

Supporting Information for:

Rapid Identification of Geographical Origin of Sliced Polygonati Rhizoma by Auto-focus Laser-induced Breakdown Spectroscopy Combined with Interpretable Machine Learning

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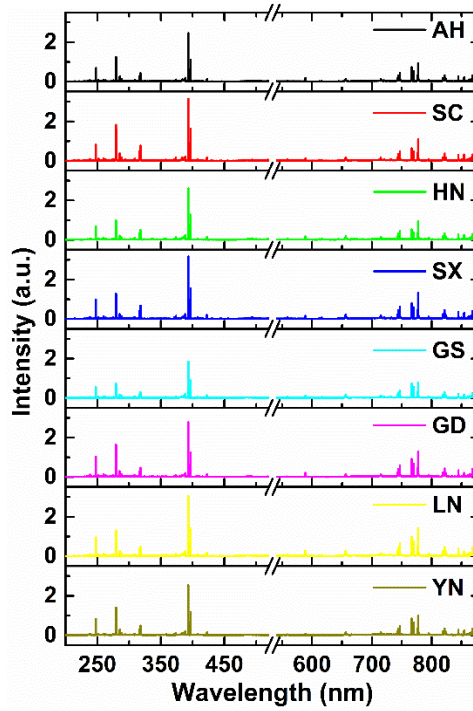


Fig. S1 The LIBS spectra of Polygonati Rhizoma from different geographical origins.

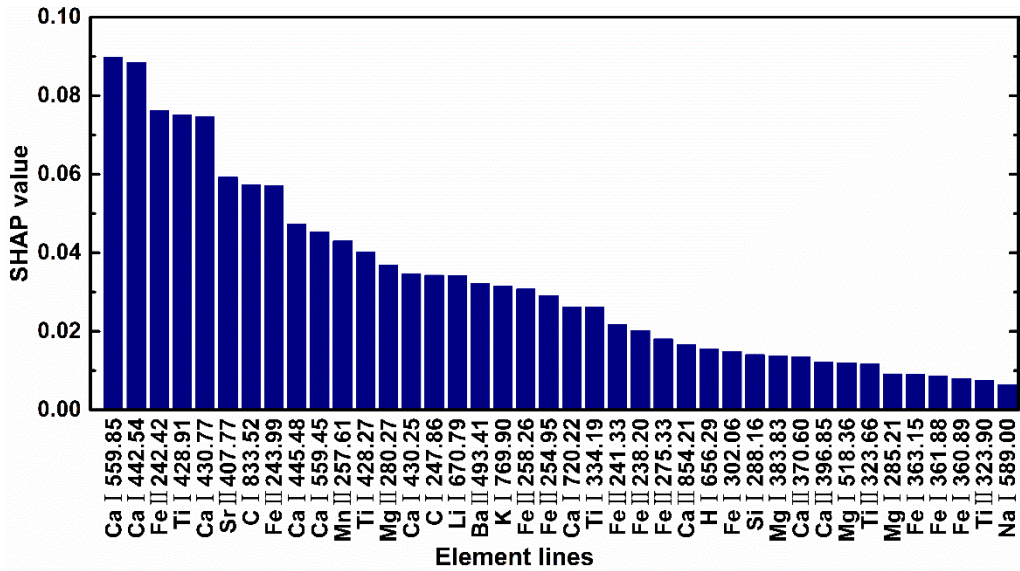


Fig. S2 The element lines importance analysed by SHAP.

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11 **Tables**

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Table S1. The LIBS spectral lines of Polygonati Rhizom.

