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Simulations of Test Reduction Using Pooled Heavy Metals Analysis in Cannabis

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Abstract:

Background: Cannabis species have a propensity to bioaccumulate toxic heavy metals from their growth media. Increased testing for these metals is required to improve the safety of the legal medical and recreational cannabis industries. However, the current methods used for mandated heavy metals tests are not efficient for a large framework. As a result, there is limited testing capacity, high testing costs, and long wait times for results across North America.

Objective: This study aimed to demonstrate that pooling strategies can be used to increase the throughput in cannabis testing labs and reduce some of the strain on the industry.

Methods: This paper presents an algorithm to simulate different pooling strategies. The algorithm was applied to real world data sets collected from Washington and California state testing labs.

Results: Using a single pooling method, for the California lab, pooling four samples on average resulted in a 54.1% reduction in tests required for 100 samples. **Conclusion:** The algorithms generated from lab data demonstrated that pooled testing strategies can be developed on a case-by-case method to reduce the time, effort, and costs associated with heavy metals tests.

Highlights: The benefits of pooled testing will vary depending on the region and rate of contamination seen in each testing lab. Overall, our results demonstrate pooled testing has the potential to reduce the fiscal costs of testing through increased efficiency, allowing increased testing, leading to greater safety.