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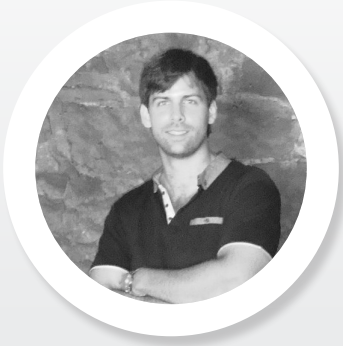

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Ivestigation of individual and combined effects of the three mycotoxins FB1, DON, ZEA on the expression of Hsp70 proteins

The worldwide contamination of foods and feeds with mycotoxins is a significant problem. Different apoptotic and pathological changes attributable to the presence of mycotoxins trigger cytoprotective molecular processes associated with the increased production of heat shock proteins (Hsp's). Their altered expression can be an early marker of cytotoxic effects confirmed by some former author in which among others on the basis of the Hsp expression depending on the type of mycotoxin different oxidative levels can be associated with. In our former establishing in vivo experiment rats were exposed to diet containing FB1 in a dose of 50 mg/kg for 5 days. Western blot analysis of the lungs and kidney demonstrated a substantial (1.4-fold and 1.8-fold, respectively) increase in Hsp70 expression referring to changes in the intracellular mechanisms. In the following to test the acute effects of combined, naturally co-occurring fusariotoxins, a 5-day rat study was performed. Mycotoxin treatment was devised by intraperitoneal injection: FB1 (F): 9 µg/animal/day (approx. 30 µg/kg bw/day), DON (D): 16.5 µg/animal/day (approx. 55 µg/kg bw/day) and ZEN (Z): 12.75 µg/animal/day (approx. 42.5 µg/kg bw/day). From the examined organs the lungs and liver didn't show any increase in the expression of Hsp70 rather it seems that the single and combined treatments lowered the production of Hsp's. Regarding the lungs alterations were significant in the FB1, DON, ZEA, FB1+DON, FB1+ZEA and DON+ZEA groups compared to the control while as for the kidneys a mild but not significant elevation was detected. It can be concluded that the decrease of Hsp's may be due to the presence of different inhibiting agents modulating the actual cytoprotective mechanisms. Changes in the kidneys are attributable to the differing sensitivity and molecular processes to the exposure of mycotoxins. Our present results need further examinations for getting a brighter picture about the mode of actions.

Biography

Dániel József Kócsó is a PhD student at Pécs University, Hungary. Since April 2015 has been a member of MTA-KE mycotoxins in the food chain research team and he works as assistant research fellow.

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