Uptake and Accumulation of Polystyrene Nanoplastics (PS-NPs) by Australian Seabass

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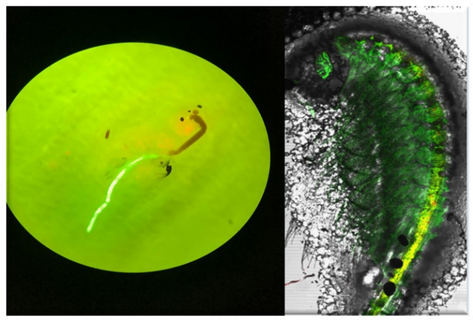
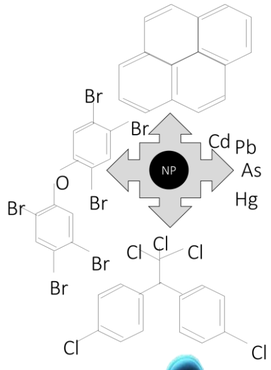
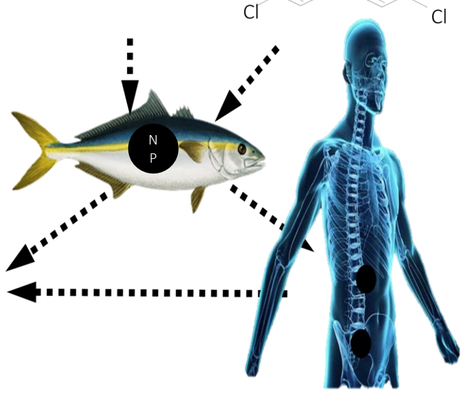
POTENTIAL RISK OF NANOPLASTICS





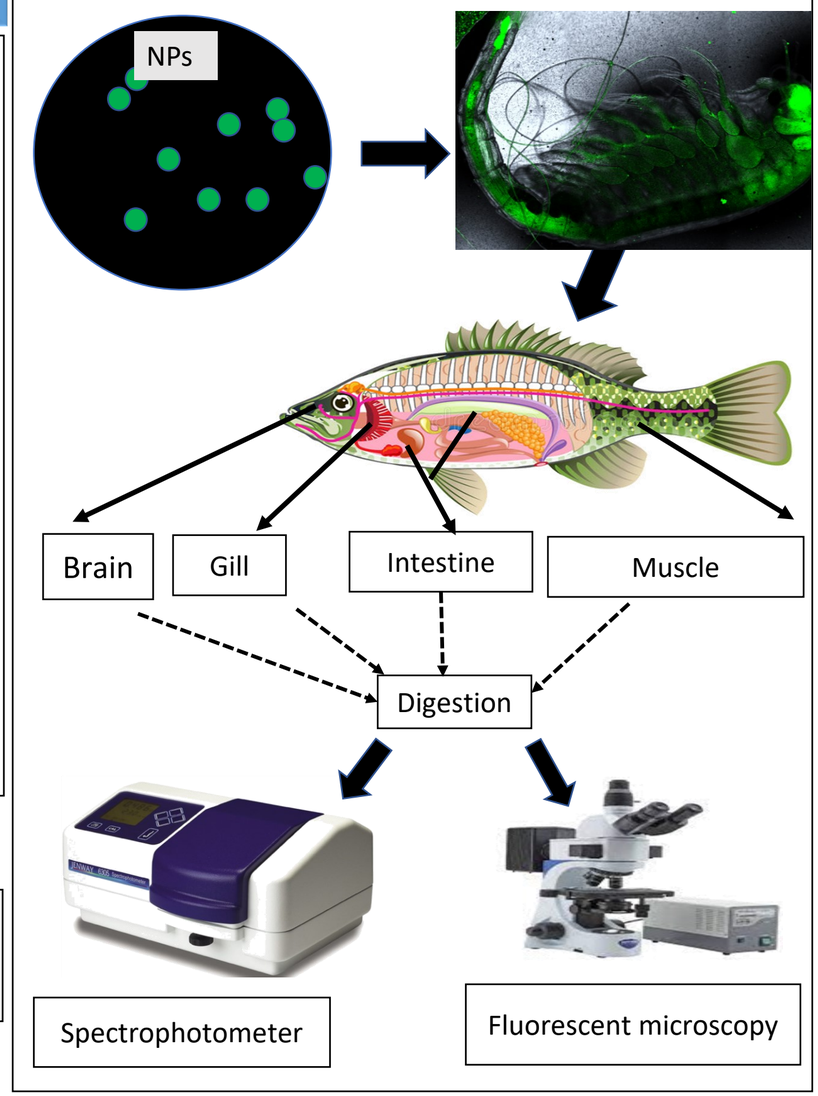
- Effect on reproduction
- Oxidative stress
- Changes in energy and lipid metabolism
- Neurotoxic effect



