Application Note RAD007

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RAD007 - Herbal Materials & Natural Foods Analysis With Handheld Raman

Introduction

FDA guidelines for current Good Manufacturing Practices (c-GMP) in manufacturing, packaging, labeling, or holding operations for dietary supplements are described under 21 CFR part 111. Under these regulations, dietary supplement manufacturers are required to use at least one appropriate test method to verify the identity of any component or excipient used in the manufacturing of a dietary supplement. Manufacturers are also required to confirm identity of all components to determine if applicable specifications are met. However, the guidelines do not provide specific analysis parameters and manufacturers often must decide the most appropriate method of verification.

Minimize sample interference while maximizing efficiency

In the past, identification methods have relied on time-consuming and sometimes expensive laboratory analysis. In recent years handheld Raman has been shown to be a valuable tool for quick identification of raw materials in regulated industries. With the advent of a portable, long wavelength 1064 nm analyzer, many materials that cannot be measured using other handheld technologies like Raman with 785 nm excitation, FTIR or NIR is now possible. To demonstrate the advantages of using a 1064 nm analyzer, the identification of two separate natural ingredients, turmeric and green tea powder (Figures 1 and 2), was performed. All materials were introduced into 2 mm glass vials and analyzed using the vial holder accessory. Raman data acquired using 1064 nm excitation provided fluorescence-free, chemically specific data.

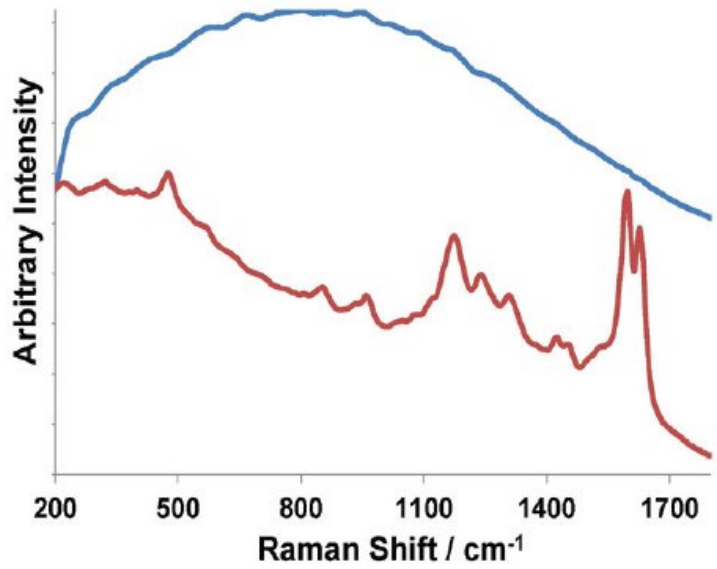

Figure 1: Raman spectra of turmeric measured at 785 nm and 1064 nm excitation. Curcumin bands are visible at 1064 nm, but are obscured by fluorescence at 785 nm.

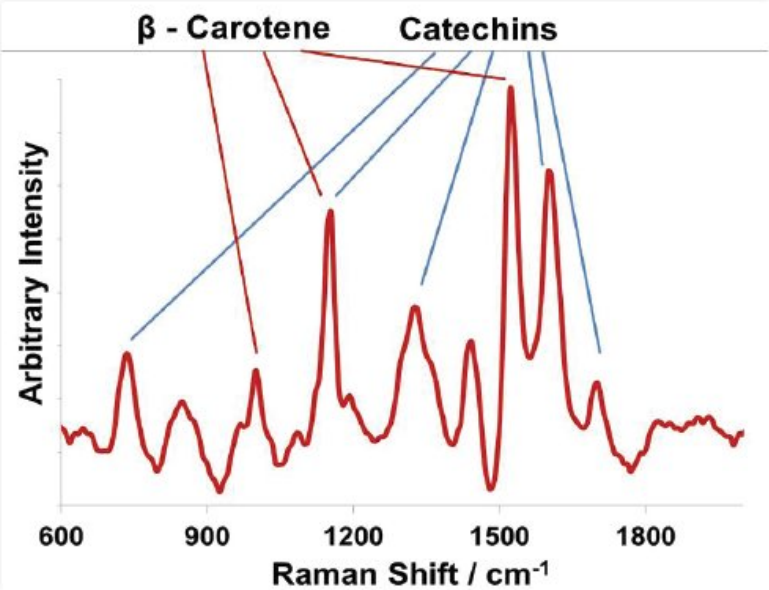

Figure 2: 1064 nm spectrum of green tea extract. Nutritionally important phenolic antioxidant flavonoid compounds called catechins are labeled along with ß-carotene. 785 nm spectra were completely obscured with fluorescence and are not shown.

Conclusion

Progeny is ideal for identification due to its chemical selectivity. Easy-to-use and implement into your processes, Progeny provides the means for obtaining rapid pass/fail verification of your materials and products at a cost that is less than half of a laboratory instrument.

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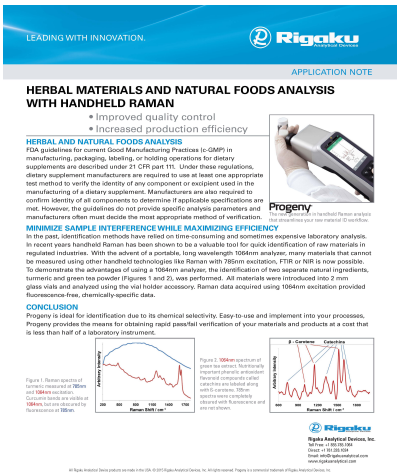
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APPLICATION NOTE
HERBAL MATERIALS AND NATURAL FOODS ANALYSIS WITH HANDHELD RAMAN
• Improved quality control
• Increased production efficiency
HERBAL AND NATURAL FOODS ANALYSIS
MINIMIZE SAMPLE INTERFERENCE WHILE MAXIMIZING EFFICIENCY
CONCLUSION
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Handheld Raman for raw material identification and finished product authentication using 1064 nm Raman analysis.