

# USP Pancrelipase Update

## USP Pancreatin Lipase RS

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Reference Standards Evaluation



# History of USP Pancreatin RS and USP Pancreatin Lipase RS

- First lot of USP Pancreatin Reference Standard
  - Placed into distribution in 1978
  - Protease and lipase activity
- In 1995
  - Initiated distribution of USP Pancreatin Lipase RS
  - Initiated distribution of USP Pancreatin Amylase and Protease RS
- Since 1995
  - Five lots of USP Pancreatin Lipase RS have been consecutively developed and placed into distribution
  - Lot J0G363 is current lot



# Development of Current Lot J0G363 - Collaborative Study Design

- Eight collaborating laboratories
- Detailed protocol provided
- Protocol refinements implemented to better control assay variables
  - Handling of material during sample preparation
  - Temperature control of solutions
  - Time elapsed between dilution and assay documented
  - Preparation of oil emulsion
    - droplet size control
    - photographic documentation



# Development of Current Lot J0G363 - Collaborative Study Design

- Materials tested
  - Two candidate materials
  - Lot I1E327 (current lot at the time of study)
  - Lot I retention (USP Laboratory only)
  - FIP Pancreatic Lipase Batch 3
- Collaborators supplied with all reagents
  - Olive oil
  - Acacia
  - USP Bile Salts RS



# Development of Current Lot J0G363 - Collaborative Study Design

- For each of the 4 materials tested
  - Three days of testing
    - two preparations per day
    - three replicates per preparation
    - 18 independent determinations per collaborator
    - 144 independent determinations for each material tested
- Raw data submitted
  - Total of 594 independent determinations analyzed
  - Potency calculated
  - Statistical analysis of data performed



# Potency Determination

- USP Pancreatin monograph, *Assay for lipase activity*
  - Activity was calculated on the absolute basis, not by comparison to Lot I1E327
  - “One USP Unit of lipase activity is contained in the amount of pancreatin that liberates 1.0 microequivalent of acid per minute at a pH of 9.0 and 37° under the conditions of the Assay”



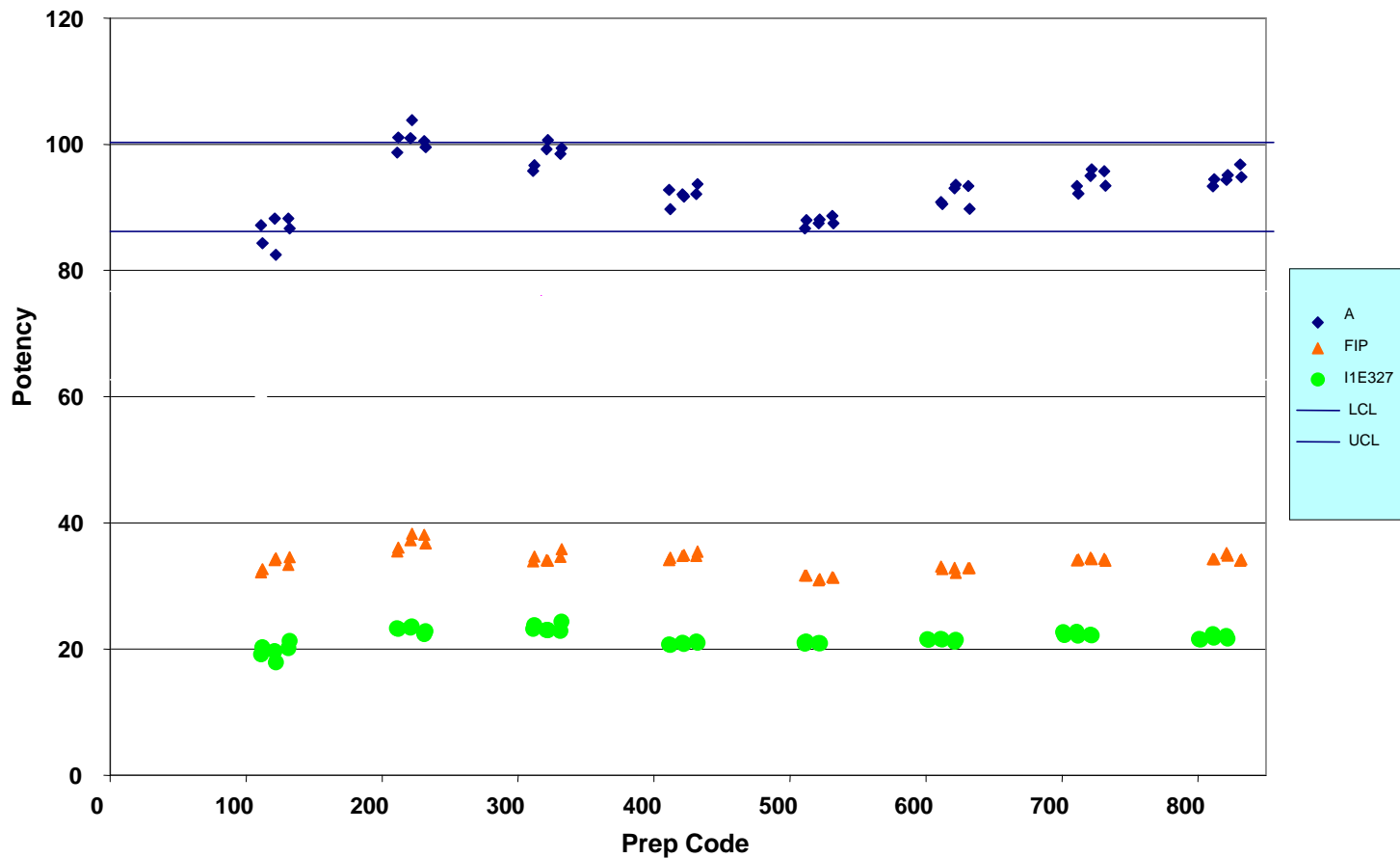
# Collaborative Study Results

## Potency Estimates (USP Units/mg)

<b>Material Tested</b>	<b>Estimated Potency</b>	<b>95% Confidence Interval</b>
Lot J0G363	93.3	(89.2, 97.4)
Lot I1E327	21.6	(20.6, 22.6)
FIP Pancreatic Lipase	34.1	(32.7, 35.4)
2006 Study Lot I1E327	21.2	(20.0, 22.5)



# Collaborative Study Results



The Prep Code is an arbitrary code that identifies each test. The 100's digit corresponds to collaborator, and all results from a laboratory are grouped together.



# Colipase studies

- Collaborative testing in two laboratories show Lot J0G363 has sufficient colipase
  - Potency value without addition of colipase was same as with addition of colipase
- Similarly, testing showed previous Lot I1E327 contained sufficient colipase



# Continued Suitability for Use

- Retesting of Lot J0G363 is underway
  - Multiple laboratories
  - Same protocol as collaborative study
  - All reagents supplied (olive oil, acacia, USP Bile Salts RS)
- Statistical analysis of results will be performed



# Moving Forward

- **Coordination between monograph and RS activities**
  - Monograph revision recommendations through an Advisory Panel (Proteins and Polysaccharides Expert Committee)
  - Monograph revisions could result in
    - Potency re-evaluation of RS if changes are made in assay method
    - Additional physical characterization of USP Pancreatin Lipase RS (e.g., identity, purity)
    - Development of assay reagents into reference standards

*Thank You*