RESEARCH AIMS

To understand the uptake and accumulation of different sized NPs by fish through two tier trophic transfer

METHODS AND MATERIALS



RESULTS

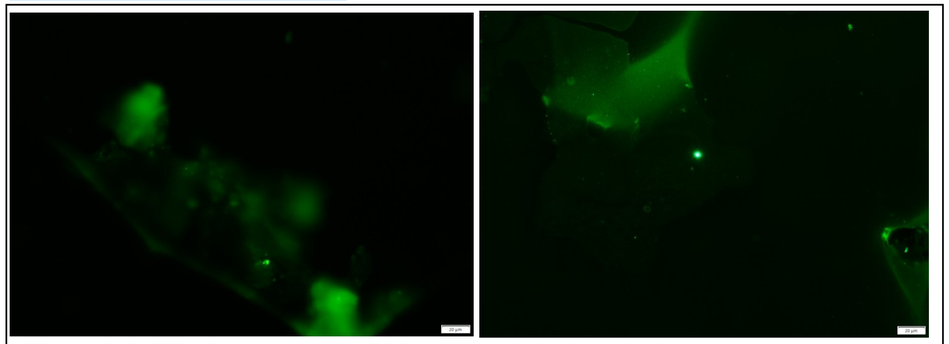


Fig. 1 PS-NPs ingestion by fish through brine shrimp

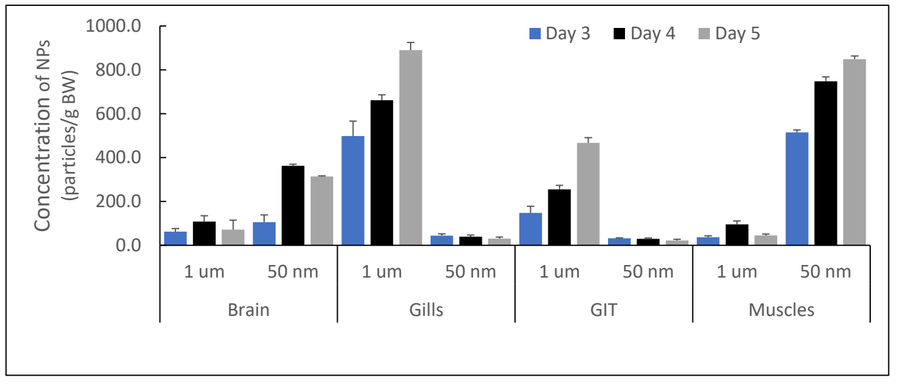


Fig. 2 NPs Accumulation in different organ of Fish : 1µm vs 50 nm

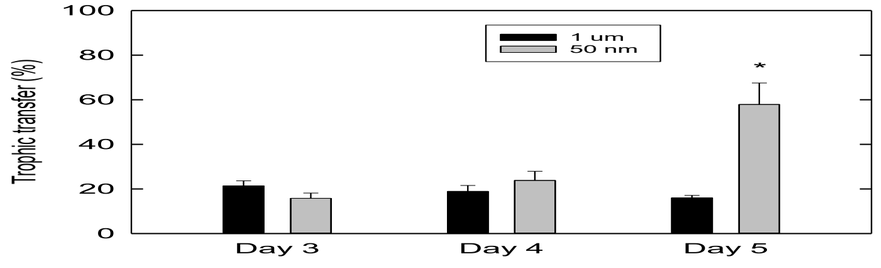


Fig. 3 Trophic transfer PS-NPs: 1µm vs 50 nm

CONCLUSIONS

- Smaller size PS-NPs (100 nm and 50 nm) transferred to all organs (brain, gill, intestine and muscle) of fish body more in number than 1 µm size particles.
- Trophic transfer of 50 nm PS-NPs was higher than 1 µm after 72 hour of NPs ingestion
- Thus, the result poses threat to transfer of NPs from environment to human through trophic transfer

REFERENCES

Carbery, M., O'Connor, W., and Palanisami, T. (2018). Trophic transfer of microplastics and mixed contaminants in the marine food web and implications for human health. Environment international.

Lu Y, Zhang Y, Deng Y, Jiang W, Zhao Y, Geng J, Ding L, Ren H (2016) Uptake and accumulation of polystyrene microplastics in zebrafish (Danio rerio) and toxic effects in liver. Environ Sci Technol 50(7):4054–4060.