

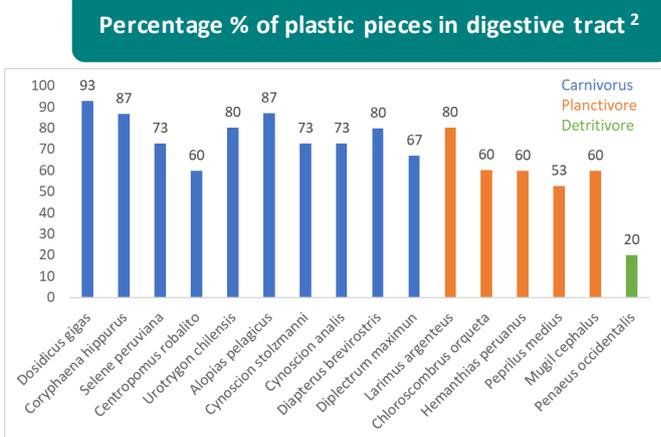
Microplastics: are they dangerous?

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In the recent years, the **detrimental effect of microplastics** on human health is addressed more and more frequently. Research on microplastics, which can reach the human body by **food, water or even breathing**, has not yet revealed the true nature of this negative impact, which can vary from **allergic response to cell damage and cell death** ¹.

Detection of microplastics **inside marine organisms** has been long known and these have been quantified in **Tropical Eastern Species** ².

BUT...



Evangelos Danopoulos
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“[Research on microplastics]...is exploding and for good reason. We are exposed to these particles every day: **we’re eating them, we’re inhaling them.** And **we don’t really know how they react with our bodies once they are in**” ¹

Even though they have been detected in marine species, the specifics of human consumption are still yet to be determined. In particular, given the still unknown impact of microplastics in humans, **measurement of the consumption of microplastics** may vary according to the route of intake.

Human Consumption of Microplastics ³

Objective

- To evaluate the **number of microplastic particles (MPs)** in commonly consumed foods.
- To explore the potential for **inhalation of MPs** and how microplastic consumption might be affected by **the source of drinking water**.

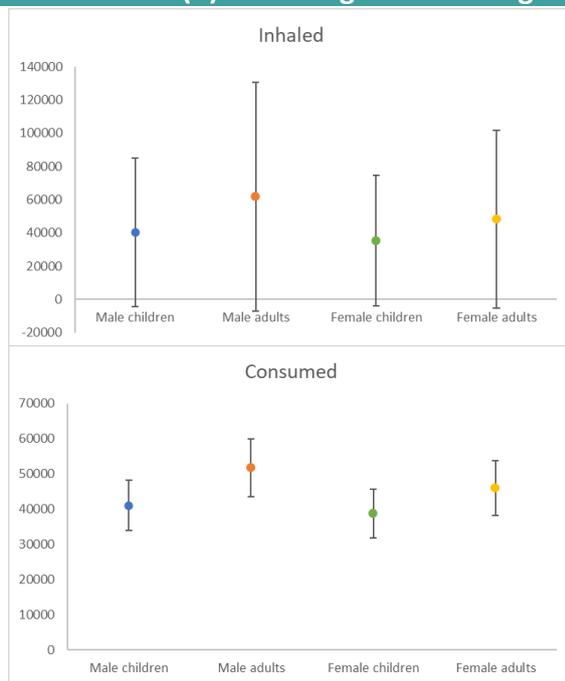
Methods

- Literature review to identify papers reporting on **concentrations of MPs**.
- Average consumption was **separated by sex and age**.
- 100% **tap water**, 100% **bottled water** and composite estimate of **average current tap and bottled water** were estimated for calculation of microplastics via drinking water.

Results

- ✓ **Seafood, sugar, honey, bottled water, tap water and air** are all sources of microplastics.
- ✓ MP consumption patterns via different routes were **similar according to sex and age**.
- ✓ **Fibres and fragments** were the most commonly consumed particles.
- ✓ **Bottled water** contained substantially more microplastics than tap water.

Microplastic particles (MPs) inhaled (a) or consumed (b) according to sex and age



Our thoughts:

- Inhalation** is the main source of microplastics. At the same time, **bottled water** contains vast amounts of microplastic particles compared to tap water.
- Although still scarce, the evidence in support of the detrimental effects of microplastics urges the need for further discussion, focusing on **regulations limiting the use of plastics**.
- The benefit from the above reduction would be evident both in terms of **human health** and in terms of the **environment**, as the implications of the use of plastic use has been evidenced both in human and in various marine species.

References

- <https://www.theguardian.com/environment/2021/dec/08/microplastics-damage-human-cells-study-plastic>
- Alfaro-Núñez, A., Astorga, D., Cáceres-Farías, L. et al. Microplastic pollution in seawater and marine organisms across the Tropical Eastern Pacific and Galápagos. Sci Rep 11, 6424 (2021). <https://doi.org/10.1038/s41598-021-85939-3>
- Cox KD, Covernton GA, Davies HL, Dower JF, Juanes F, Dudas SE. Human Consumption of Microplastics. Environ Sci Technol. 2019 Jun 18;53(12):7068-7074. doi: 10.1021/acs.est.9b01517. Epub 2019 Jun 5. Erratum in: Environ Sci Technol. 2020 Sep 1;54(17):10974. PMID: 31184127