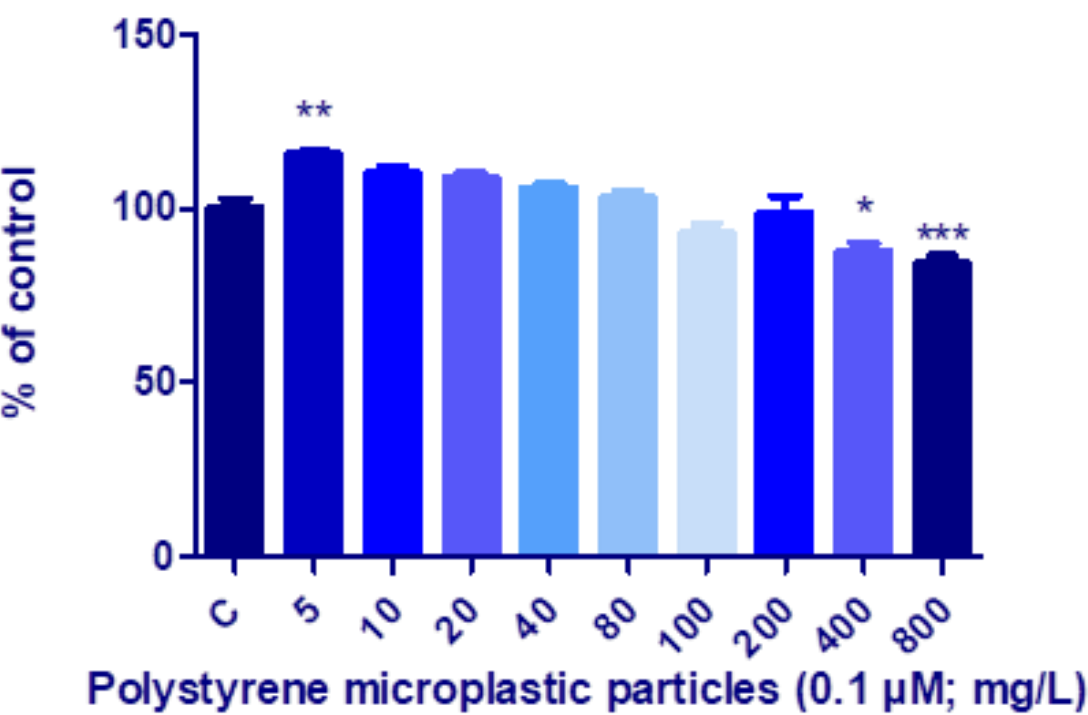


EFFECT OF POLYSTYRENE MICROPLASTICS ON VIABILITY AND TESTOSTERONE PRODUCTION OF TM3 LEYDIG CELLS *IN VITRO*.

