

EXPOSURE TO ENDOCRINE DISRUPTORS. AN IN VIVO APPROACH.

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Background: Humans are widely exposed to endocrine disruptors in variable doses, posing a real-life risk for human health. Glyphosate is the active substance of the widely used herbicide Roundup[®]. Parabens (PBs) and triclosan (TCS) are mainly used as antimicrobial agents and preservatives in personal care products while bisphenol A (BPA) and di (2-ethylhexyl) phthalate (DEHP) are used as plasticizers. Studies indicate that exposure in these substances affects several systems of human organism like endocrine, reproductive, nervous, immune and respiratory system. Although there are a lot of studies examining the toxic effects of these substances, there is a small number of *in vivo* studies related to combined exposure to them as well as their genotoxic effects. **Aim:** In the current study, we aim to assess the genotoxic effects of the aforementioned substances in rabbits after long term exposure to glyphosate (pure and commercial form) and to mixture of the substances (low and high doses) by using the micronucleus assay. **Methods:** Twenty white New Zealand rabbits (10 males – 10 females), three months old, weighing 3 kilograms each were divided into 5 groups (4 rabbits per group). Specifically, in the second and third group, low and high dose of mixture BPA, PBs, TCS, DEHP and glyphosate was administered, while in the fourth and fifth groups, high dose of pure and commercial glyphosate, respectively. Doses were calculated based on the established ADI for each substance; low dose corresponds to 1 x ADI while high dose to 10 x ADI (in all cases much lower than NOAEL). The control group (first group) received a regular diet. Blood samples were collected every 3 months in order to measure the number of bile ducts and the number of micronuclei in the binuclear cells by micronucleus assay in lymphocytes. **Results:** Significant differences were observed between control and exposed groups in a dose response manner. The

Micronuclei frequency, as well as the CBPI index, were increased in the rabbits with higher doses treatment. **Conclusion:** This is the first study that simulates real life risk exposure to endocrine disruptors in rabbit *in vivo* model. Conducting the current project, we aimed to identify the potential health impacts of this combined exposure.