

Nanomaterials in Drugs and Food Supplements



Because nanoparticles are a fairly new and important additive in food supplements and some drugs, existing methods for determining expiration dates may need to be revisited. RTI International’s expert capabilities in analyzing the utility of existing expiration date recommendations against an evolving industry, such as nanotechnology, offer a unique opportunity for advancing science while mitigating risk.

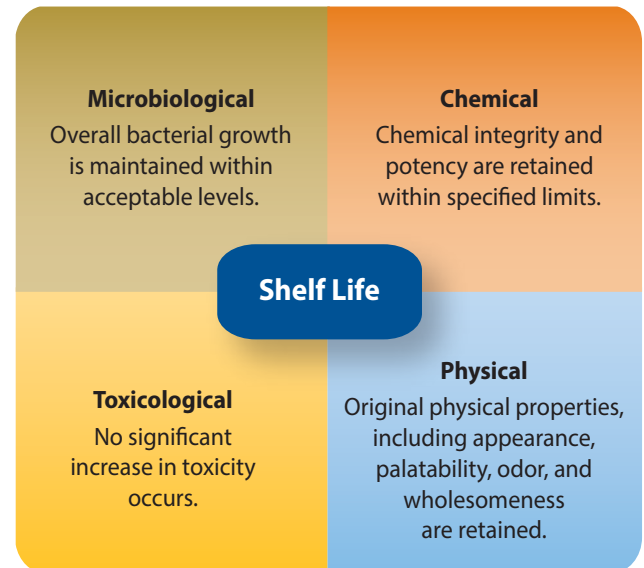
A Closer Look at Expiration Dates

Expiration date recommendations exist for both food supplements and pharmaceutical products. They are often determined from a microbiological perspective, and the current approach to developing expiration dates includes monitoring bacterial growth as a critical testing requirement.

RTI’s nanomaterial science department provides routine characterization of a variety of materials—including foods and drugs—to understand a material’s stability over time. Our microbiology department routinely studies the growth of various organisms through simulated real-life conditions. Ultimately, we aim to determine the best conditions for peak quality for human and animal consumption.



Testing to Support Expiration Dating Claims



Areas of Expertise

Current Material Science Tests

Test	Method	Applicable to Engineered Nanomaterials
Physicochemical characterization	Microscopy, spectroscopy, chromatography	Yes
Formulations	Aerosols, emulsions, composites	Yes
Mammalian cell toxicity	Molecular assays	Yes
Changes over time	Microscopy, spectroscopy, chromatography	Yes

Current Microbiological Tests

Test	Method	Applicable to Engineered Nanomaterials
Yeasts and molds in food	Dilution plating	Yes
Molds in food	Direct plating	Yes
Viable and nonviable yeasts in beverages	Fluorescence microscopy	Yes
Toxin production by mold	Chromatography	Yes
Bacteria	Pathogen-specific	Yes

Project Snapshots

- A physiologically relevant approach to investigate the microbial and mammalian response to digested silver nanoparticles within a simulated gastrointestinal tract
- Analysis of pharmaceutical products for trace metals
- Demonstrating improved physiological relevance of microfluidic organs
- Development of in vitro macrofluidics lung model system
- Assessment of the expiration date determination on foods containing nanoparticles

Potential Impact

- Safety: Pharmaceuticals and food supplements
- Efficacy: Drugs, including antibiotics
- Method development: New approaches to address potential issues

More Information

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