	Elements	Wavelength (nm)	Elements	Wavelength (nm)
Nonmetallic elements	H	656.29	C	247.86, 833.52
	O	715.67, 777.19, 794.76, 844.54	C-N	385.00, 385.50, 385.98, 386.20, 387.1, 388.30
	Si	212.41, 250.69, 251.43, 251.61, 251.92, 252.41, 252.85, 263.13, 288.16, 390.55		
	N	742.36, 744.23, 746.83, 818.49, 820.04, 821.63, 822.31, 824.34, 856.77, 859.4, 862.92, 868.03, 870.33, 871.17, 871.88		
	Li	670.79	Sr	407.77, 421.55
Metallic elements	Na	589.00, 589.59, 819.48	K	766.49 769.90
	Mn	257.61, 259.37	Cu	213.60, 214.90, 324.75
	Zn	202.55, 206.20	Ba	455.40, 493.41, 614.17
	Al	308.22 309.27 394.40 396.15		
	Mg	277.98, 279.08, 279.55, 279.80, 280.27, 285.21, 382.94, 383.23, 383.83, 517.27, 518.36		
	Ti	307.87, 308.80, 323.45, 323.66, 323.90, 334.19, 334.94, 336.12, 337.28, 338.38, 368.52, 428.27, 428.91		
	Ca	315.89, 317.93, 370.60, 373.69, 393.37, 396.85, 422.67, 430.25, 430.77, 431.87, 442.54, 443.50, 445.48, 527.03, 558.88, 559.45, 559.85, 610.27, 612.22, 616.22, 643.91, 646.26, 714.82, 720.22, 732.62, 849.82, 854.21, 866.21		
	Fe	233.28, 233.80, 234.40, 234.83, 236.00, 236.48, 237.36, 238.20, 238.86, 239.56, 239.92, 240.49, 240.70, 241.05, 241.33, 242.42, 243.50, 243.99, 244.56, 248.33, 249.06, 249.33, 253.56, 254.95, 256.28, 258.26, 258.59, 259.94, 260.71, 261.19, 261.38, 261.76, 262.57, 262.83, 273.96, 274.33, 274.65, 274.93, 275.33, 275.57, 293.69, 302.06, 344.06, 356.54, 357.01, 358.12, 360.89, 361.88, 363.15, 364.78, 371.99, 373.49, 374.95, 381.58, 382.04, 382.59, 404.58		

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Table S2. The detailed elemental spectral lines selected by different variable selection methods.

Variable selection method	Variable number	Elements	Wavelength (nm)	Elements	Wavelength (nm)
IRIV	71	H	656.29	C	247.86, 833.52
		O	715.67, 777.19	C-N	385.50, 388.30
		Si	263.13		
		N	744.23, 746.83, 818.49, 824.34, 862.92, 868.03, 870.33, 871.17, 871.88		
		Li	670.79	Sr	407.77, 421.55
		Na	589.00, 589.59	K	766.49, 769.90
		Mn	259.37	Cu	324.75
		Zn	202.55	Ba	455.40, 493.41
		Mg	277.98, 279.55, 279.80, 280.27, 383.83, 518.36		
		Ti	323.66, 334.94, 337.28, 338.38, 368.52, 428.27		
		Ca	315.89, 317.93, 373.69, 393.37, 443.50, 527.03, 558.88, 559.45, 559.85, 610.27, 714.82, 720.22, 849.82, 854.21		
		Fe	238.20, 239.92, 240.70, 241.33, 242.42, 256.28, 259.94, 261.19, 262.83, 273.96, 274.33, 274.65, 360.89, 361.88, 374.95, 404.58		
VISSA	74	H	656.29	C	247.86, 833.52
		O	715.67, 777.19	C-N	385.50, 386.20, 388.30
		Si	243.52, 251.43, 251.61, 251.92, 263.13		
		N	744.23, 746.83, 818.49, 824.34, 868.03, 870.33, 871.17, 871.88		
		Li	670.79	Sr	407.77, 421.55
		Na	589.00, 589.59	K	766.49, 769.90
		Mn	259.37	Cu	324.75
		Zn	202.55	Ba	455.40, 493.41
		Mg	277.98, 279.55, 279.80, 280.27, 383.83, 518.36		
		Ti	323.66, 334.94, 337.28, 338.38, 368.52, 428.27		
		Ca	315.89, 317.93, 373.69, 443.50, 559.45, 559.85, 610.27, 643.91, 714.82, 720.22, 849.82, 854.21		
		Fe	236.00, 239.56, 239.92, 240.49, 240.70, 241.33, 242.42, 256.28, 258.59, 259.94, 261.19, 262.83, 274.33, 361.88, 373.49, 374.95, 404.58		
SPA	40	H	656.29	C	247.86, 833.52
		Si	288.16	Sr	407.77
		Li	670.79	K	769.90
		Na	589.00	Mn	257.61
		Mg	280.27, 285.21, 383.83, 518.36	Ba	493.41
		Ti	323.66, 323.90, 334.19, 428.27, 428.91		
		Ca	370.60, 396.85, 430.25, 430.77, 442.54, 445.48, 559.45, 559.85, 720.22, 854.21		
		Fe	238.20, 241.33, 242.42, 243.99, 254.95, 258.26, 275.33, 302.06, 360.89, 361.88, 363.15		

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