

Research Suggests There May Be A Plastic Spoon's Worth of Plastic in Your Brain: Analysis Warns of Health Implications

A plastic spoon in your brain: Rising star psychiatry resident examines groundbreaking research showing alarming levels of microplastics in brain tissue.

OTTAWA, ONTARIO, CANADA, March 4, 2025 /EINPresswire.com/ -- A comprehensive analysis published today in [Brain Medicine](https://doi.org/10.61373/bm025c.0020) (<https://doi.org/10.61373/bm025c.0020>) examines alarming new evidence about microplastic accumulation in human brain tissue. The Commentary by Dr. Nicholas Fabiano of the University of Ottawa discusses recent findings from Nihart et al. in *Nature Medicine* (<https://doi.org/10.1038/s41591-024-03453-1>) showing that human brains contain approximately a plastic spoon's worth of microplastics and nanoplastics (MNPs), with levels 3-5 times higher in individuals with documented dementia diagnoses. A separate *Brain Medicine* article, also published today, highlights Dr. Fabiano's life and career in a comprehensive [Genomic Press](https://doi.org/10.61373/bm025k.0017) Interview (<https://doi.org/10.61373/bm025k.0017>).

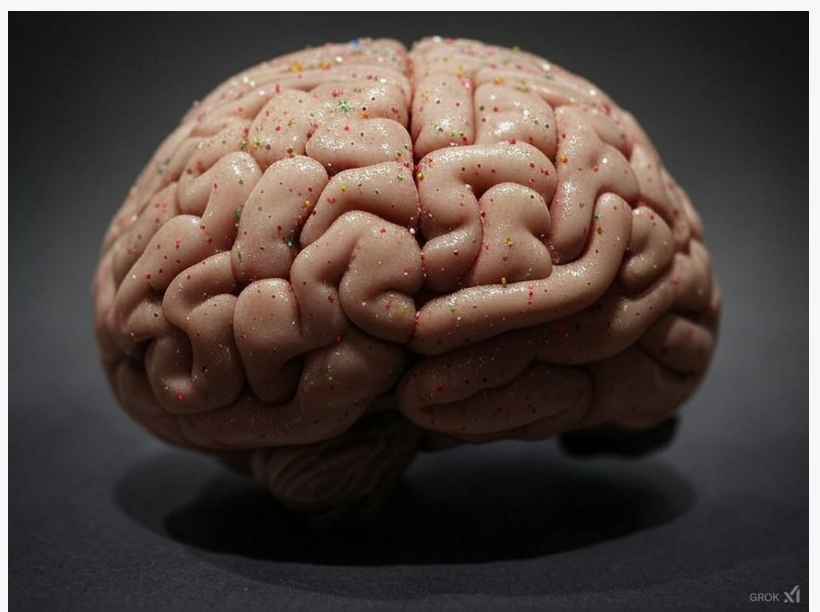
"Human microplastic removal: what does the evidence tell us?"

In their Commentary published today in *Brain Medicine* (DOI: 10.61373/bm025c.0020), Dr. Fabiano and co-authors Dr. Brandon Luu from the University of Toronto and Dr. David Puder, full time psychiatrist and psychotherapist in Winter Park, Florida and host of the *Psychiatry & Psychotherapy Podcast* examine findings about particles smaller than 200 nanometers, predominantly composed of polyethylene. These particles show notable deposition in cerebrovascular walls and immune cells, potentially crossing the blood-brain barrier.



A plastic spoon's worth of plastic is inside your brain: "Research reveals that human brains contain approximately a spoon's worth of microplastics and nanoplastics (MNPs), with levels 3-5 times higher in individuals with documented dementia diagnoses."

"The particles identified in brain tissue measured less than 200 nanometers and were located within white blood cells, suggesting the brain was actively attempting to remove them. The finding of a four-fold higher presence of these particles in dementia patients is particularly concerning. While further research is needed to understand exactly how microplastics influence brain health, these results have already significantly impacted my own lifestyle—prompting me to stop cooking or heating food in plastics, switch to recirculated air while driving in traffic, purchase HEPA filters for my home and office, and reduce my consumption of processed foods", explains Dr. Puder.



Model brain showing microplastic particles scattered across the surface, visualizing the accumulation of plastic particles, equivalent to one plastic spoon, in brain tissue.

