

## عنوان مقاله:

Does pristine polystyrene nanoparticles exposure at different dose cause behavioral disorders in rats

## محل انتشار:

دوازدهمین همایش تازه های علوم بهداشتی کشور (سال: 1398)

تعداد صفحات اصل مقاله: 1

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## خلاصه مقاله:

**Background and Aim:** The increasing use of plastics has raised concerns about pollution of marine and freshwater by these polymeric materials. Knowledge about their potential effects on environmental and public health, however, is limited. Recent publications have suggested that the degradation of disposed plastics will result in the release of nano-sized plastic particles to the environment. Therefore, it is of utmost importance to gain knowledge about whether and how plastic nanoparticles affect living organisms, including humans. The present study aimed to analyse potential neurobehavioral effects of polystyrene nanoparticles (PS-NPs) after long-term exposure on one representative organism for physiologically resembling humans (rat). **Methods:** Potential effects of PS-NPs were investigated using four test dosages (1, 3, 6, and 10 mg PS-NPs/kg of body weight/day) delivered orally with adult Wistar male rats for five weeks. Neurobehavioral tests were chosen to assess a variety of behavioral domains including spontaneous locomotor activity, spatial working memory, anxiety-related behavior, motor coordination, and passive avoidance memory performance. Particle diameters in test suspensions were determined through dynamic light scattering (DLS) and showed an average hydrodynamic diameter of approximately 38.92 nm. **Results:** No statistically significant behavioral effects were observed in all tests performed ( $p > 0.05$ ). In the elevated plus maze (EPM), PS-NPs-exposed rats showed greater number of entries into open arms compared to controls. Also, PS-NPs had no significant influence on body weight of animals. **Conclusion:** Taking into account the subtle and transient nature of neurobehavioral consequences, however, these results underline the possibility of even pristine plastic nanoparticles to induce behavioral alteration in the rest of the food web, including for marine biota and humans. Indeed, even though studied neurobehavioral effects in our study was not statistically significant, the observed subtle effects may be clinically considerable.

## کلمات کلیدی:

Nanoplastics, Polystyrene, Neurobehavioral effects, Rat, Oral delivery

