

Supplementary information for:

Rapid identification and quantification of antibiotic susceptibility of lactic acid bacteria using surface enhanced Raman spectroscopy

Panxue Wang^{a, b, c}, Xuejie Wang^c, Yan Sun^c, Guoli Gong^c, Mingtao Fan^{b, †} and Lili He^{a, †}

^a Department of Food Science, University of Massachusetts, Amherst, MA 01003, USA;

^b College of Food Science and Engineering, Northwest A&F University, Yangling 712100, Shaanxi, P. R. China.

^c School of Food and Biological Engineering, Shaanxi University of Science & Technology, Xi'an 710021, Shaanxi, P. R. China.

[†] Corresponding author. Lili He E-mail: lilihe@foodsci.umass.edu; Phone: 413.545.5847; Fax: 413.545.1262;

Mingtao Fan E-mail: fanmt@nwsuaf.edu.cn.

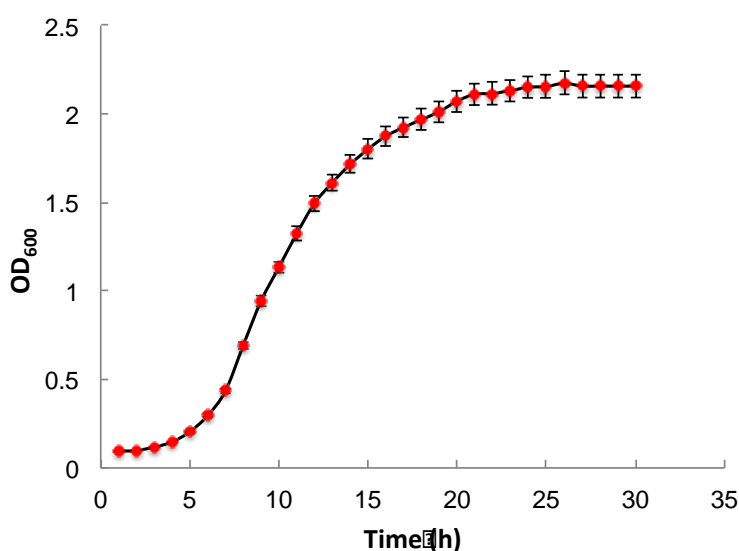


Fig. S1 Growth curve of *Lb. bulgaricus* ATCC11842

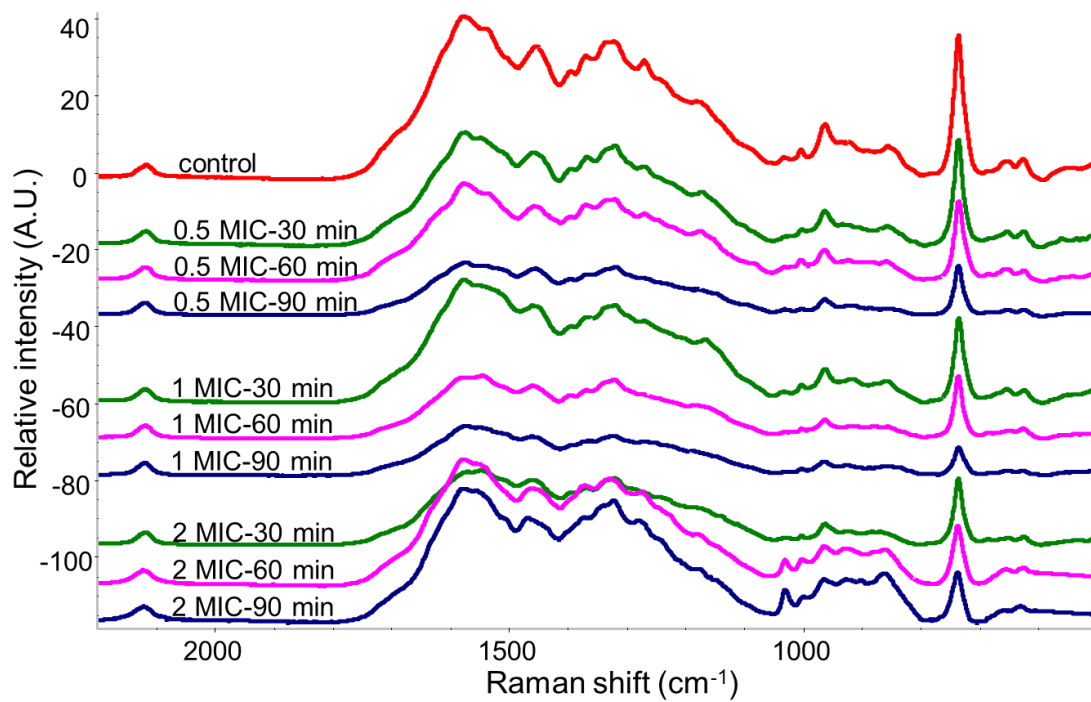


Fig. S2 SERS spectra of *Lb. bulgaricus* ATCC11842 treated with penicillin G at different concentrations for 30, 60 and 90 min.

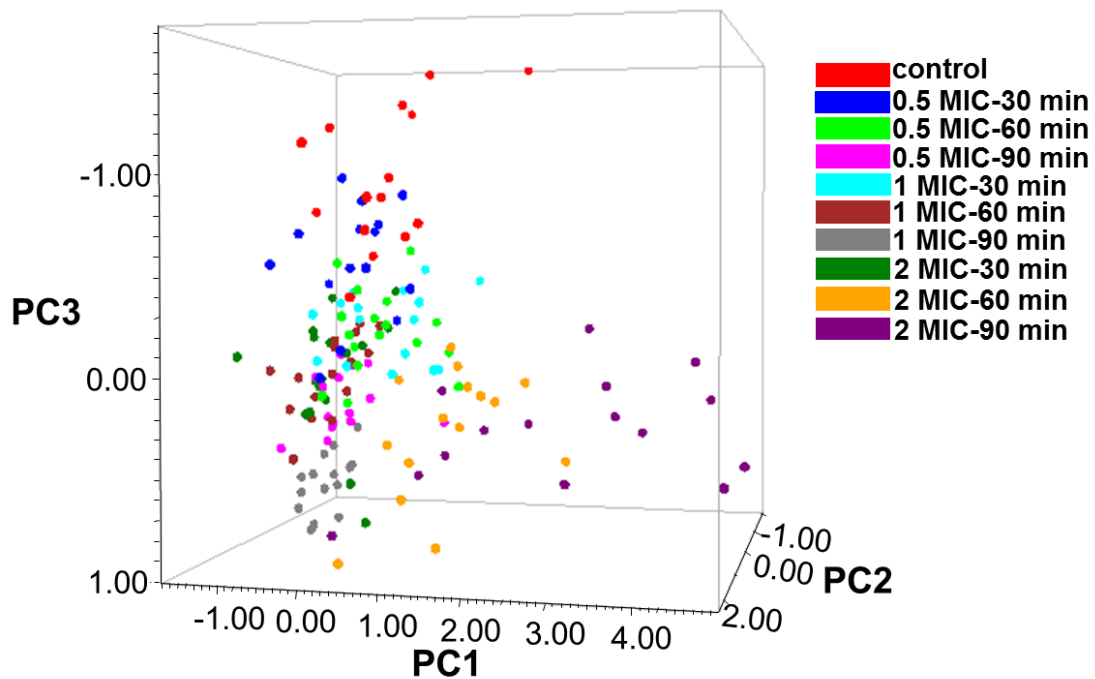


Fig. S3 3-D PCA plot of *Lb. bulgaricus* ATCC11842 treated with penicillin G at different concentrations for 30, 60 and 90 min.

