

Supplementary Information

Intelligent evaluation of free amino acid and crude protein content in raw peanut seed kernel using NIR spectroscopy paired with multivariable calibration

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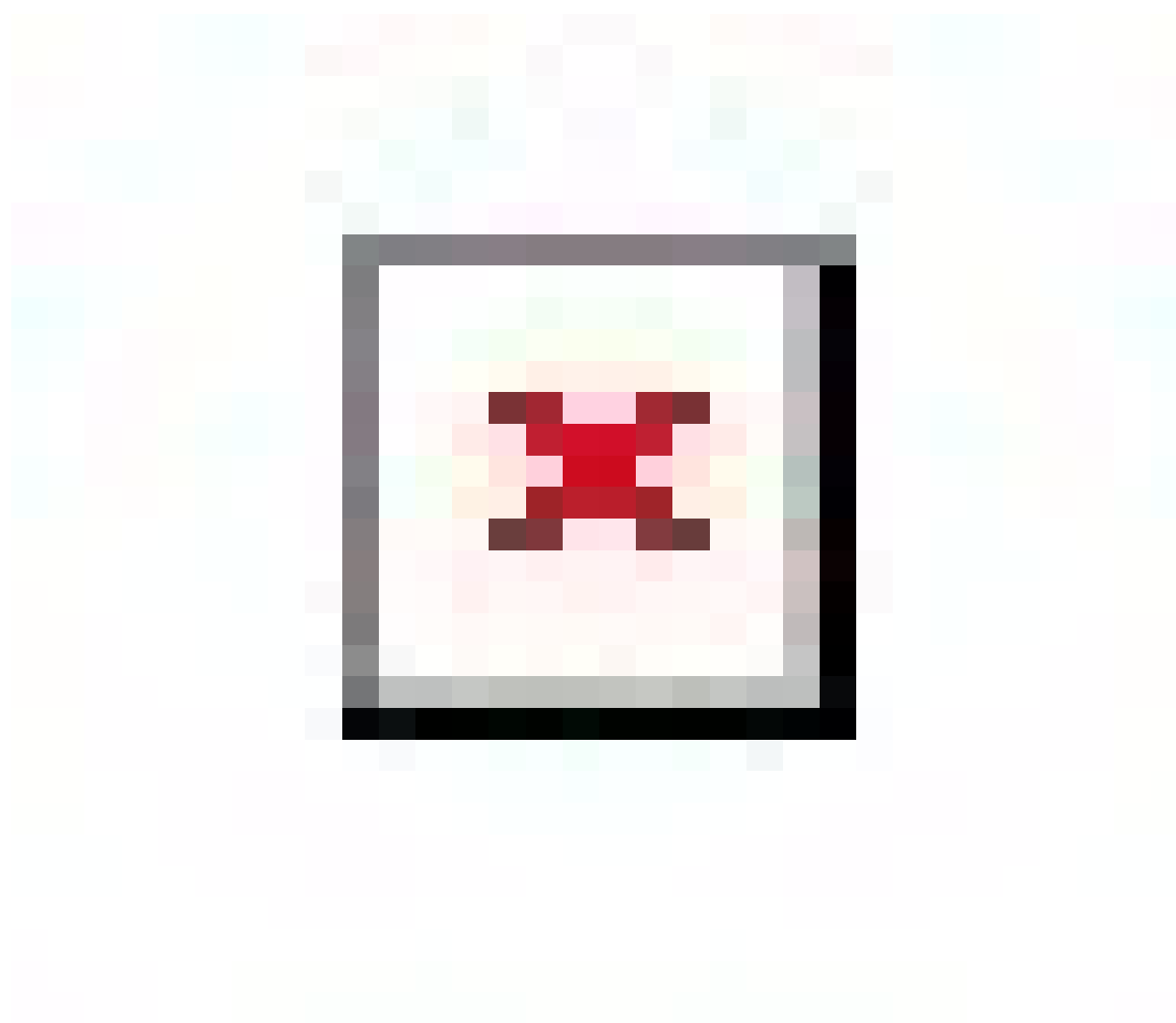


Figure S1. Optimum principal components and scatter plot performance of PLS model based on pretreated spectral data for FAA (A, B) and CP (C, D).

