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摘要：采用傅立叶变换近红外光谱仪对220个烟叶样品进行光谱采集，用偏最小二乘法建立钙元素和镁元素的校正模型，并通过剔除异常值优化模型。模型经过优化后的结果：钙元素近红外模型的R<sup>2</sup>值、SEE值、SEP值和RPD值分别为98.39%、0.11、0.15和5.7，模型因子数为14；镁元素近红外模型的R<sup>2</sup>值、SEE值、SEP值和RPD值分别为89.39%、0.04、0.06和2.2，模型因子数为14。用F检验和t检验说明近红外模型的预测值和化学值之间没有明显差异。结果表明，近红外光谱法可用于烟叶中的钙、镁元素的同时快速定量测定。

关键词：烟叶, 钙, 镁, 傅立叶变换近红外光谱

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### The simultaneous detection of the element Ca and Mg in tobacco leaf by FT-NIR spectral method

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Abstract: The spectra of 220 tobacco samples were measured by FT-NIR Spectrometer. The calibration models of the elements of calcium and magnesium were established by PLS method, which were optimized by rejecting the outliers. The result suggested that after the models being optimized, for the NIR model of the element of calcium, R<sup>2</sup>, SEE, SEP and RPD were 98.39%, 0.11, 0.15 and 5.7 respectively, the number of factors was 14; for the NIR model of the element of magnesium, R<sup>2</sup>, SEE, SEP and RPD were 89.39%, 0.04, 0.06 and 2.2 respectively, the number of factors was 14. The results of the NIR models were tested by F test and t test, which suggested that the predicted values by NIR models and the specified values had no distinct difference. The results showed that near-infrared spectral method can be applied to the quantitative analysis of calcium and magnesium in tobacco leaf simultaneously.

Key words: Tobacco Leaf, Calcium, Magnesium, FT-NIR Spectroscopy

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