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Impact of MPs on trypsin activity in simulated intestinal fluid

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Mircoplastics (MPs) are an abundant contaminant in the environment with ingestion being the most common way of exposure for humans. Binding of protein to MPs is proposed to be multilayered with the formation of a soft and hard corona¹. It has been proven that MPs interact with enzymes present in the digestive system and impact their activity². The aim of this study is to investigate the impact of MPs on the activity of trypsin in simulated intestinal fluid (SIF). For this purpose, two sizes of polypropylene (large – 180-500 μm, small – 63-180 μm) and one size of polyethylene terephthalate (<80 μm) have been studied. Activity in bulk and soft corona was determined in SIF at 405 nm with N α -Benzoyl-DL-arginine 4-nitroanilide hydrochloride after different times of incubation. Activity in hard corona was determined after 1 h of incubation with the MPs. Although specific activity in the control decreases through time, there is a tendency for all MPs to preserve activity in bulk and soft corona trypsin after 4 h of incubation. Trypsin remains active in the hard corona, with the activity being an order of magnitude lower than in the control, possibly due to significant changes in structure.

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References

1. Monopoli MP, Åberg C, Salvati A, Dawson, KA. Biomolecular coronas provide the biological identity of nanosized materials. *Nat Nanotechnol* 2012;7:779-86.
2. de Guzman MK, et al. Small polystyrene microplastics interfere with the breakdown of milk proteins during static in vitro simulated human gastric digestion. *Environ Pollut* 2023;335:122282.

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