

Table S1 Characteristics of tested enzymes.

Enzyme	Source	Hydrolase type	Optimum pH	Optimum T (°C)	Specific activity
Alcalase	<i>Bacillus sp.</i>	Protease	7.0–9.0	40-70	2.4 AU/g*
Resinase	<i>Aspergillus sp.</i>	Lipase	5.0–8.0	50-70	50 kLU/g**

*AU = Anson unit (1 AU is the amount of enzyme which liberates 1 μ mol of Folin-positive amino acids per minute at pH 7.5 and 35°C, using hemoglobin as substrate), g = mass of enzyme formulation

**k = kilo, LU = Lipase unit (1 LU is the amount of enzyme which liberates 1 μ mol of titratable butyric acid per minute at pH 7.0 and 30°C, using glycerol tributyrates as substrate), g = mass of enzyme formulation

Table S2 Values observed during validation experiments along with corresponding predicted values under different combinations of independent variables.

Experiment	Eo/So (UA/g)	Eo'/So' (kLU/g)	pH	T (°C)	Hydrolyzed protein recovery (%)		Collagen recovery (%)		Lipid recovery (%)	
					Observed	Predicted	Observed	Predicted	Observed	Predicted
1'	0.05	0.00	8.0	50	32.64	31.12	68.17	67.68	48.60	51.50
2'	0.11	0.00	8.0	50	37.79	39.69	53.85	54.00	66.42	68.88
3'	0.16	0.00	8.0	50	45.03	46.29	43.26	43.98	82.62	81.59
4'	0.21	0.00	8.0	50	49.93	52.41	34.39	35.20	94.04	92.69
5'	0.81	0.00	8.0	50	86.68	87.84	27.03	26.84	99.75	100.00
6'	0.16	0.00	7.0	50	40.30	38.52	48.14	46.54	70.73	69.00
7'	0.16	0.00	7.5	50	41.05	41.53	45.41	45.67	74.87	75.89
8'	0.16	0.00	8.0	50	45.03	46.29	43.10	43.98	82.62	81.59
9'	0.16	0.00	8.5	50	55.65	52.81	42.18	41.47	86.54	86.09
10'	0.16	0.00	9.0	50	59.30	61.08	38.18	38.13	89.57	89.40
11'	0.16	0.00	8.0	40	46.76	48.42	35.94	35.33	95.44	91.15
12'	0.16	0.00	8.0	45	45.82	47.69	39.23	40.23	87.12	86.89
13'	0.16	0.00	8.0	50	45.03	46.29	43.10	43.98	82.62	81.59
14'	0.16	0.00	8.0	55	43.53	44.22	44.17	46.58	80.24	75.23
15'	0.16	0.00	8.0	60	40.83	41.48	47.74	48.03	68.86	67.83
16'	0.00	0.55	8.0	50	38.00	36.29	93.26	93.20	79.05	77.15
17'	0.00	0.83	8.0	50	39.96	40.00	93.60	94.38	95.40	91.20
18'	0.00	1.04	8.0	50	40.11	41.53	94.03	92.92	96.01	98.51
19'	0.00	1.11	8.0	50	42.24	41.80	94.05	91.98	97.08	100.00
20'	0.00	0.83	7.0	50	37.87	40.19	93.70	93.15	77.36	78.72
21'	0.00	0.83	7.5	50	38.79	39.21	93.17	94.18	91.31	85.56
22'	0.00	0.83	8.0	50	39.96	40.00	93.60	94.38	95.40	91.20
23'	0.00	0.83	8.5	50	42.76	42.54	93.27	93.77	96.45	95.65
24'	0.00	0.83	9.0	50	43.80	46.83	93.26	92.33	97.68	98.90

25'	0.00	0.83	8.0	40	41.76	41.18	93.28	92.06	98.89	100.00
26'	0.00	0.83	8.0	45	40.67	40.92	93.15	93.80	97.29	97.26
27'	0.00	0.83	8.0	50	39.92	40.00	93.44	94.38	95.39	91.20
28'	0.00	0.83	8.0	55	37.98	38.40	92.91	93.82	87.01	84.09
29'	0.00	0.83	8.0	60	36.53	36.13	93.16	92.10	72.12	75.93
