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Microplastics in Sri Lankan sea salts

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Plastics are man-made polymeric materials made from crude oils. Marine plastic pollution has been recognized as a global concern. Sri Lanka (SL) has been identified as the fifth largest marine plastic polluter in world in 2017 with plastic waste generation of 1.59 MMT/year. Most of plastics ends in oceans as marine litter and will break into pieces. When the size is less than 5 mm they are termed as microplastics (MPs). Plastic fragmentation occurs due to sunlight, wind-wave action, and microorganisms (bacteria and fungi) and fragments will compile on ocean floor over years. Microplastics are serious pollutants, which can remain in environment for a longer time leading to accumulation. They could enter into human body through food chains and cause many health risks including immune and respiratory system damage, cell death, cancers and gene mutations. In traditional salt manufacturing process, salt is produced by solar evaporation of sea water directly taken from sea. Therefore, MPs can easily enter into humans. This study analysed five commercial salt brands in SL and salt from Hambantota saltern in three different weather seasons (first inter-monsoon, south-west, and north-east monsoon) for MPs. First, MPs were separated by filtering with a mesh system. MPs were identified and quantified using a dissecting microscope and hot needle test was conducted to confirm plastic. Statistically analysed results indicated the presence of MPs in all samples. Microplastics in commercial salts vary from 10–46 MP/kg whereas salts from Hambantota saltern reported relatively high MPs values varying from 26–108 MP/kg. Most abundant type of MPs was fragments (46%) followed by fibres (32%), nurdles (13%), and microfilms (9%). According to results, there was no variation of MPs between commercial salt brands. There was a seasonal variation of MPs between first inter monsoon season and south-west and north-east monsoon season samples. Salt from south-west monsoon season reported the highest MPs content. Results are alarming as MPs can impart serious risks to human health. Presence of MPs in edible salt has been identified as a global concern; however, in SL as research conducted on MPs is limited, SL has not identified it as a growing concern yet.

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