Toxic Mechanisms of Per- and Polyfluoroalkyl Substances in Fungal Cells: Environmental and Human Health Impact

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This study investigates how per- and polyfluoroalkyl compounds—PFOA, PFOS, and PFBA—affect the growth and genetic stability of Saccharomyces cerevisiae, a eukaryotic organism with a genome that has similarities to humans. Using growth assays, we observed that higher concentrations of both PFOA and PFOS significantly reduced yeast viability. Additionally, the growth assay/cell viability test shows that PFBA has less of an effect on these cells than PFOA. In addition, mitochondrial staining revealed a strong negative effect of these PFAS chemicals on mitochondrial morphology, as each PFAS tested significantly reduced the amount of mitochondrial processes present. These findings contribute to understanding the biological impact of PFAS exposure, which is particularly relevant given Missouri's lack of regulations on PFAS levels in drinking water. This research highlights the need for additional studies on PFAS toxicity and its implications for human health.

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