Hyeon-Ju Lee et al., Biol Syst Open Access 2017, 6:1(Suppl)
DOI: 10.4172/2329-6577-C1-009

Mycotoxin zearalenone decreases nitric oxide production via decreasing an endothelial nitric oxide synthase expression

Hyeon-Ju Lee, Jung-Hyun Park and **Inho Jo**
Ewha Womans University, South Korea

Zearalenone (ZEN), a non-steroidal estrogenic mycotoxin produced from Fusarium species, is reported to induce damage of a variety of cells such as primary Leydig cells, human bronchial epithelial cells, and human HepG2 hepatocytes. However, to date such study has never been conducted in endothelial cells (EC). In this study, using bovine aortic EC (BAEC), we examined whether and how ZEN affects nitric oxide (NO) production in EC, which is commonly used as an index of EC function. ZEN significantly decreased NO production which was accompanied by a dose- and time-dependent decreases in endothelial NO synthase (eNOS) protein expression. It also decreased eNOS mRNA expression in a dose- and time-dependent manner. Treatment with ICI 182,780, a specific estrogen receptor (ER) antagonist, did not reverse ZEN-induced decrease in eNOS protein and mRNA expression, suggesting no evidence of involvement of ER. Treatment with MG132, a specific proteasome inhibitor, and mithramycin A, a specific Sp1 inhibitor, however, clearly reversed the observed inhibitory effects of ZEN on eNOS protein and mRNA expression. However, the eNOS gene promoter activity analysis revealed that MG132 did not reverse the decreased eNOS gene promoter activity by ZEN, suggesting a possible role for mRNA stability. Altogether, ZEN decreases NO production at least by decreasing eNOS expression at multiple levels including eNOS mRNA transcription/stability and protein degradation, indicating that this mycotoxin may profoundly alter vessel function.

Biography

Hyeon-Ju Lee has done her graduation from Dankook University. She is currently a PhD candidate in the Department of Molecular Medicine, Ewha Womans University Medical School. She has published six papers in reputed international journals.

eihj0323@hanmail.net

Notes: