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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Potential competing interests: No potential competing interests to declare.

The work presents a thorough investigation into the application of FT-NIR spectroscopy and multivariate analysis for the quality control of tea. The integration of advanced analytical techniques to differentiate between various parts of tea showcases innovation in the field of spectroscopic analysis. It opens pathways for further research and application in quality assurance. The study's use of methods like t-SNE for data visualization and the application of derivative spectroscopy for frequency band identification suggest a high level of analytical rigor, providing confidence in the results obtained. In conclusion, this study not only provides significant contributions to the field but also encourages further exploration into the analytical methodologies applicable to tea adulteration.

The use of FT-NIR spectroscopy combined with multivariate analysis, particularly t-SNE for the separation of samples, underscores the methodological rigor of this study. The ability to distinguish between different anatomical parts of the plants (leaves, leaf stems, and petioles) reinforces the reliability of the analytical approach employed. This work contributes valuable insights into the quality assessment of medicinal plants.

Questions:

Sample Diversity and Representation: What criteria were used to select the samples for this study, and how do these samples represent the broader range of medicinal plants? Were geographical or seasonal variations considered, and how might they affect the spectral characteristics observed?

How can the findings of this study be translated into practical applications for quality control in the industry? Additionally, what steps would you recommend for validating the proposed methodology on a larger scale across different species and conditions?