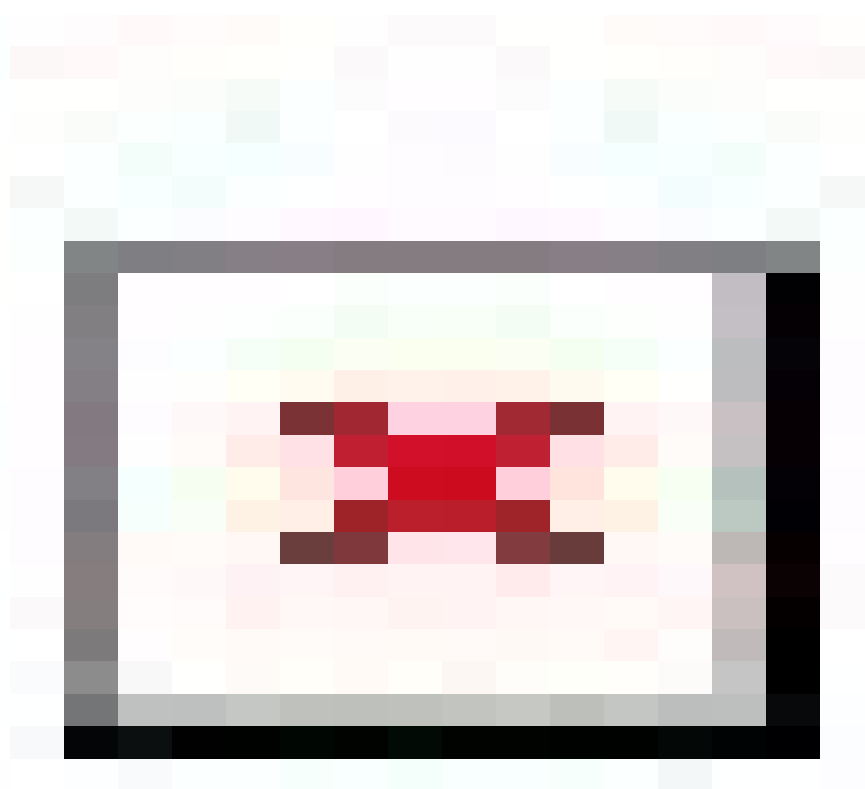


Figure S2. Principal components derived from GA-PLS (A), UVE-PLS (B), and RF-PLS (C) for FAA, and from GA-PLS (D), UVE-PLS (E), and RF-PLS (F) for CP.

Table S1. Analyzed PLS results between raw peanut seed kernel and different pretreatment models for FAA and CP using near- infrared spectroscopy.

Parameter	Pretreatment method	PCs	Training set		Validation set		RPD
			(n=70)		(n=35)		
			Rc	RMSEC	Rp	RMSEP	
Free amino acid (mg/g)	Raw	9	0.8013	3.4655	0.8299	3.1610	1.38
	MSC	8	0.8010	3.4683	0.8295	3.2327	1.38
	SNV	8	0.8013	3.4661	0.8294	3.2328	1.38
	1 st derivative	8	0.8400	3.1435	0.8358	3.1629	1.36
	2 nd derivative	5	0.8507	3.0454	0.8310	3.3252	1.40
Crude protein (%)	Raw	10	0.9081	0.6889	0.8765	0.9054	1.69
	MSC	10	0.9819	0.3110	0.8373	0.9989	1.78
	SNV	10	0.9344	0.4041	0.8964	0.9757	1.81
	1 st derivative	9	0.8789	0.7840	0.847	0.9763	1.73
	2 nd derivative	8	0.9276	0.6137	0.748	1.2852	1.67

Sample number, n; Principal components factors, PCs; correlation coefficient of calibration, Rc; correlation coefficient of prediction, Rp; root mean square error of calibration, RMSEC; root mean square error of prediction, RMSEP; Residual predictive deviation, RPD.