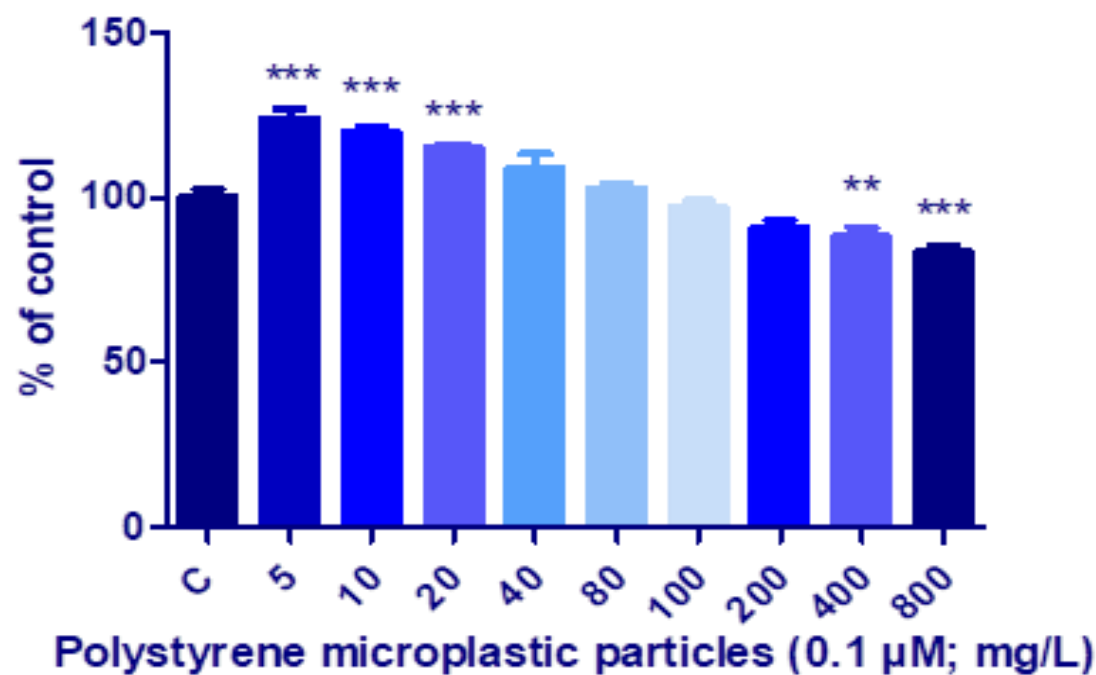
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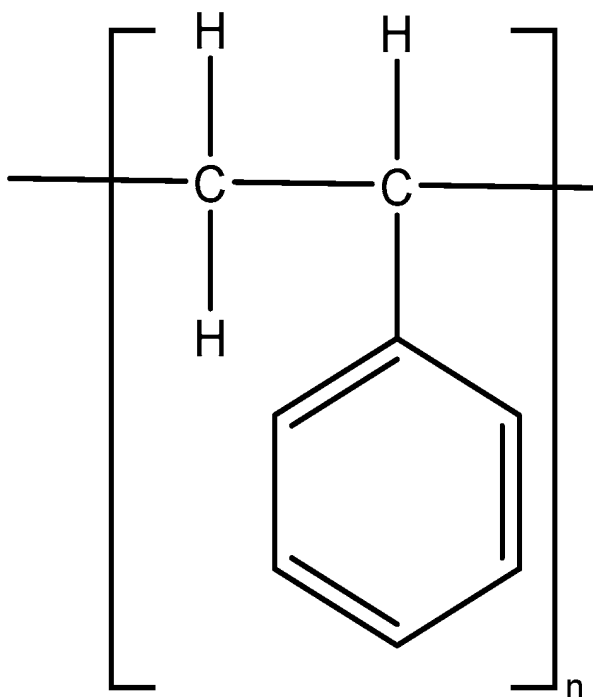
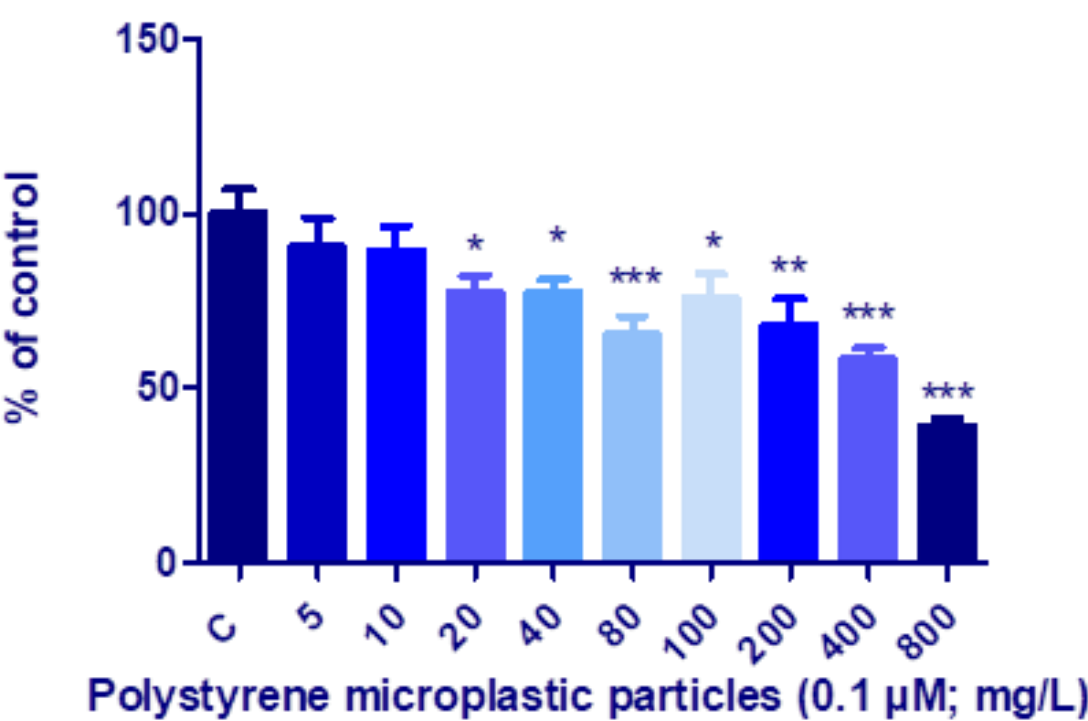
AlamarBlue 24 h



MTT 24 h



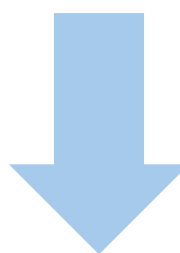
Testosterone 24 h



Microplastics (MPs) are characterized by diameters smaller than 5 mm. The spread of microplastic particles in the human environment is **ubiquitous** and thus can be found in rivers, sediments, sewage, sand beaches, soil, and also **in drinking water**. Additionally, MPs have the ability to **transition** through the food chain from lower to higher nutritional levels, endangering human health in the process. All together, increased concentrations of MPs have been shown to have negative impacts on mammals, including decreased feeding activity, body condition, oxidative damage, inflammation, neurotoxicity, and last but not least, **reproductive toxicity**.

In our study, we used **polystyrene microplastics** as a treatment addition for the **TM3 Leydig cell line** (derived from immature mouse Leydig cells). After cell cultivation, we added distinct concentrations of polystyrene microplastic particles (5; 10; 20; 40; 80; 100; 200; 400; 800 μM; mg/L).

Metabolic activity assay (AlamarBlue) shown significant results in group treated with 400 μM mg/L (*P<0,05), 5 μM mg/L (**P<0,01), and 800 μM mg/L (***P<0,001). The second metabolic activity assay (MTT) showed a significant increase in TM3 cells treated with PS-MP in groups of 5; 10, and 20 μM mg/L (***P<0,001). On the other hand, the group treated with 400 μM mg/L showed a significant decrease in metabolic activity (**P<0,01). The same result was proved by the experimental group treated with 800 μM mg/L (***P<0,001). Production of testosterone after 24 hours of treatment showed a significant decrease and lower levels of produced hormone in groups treated with 20; 40; 100 μM; mg/L (*P<0,05); 200 μM; mg/L (**P<0,01); and 80; 400; 800 μM; mg/L (***P<0,001).



Our results proved reproductive toxicity of PS-MP. Production of testosterone after 24 h treatment was significantly decreased in all experimental groups. The reproductive toxicity of these substances, which are highly widespread in the human environment, creates a complex problem, and therefore more attention should be paid to this issue.



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The research was financially supported by projects 05-GA-SPU-2024, APVV-20-0218, APVV-19-0243, VEGA 1/0207/23, KEGA 023SPU-4/2022.