USP Open Forum:
Comparing Probiotic Plate Count Methods

Executive Summary

June 16, 2022

Overview

On June 16, 2022, USP hosted an Open Forum to convene stakeholders about probiotic enumeration methods. Staff and Expert Volunteers reviewed enumeration methods, discussed applications of the analytical procedure life cycle, and shared best practices for comparing different enumeration methods.

Presentations

Dr. Christina Vegge discussed USP's approach to probiotic enumeration and highlighted the challenges and uncertainty associated with CFU plate count methods.

Dr. Jean Schoeni, Vice Chair of the USP's Probiotic Expert Panel, reviewed enumeration methods described in General Chapter <64> *Probiotic Tests*. Dr. Schoeni described common challenges with plate count methods and emphasized the importance of ensuring that products meet their label claims for viable organisms throughout the product shelf life.

Jane Weitzel, Chair of USP's Measurement and Data Quality Expert Committee, discussed the application of <1220> *Analytical Procedure Life Cycle* to CFU enumeration methods. Using an Excel template, Weitzel demonstrated how laboratories could perform ANOVAs to calculate measurement uncertainty and ascertain the risk of obtaining out-of-specification results. Weitzel described sources of measurement uncertainty, such as plating and counting, and reviewed several case studies demonstrating how to ensure that enumeration methods are fit for purpose. These exercises can help users control overages and reduce production costs.

Panel Discussion

After the presentations, Dr. Pierre Burguière moderated a panel discussion with the presenters as well as Dr. Kit Goldman, USP's Senior Director of Dietary Supplements and Herbal Medicines. Panelists discussed challenges when comparing classical microbiological methods to newer technologies, such as flow cytometry and PCR-based methods. Key considerations when comparing methods include defining the measure, calculating the uncertainty of each method, and comparing uncertainty across methods.

When planning clinical studies, panelists suggested laboratories take classical potency measurements—enumeration by cell count—throughout the duration of the study and combine that information with descriptive data about cell composition provided by alternative technologies. Together, these data can help ensure consistent potency and provide characterization information that can prove valuable for future comparability studies.

Key Takeaways and Next Steps

Panelists noted that analytical procedure life cycle management, as described in <1220>, is a great way to build and maintain control of procedures, communicate consistently across teams, and develop a practical and structured tool to assess assay performance.

USP plans to share an Excel template that will enable laboratories to perform an ANOVA using their enumeration data.