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Preliminary Study on PCC-Chitosan's Ability to Enhance Microplastic Excretion in Human Stools from Healthy Volunteers

Recent studies have indicated that microplastics (MPs) may accumulate in the human body, potentially posing health risks. This preliminary study aimed to investigate the effect of a food supplement (FS: 0.8 g of chitosan derived from *Procambarus clarkii*, PCC, PLASTIKDREN®) on the fecal excretion of MPs (20–500 µm size) following ingestion of a standardized meal (SM). Ten healthy volunteers (non-smokers, non-drinkers, non-drug users) participated in a two-phase, crossover design conducted one week apart. In both phases, participants consumed an SM after overnight fasting, and fecal samples were collected the following morning (7–10 am). Phase 1 served as baseline (no PCC), while in Phase 2, PCC was administered immediately before the SM. Sixteen types of MPs were analyzed. A modest increase (5%) in fecal mass was observed after PCC intake. MP counts were 356 in the SM, 656 ±110 in Phase 1 feces, and 965 ±165 in Phase 2 feces. The excretion of nine MPs—PA, PAN, PAM, PE, PES, PET, PP, PS, and RA—was enhanced by PCC. These preliminary findings suggest that PCC promotes the fecal elimination of MPs. Further controlled studies are needed to validate these results and assess their potential relevance for dietary interventions.

Biography

He holds a Ph.D. in Chemical Sciences from University of Pavia (Italy) and is almost finishing his second doctorate at the University of Oviedo (Spain), specializing in environmental chemistry and the impact of micro-nanoplastics on human and environmental health. Currently, he collaborates in research at Loyola University's School of Medicine in Chicago alongside Dr. Umberto Cornelli. With over twelve years of experience, he has published more than 16 indexed articles in the last 18 months, and lectured in postgraduate programs internationally. His leadership extends to supervising master's theses, fostering cooperation projects, and guiding scientific and peer-review committees.