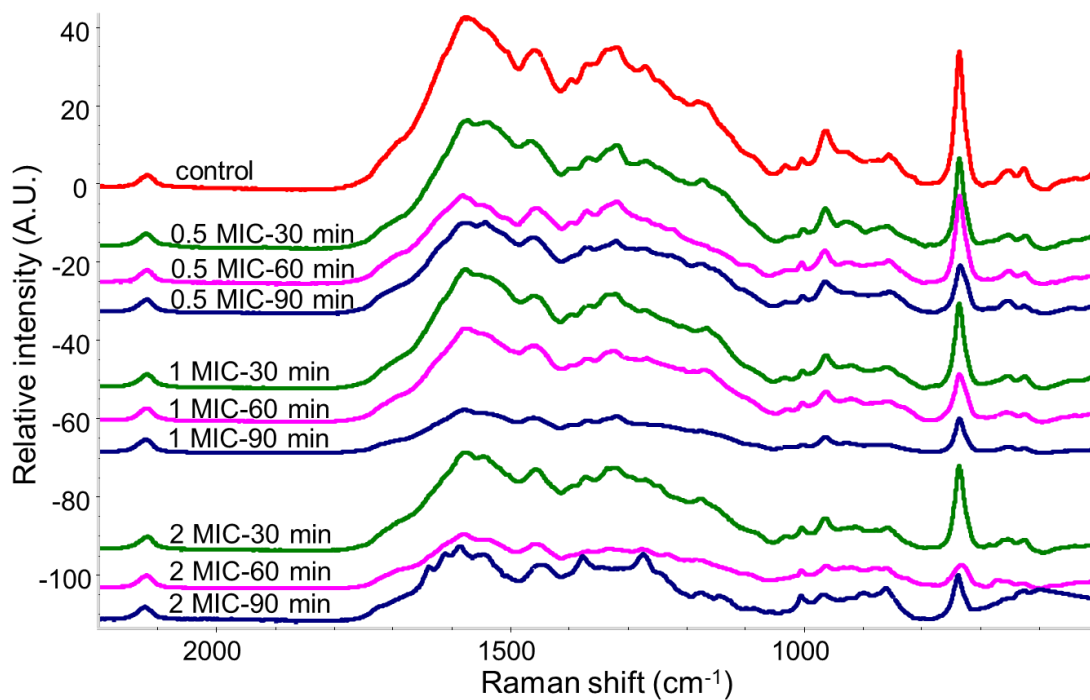


Fig. S4 SERS spectra of *Lb. bulgaricus* treated with ampicillin sodium salt at different concentrations for 30, 60 and 90 min.

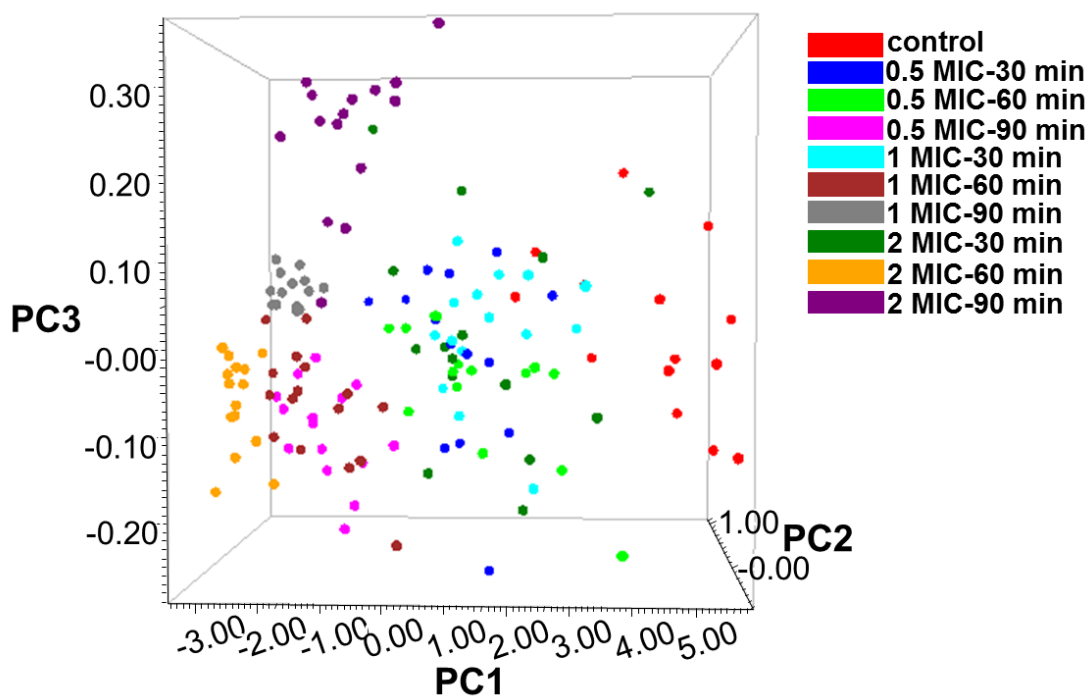


Fig. S5 3-D PCA plot of *Lb. bulgaricus* ATCC11842 treated with ampicillin at different concentrations for 30, 60 and 90 min.

