HEALTH

Toxic Plastic Particles Can Reach the Brain Within Two Hours of Ingestion, Study Finds!

By Anuja Vartak · 26 April, 2023 · TWC India

Representational image of microplastics (StopTheSpread, Getty Images/Via Canva)

No matter how hard we try to eliminate plastic from our daily lives, it will remain omnipresent for decades, in some form or the other. Now, before you dismiss us as pessimistic, allow us to elaborate.

Ocean waves or radiation from the Sun often break down larger plastic chunks into microplastics (less than 5 mm) or nanoplastics (1-1000 µm). These micro- and nanoplastics (MNPs) are capable of evading our sight and reaching almost every nook and corner of the world. In fact, previous studies have detected them in raindrops, food and even in our bloodstream, heart and veins.

Now, to make matters worse, a groundbreaking study has revealed that these minuscule particles could even penetrate the blood-brain barrier (BBB) — a biological barrier that shields the brain from potentially harmful substances like pathogens and toxins!

The research was led by Lukas Kenner from the University of Vienna and Oldamur Hollóczki from the University of Debrecen, Hungary.

To reach this conclusion, they conducted the study on six mice, three of which were orally administered a single dose of 100 µL of polystyrene (a versatile plastic commonly used in food packaging). Just two hours later, when the mice were euthanised for further testing, researchers found that their brains indeed contained MNPs.

"With the help of computer models, we discovered that a certain surface structure (biomolecular corona) was crucial in enabling plastic particles to pass into the brain," researcher Oldamur Hollóczki explained.

This corona is essentially a layer of proteins and other biomolecules that accumulate on the surface of plastic particles when exposed to biological fluids.

According to previous studies, plastic particles are known to raise the risk of cognitive impairment, neuroinflammation, Alzheimers and Parkinson's. And we are already consuming loads of these toxins, with another research indicating that drinking 1.5 to 2 litres of water daily from plastic bottles equals ingesting around 90,000 plastic particles a year!

Now, these new findings offer valuable insights into the plastic particle transfer mechanism and a framework for devising policies aimed at mitigating their detrimental impacts on human health.

But given the pervasive use of plastics in our day-to-day lives and the growing concern over the impact of microplastics on the environment and our health, there is

an urgent need for more research in this field.

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This study was recently published in the journal *Nanomaterials* and can be accessed here.

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