The analysis highlights how brain tissues showed 7-30 times higher concentrations of micro- and nanoplastics compared to other organs like the liver or kidney." The dramatic increase in

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The dramatic increase in brain microplastic concentrations over just 8 years, 2016-24, is very alarming. This rise mirrors the exponential increase we're seeing in environmental microplastic levels.”

Nicholas Fabiano, MD

microplastic concentration over just eight years, from 2016 to 2024, is particularly alarming," notes Dr. Fabiano. "This rise mirrors the exponential increase we're seeing in environmental microplastic levels."

The Commentary synthesizes current research to provide comprehensive guidance for reducing exposure to microplastics:

1. Switch to Tap Water: "Switching from Bottled water to tap or filtered water can be an effective way to reduce microplastic exposure" explains Dr. Luu. Bottled water can expose people to a significant amount of microplastic

particles annually.

2. Change Food Storage and Heating: "Heating food in plastic containers—especially in the microwave—can release substantial amounts of microplastics and nanoplastics" explains Dr. Luu. "Even long-term storage at room temperature may lead to significant plastic shedding."

3. Avoid Plastic Tea Bags: A single plastic tea bag can release millions of micro and nano-sized particles per brewing session.

4. Reduce Processed Foods: Highly processed foods, like chicken nuggets, contained 30 times more microplastics per gram than unprocessed alternatives. The researchers suggest focusing on fresh, minimally packaged foods.

5. Consider Air Quality: "HEPA filters can remove up to 99.97% of airborne particles as small as 0.3 μ m, including many microplastics," notes Dr. Fabiano. This could significantly reduce inhalation exposure, estimated at up to 62,000 particles annually in adult males.

Different populations may face varying risks:

- Elderly Population: The correlation with dementia raises questions about whether microplastics contribute to cognitive decline or if cognitive decline affects the brain's ability to clear these particles.
- Children: The developing brain may be especially susceptible. We urgently need to understand the impact on children, whose blood-brain barriers are still developing.
- People with Neurological Conditions: Individuals with existing conditions may face additional risks due to compromised blood-brain barriers.

"We need more research to wrap our heads around microplastics—rather than wrapping our brains in them—since this could be one of the biggest environmental storms most people never saw coming," warns Dr. Puder. "However, there's hope in the fact that these particles don't seem to accumulate with age, suggesting our bodies may have mechanisms to clear them if we can reduce exposure."

The research team also notes that early intervention studies in animal models suggest it takes approximately 70 days to clear 75% of accumulated brain microplastics when exposure is reduced, indicating that lifestyle changes could potentially make a meaningful difference.

Profile Interview: "Nicholas Fabiano: Removing the divide between physical and mental health"

In a separate article also published today in *Brain Medicine* (DOI: 10.61373/bm025k.0017), Dr.



Nicholas Fabiano, MD, University of Ottawa, Canada.

Fabiano is featured in an in-depth Genomic Press Interview exploring his commitment to bridging the historical divide between physical and mental health.

Emerging researcher Nicholas Fabiano, a psychiatry resident at the University of Ottawa, discovered firsthand how physical trauma impacts mental wellbeing after a broken bone from arm wrestling that required surgical repair and led to nerve damage. This personal experience sparked his research into lifestyle interventions for mental health, with a focus on the therapeutic potential of exercise for depression.

"I have always held the belief that the arbitrary line we have drawn between mental and physical health is one of the biggest mistakes in medicine," Dr. Fabiano states in the interview. His recent work includes meta-analyses on exercise and suicide risk alongside practical frameworks helping clinicians "prescribe" exercise for patients with depression.

Through active science communication and interdisciplinary collaborations spanning nephrology, cardiology, and ophthalmology, Dr. Fabiano advocates for an integrated approach recognizing the profound interconnection between physical and mental wellness. In the interview, he reflects on his path in medicine, challenges the artificial separation of mind and body, and shares evidence-based guidance for implementing lifestyle interventions in psychiatric care.

About the Publications

Both articles are published on 4 March 2025, in Brain Medicine (Genomic Press, New York):

1. "Human microplastic removal: what does the evidence tell us?" Open Access - DOI:

<https://doi.org/10.61373/bm025c.0020>

2. "Nicholas Fabiano: Removing the divide between physical and mental health." Open Access -

DOI: <https://doi.org/10.61373/bm025k.0017>

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Nicholas Fabiano

University of Ottawa

nfabi026@uottawa.ca

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