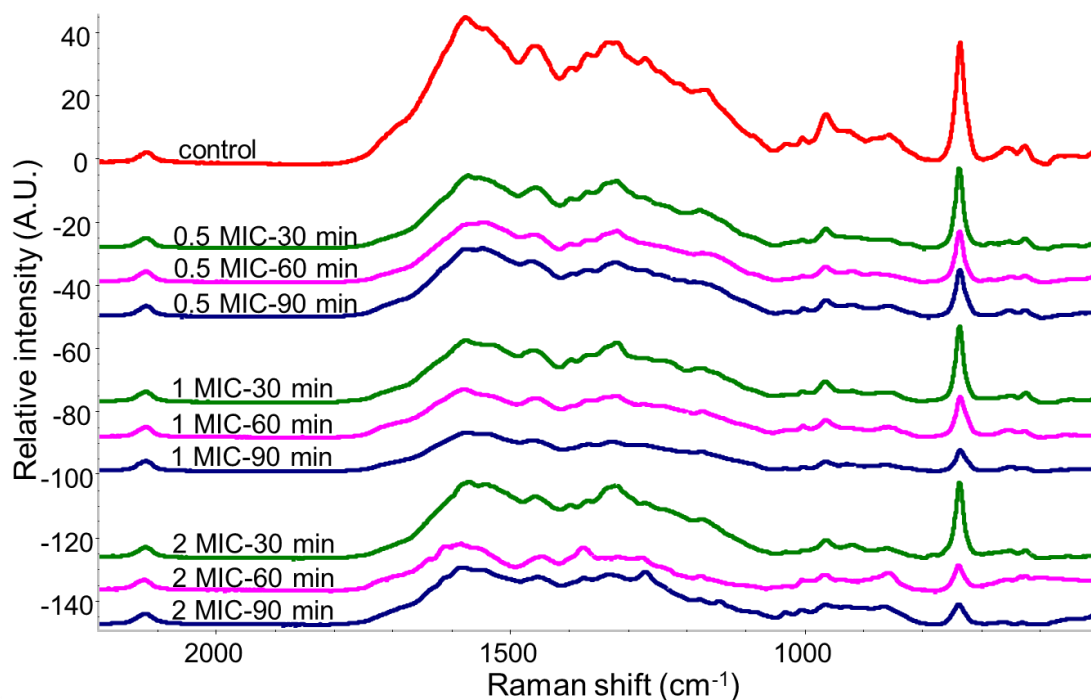


Fig. S6 SERS spectra of *Lb. bulgaricus* treated with vancomycin hydrochloride at different concentrations for 30, 60 and 90 min.

