Review of: "Infrared Spectroscopy (FT-NIR) and t-Distributed Stochastic Neighbor Embedding (t-SNE) as an Analytical Methodology for Rapid Identification of Tea Adulteration"

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The paper "Infrared Spectroscopy (FT-NIR) and t-Distributed Stochastic Neighbor Embedding (t-SNE) as an Analytical Methodology for Rapid Identification of Tea Adulteration" explores the use of unsupervised pattern recognition techniques to detect adulteration in three types of tea. The writing is clear; however, some aspects need to be addressed before publication:

1- The NIR technique has been previously used in other studies to identify tea adulteration. I recommend conducting a review of these applications to refine your introduction;

2- The sample size appears to be insufficient for the type of analysis conducted. Although replicates are valuable for error identification, they do not enhance the variability of the dataset. Additionally, the inclusion of commercial samples is strongly recommended to ensure robust validation of the proposed models.

3 - Figure 1a does not display normalized values within the range of 0 to 1.

4- Specify the parameters used for the derivative (e.g., polynomial degree and window size).

5- The data contains significant noise. Reprocess the data using more appropriate bands to improve the signal-to-noise ratio.

6- Indicate the strategy employed to delineate the clusters and the confidence ellipse in the PCA analysis (Figure 5).

7- In the construction of the dendrogram (Figure 6), it is very important to specify the distance metric employed and the threshold value applied for clustering.