Quantitative Determination of Sulphamethoxazole and Trimethoprim in Powder Mixtures Using Raman Spectroscopy and PLS

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SUMMARY. **Raman spectroscopy in combination with partial least-squares (PLS) regression method was developed for sulphamethoxazole (SMZ) and trimethoprim (TMP) simultaneous determination in powder mixtures. The calibration set was designed with 18 samples and validation set with 9 samples, containing different SMZ and TMP concentrations. The concentration ranges were 400–900 mg/g for SMZ and 80-240 mg/g for TMP. The proposed procedure was validated by comparison with the official method (HPLC). Mean root square error of calibration (RMSEC) and mean root square error of prediction (RM-SEP) were calculated. RMSEC found was 30.96 mg/g to SMZ and 14.36 mg/g to TMP, respectively. RM-SEP found was 25.60 mg/g to SMZ and 14.36 mg/g to TMP, respectively. Correlation coefficient (R^2) was 0.99 for SMZ and 0.99 for TMP. This parameter evidences a very good agreement between estimated and real values. The results showed that PLS regression model combined with Raman spectroscopy provides a sensitive, fast and simple method for the quantitative analysis of SMZ and TMP mixtures in powder quality control.**

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