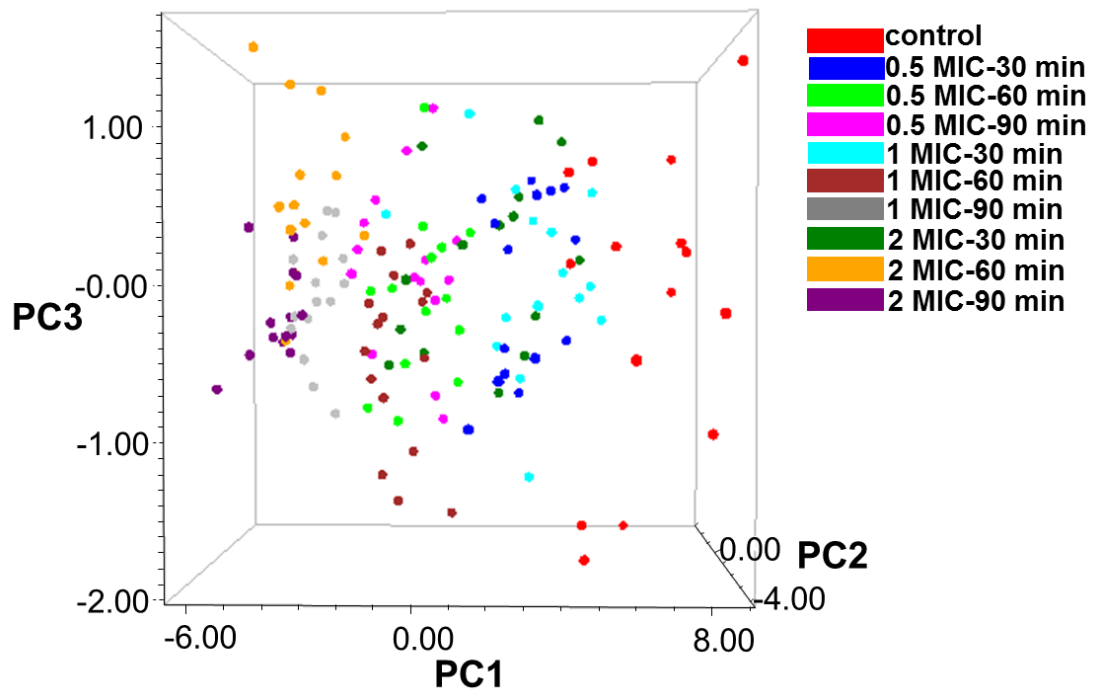


Fig. S7 3-D PCA plot of *Lb. bulgaricus* ATCC11842 treated with vancomycin at different concentrations for 30, 60 and 90 min.

