

T-P5 PFOA-INDUKOVANI POREMEĆAJI HEMATOLOŠKE HOMEOSTAZE ZAVISNI OD DOZE I POLA KOD WISTAR PACOVA

Đ. Marić, J. Živanović, K. Baralić, E. Antonijević Miljaković, M. Ćurčić, D. Đukić-Čosić, Z. Bulat, B. Antonijević, A. Buha Đorđević

Univerzitet u Beogradu – Farmaceutski fakultet, Beograd, Srbija

Per- i polifluoroalkil supstance, uključujući perfluorooktansku kiselinu (PFOA), predstavljaju perzistentne zagađivače životne sredine od globalnog značaja. Postoje naznake da izloženost PFOA može doprineti poremećajima hematološke homeostaze, čak i pri niskim nivoima izloženosti. Cilj ovog rada bio je da se ispita uticaj PFOA na hematološke parametre kod mužjaka i ženki Wistar pacova nakon izloženosti niskim dozama koje odražavaju realnu izloženost iz životne sredine. Ukupno 48 pacova (24 po polu) nasumično je raspoređeno u tri tretirane i kontrolne grupe. Izbor doza PFOA koje su korišćene u studiji, zasnivao se na prethodno objavljenim literaturnim podacima i obuhvatio je tri nivoa izloženosti. Grupe M1/F1 bile su izložene dozama koje odgovaraju niskom nivou izloženosti u opštoj populaciji, M2/F2 dozama koje odgovaraju višem nivou izloženosti, dok su M3/F3 grupe tretirane najvišim dozama koje ne dovode do pojave štetnog efekta, a pronađene su u literaturi. Nakon 28 dana životinje su humano žrtvovane, krv je prikupljena kardijačnom punkcijom, a hematološki parametri su analizirani pomoću automatskog hematološkog analizatora. Kod mužjaka je uočeno značajno povećanje broja eozinofila u grupama M2 i M3, praćeno smanjenjem broja eritrocita u M2, kao i smanjenjem broja trombocita u obe grupe sa višom dozom (M2 i M3). Nasuprot tome, ženke su pokazale suprotan odgovor, sa povećanim brojem eritrocita u grupama F2 i F3, uz povišen hematokrit u F2. Rezultati u celini ukazuju na izražene polno-specifične razlike u osetljivosti hematološkog sistema na PFOA, pri čemu su promene doslednije pri višim nivoima izloženosti.

Zahvalnica

Ovo istraživanje finansiralo je Ministarstvo nauke, tehnološkog razvoja i inovacija Republike Srbije kroz dva ugovora sa Univerzitetom u Beogradu – Farmaceutskim fakultetom, broj 451-03-33/2026-03/200161 i broj 451-03-34/2026-03/200161.

T-P5 PFOA-INDUCED DOSE- AND SEX-DEPENDENT DISRUPTION OF HEMATOLOGICAL HOMEOSTASIS IN WISTAR RATS

Đ. Marić, J. Živanović, K. Baralić, E. Antonijević Miljaković, M. Ćurčić, D. Đukić-Čosić, Z. Bulat, B. Antonijević, A. Buha Đorđević

University of Belgrade – Faculty of Pharmacy, Belgrade, Serbia

Per- and polyfluoroalkyl substances, including perfluorooctanoic acid (PFOA), are persistent environmental contaminants of global concern. There is evidence suggesting that PFOA exposure may contribute to disturbances in hematological homeostasis, even at low exposure levels. The aim of this study was to investigate the effects of PFOA on hematological parameters in male and female Wistar rats following exposure to low doses reflecting real-life environmental exposure. A total of 48 rats (24 per sex) were randomly assigned to three treatment groups and a control group. PFOA dose selection was based on previously published literature and included three exposure levels. Groups M1/F1 were exposed to doses corresponding to low levels of exposure in the general population, M2/F2 to doses corresponding to higher exposure levels, while M3/F3 were treated with doses based on the highest no-observed-adverse-effect levels reported in the literature. After 28 days, the animals were humanely euthanized, blood was collected via cardiac puncture, and hematological parameters were analyzed using an automated hematology analyzer. In males, a significant increase in eosinophil counts was observed in the M2 and M3 groups, together with a decrease in erythrocyte counts in M2, as well as reduced platelet counts in both higher-dose groups (M2 and M3). In contrast, females showed an opposite response, with increased erythrocyte counts in F2 and F3 groups, along with elevated hematocrit in F2. Overall, the results indicate pronounced sex-specific differences in hematological sensitivity to PFOA, with more consistent alterations observed at higher exposure levels.

Acknowledgement

This research was funded by the Ministry of Science, Technological Development, and Innovation of the Republic of Serbia through two grant agreements with the University of Belgrade – Faculty of Pharmacy (Nos. 451-03-33/2026-03/200161 and 451-03-34/2026-03/200161).