, IL-4, IL-6, IL-8, IL-10, CCL-2, CCL-5, TNF- α , IL-1 β and IFN- γ was investigated using Luminex assay. Cytotoxicity of ellagic was determined using MTT assay. No cytotoxicity of ellagic acid was observed on vaginal epithelial cells. The expression of hBD2 mRNA was significantly increased at both transcriptional and translational levels in response to ellagic acid ($p < 0.05$). SLPI mRNA expression was significantly increased in the presence of ellagic acid. The expression of IL-2 was induced in response to ellagic acid in a dose-dependent manner. In contrast, no changes in the expression of other cytokines/chemokines were observed. We conclude that vaginal epithelial cells can recognize a plant-derived compound. Innate immune factors produced by vaginal epithelial cells are differentially expressed in response to ellagic acid. Thus, plant-derived compounds such as ellagic acid may be useful to be developed as immunomodulatory agents to improve vaginal health.