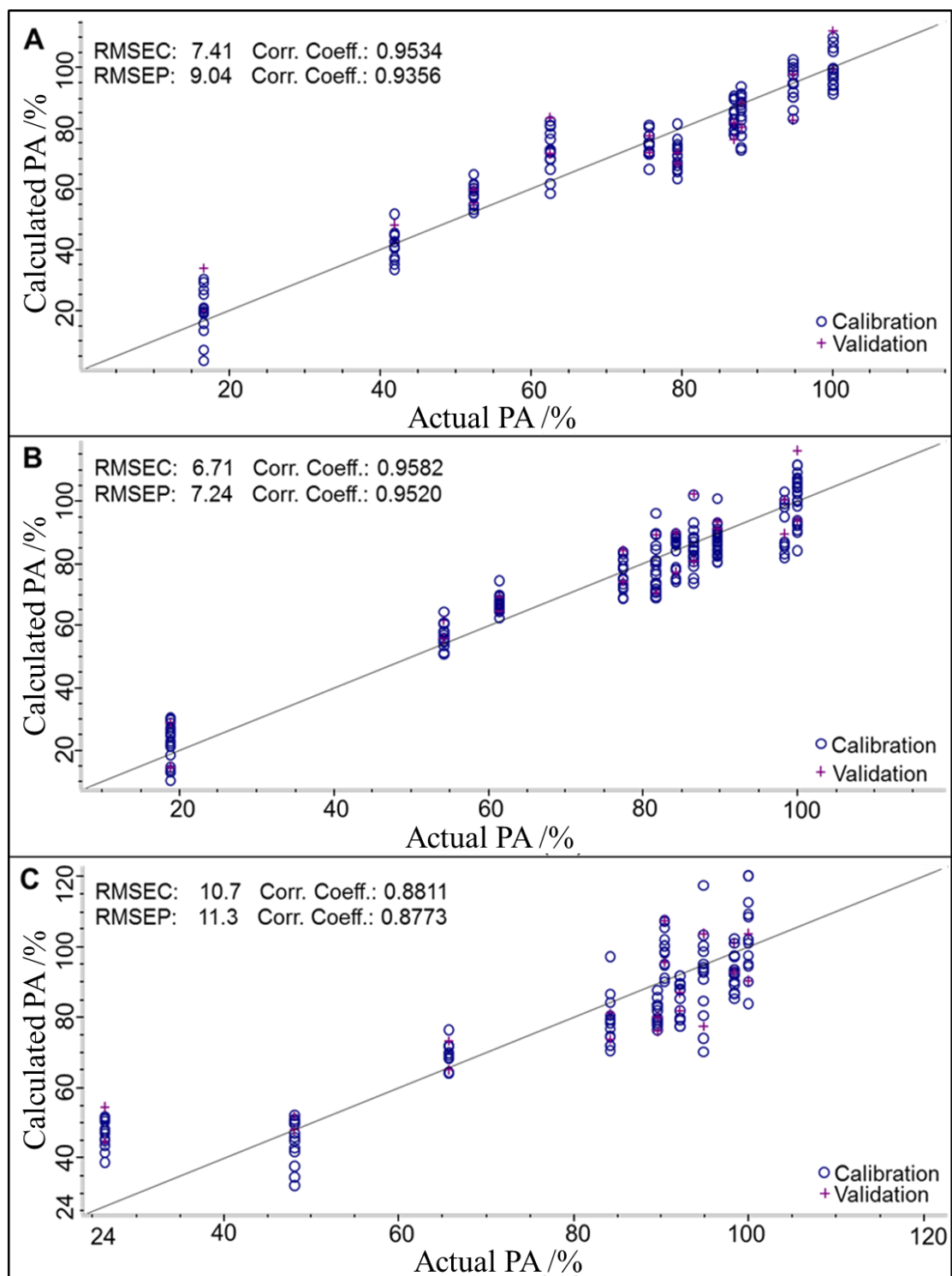


Fig. S8 PLSR plots using both calibration and validation data of SERS spectra and the corresponding proliferation abilities, (A) penicillin G, (B) ampicillin, and (C) vancomycin (PA stands for proliferation ability). The circles in the figure stand for calibration standards, the crosses stand for validation standards, and the input spectra were grouped using the Suggest Standards function of TQ analyst (version 8.0).

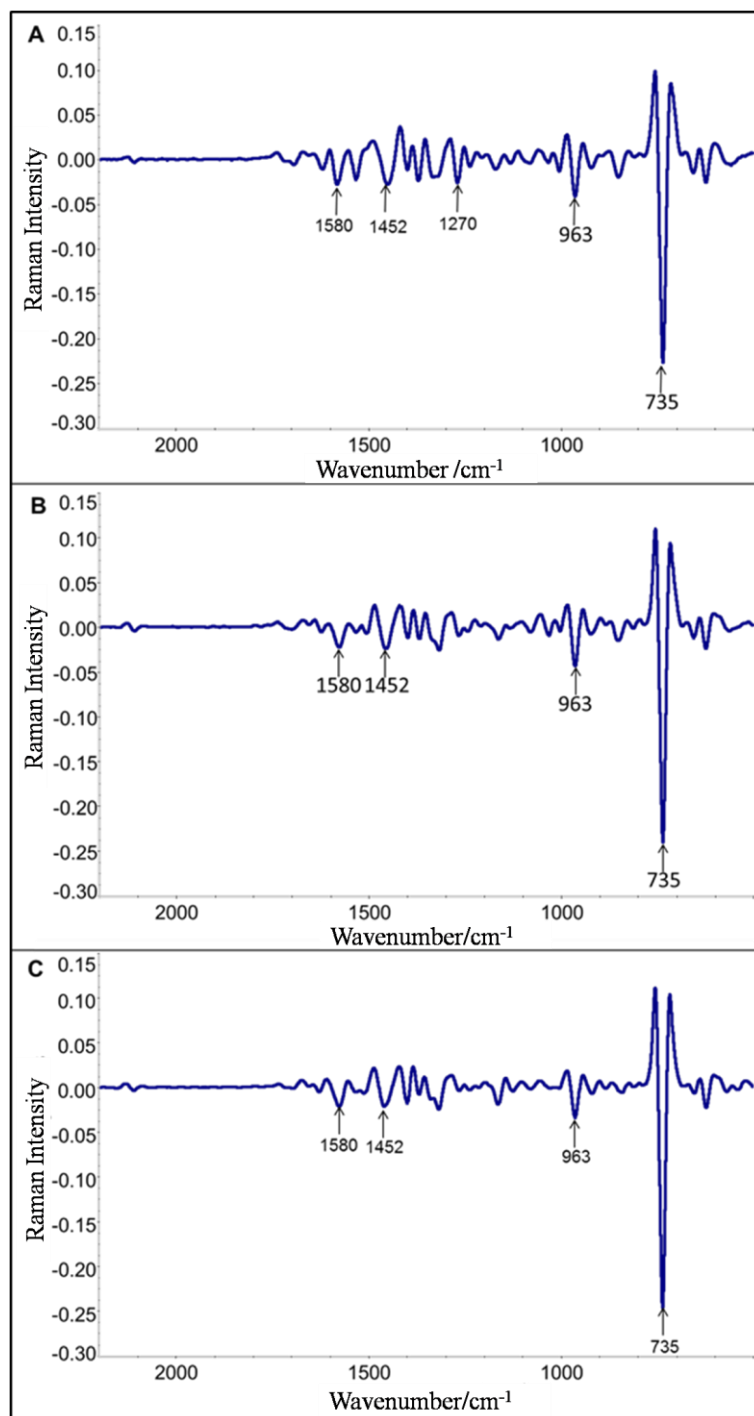


Fig. S9 Spectrum of the first factor used to build the PLSR model of (A) penicillin G, (B) ampicillin, and (C) vancomycin.