Asia Pacific Food Analysis Network

Preliminary Report of Results for APFAN PT2 Proficiency Testing Study
(Spiked Rice Flour, Natural Rice Flour, Fish Meal, Defatted Soya Bean Flour)

Spiked Rice Flour Results - Table 1 of 1

LAB NUMBER	Moisture, g/100g, as received	Moisture MU	Arsenic, As mg/kg, as received	Arsenic, As MU	Cadmium, Cd mg/kg, as received	Cadmium, Cd MU	Lead, Pb mg/kg, as received	Lead, Pb MU	Mercury, Hg mg/kg, as received	Mercury, Hg MU	Tin, Sn mg/kg, as received	Tin, Sn MU
1			0.650	0.190	0.591	0.112	1.054	0.334	0.556	0.186		
3	9.157	0.233										
13			1.30		0.278		1.49		0.331		12.9	
14	11.483	0.891			0.496		0.546				2.620	
15			0.575		0.557		1.19		0.523		10.1	
16			0.54	0.05	0.46	0.04	0.94	0.09	0.54	0.05	2.56	0.13
18			0.930		1.11		3.10		0.540		12.5	
19	9.922											
25	7.72		1.45	0.068	0.516	0.068	0.900	0.068	0.439	0.068	8.66	0.068
26							1.12	0.0851	0.0116	0.000254		
27			0.14	0.02	0.18	0.02	0.64	0.05				
29	10.078	0.073										
31	10.56	0.37	0.099	0.009	0.333		0.681	0.001	0.421		< 4.5	
32			0.547	0.029								
38	9.18	0.203	0.327	0.0249	< 0.150		2.77	0.313	0.224	0.110	100	0.958
39			0.705	0.109	0.465	0.025	0.664	0.047	0.493	0.039		
41	10.280	0.083										
42	10.0	0.167			0.713	0.0141	1.84	0.111	0.387	0.0177	10.5	0.793
43			0.597	0.040	0.511	0.030	1.12	0.050	0.514	0.010	8.44	0.950
44			0.513	0.534	1.32	0.063						
47			1.08	0.200	0.427	0.0264	0.985	0.0256				
48	10.316	0.110	< 0.020		0.723	0.065	9.971	1.118	0.560	0.09	< 0.05	
49	9.83	0.49	0.603	0.030	0.476	0.024	1.10	0.06			3.94	0.20
50	10.4	0.227										
53			0.710	0.005	0.472	0.036	0.987	0.048	0.570	0.063	9.61	0.21
54	9.43	0.08	0.574	0.050	0.481	0.006	1.23	0.21	0.547	0.050	9.26	0.73
58			0.831	0.07	0.466	0.06	0.495	0.08	0.318	0.13	9.62	0.50
59			0.40	0.002	0.39	0.09	< 0.05		0.46	0.005	< 0.10	

Spiked Rice Flour Results - Table 1 of 1

LAB NUMBER	Moisture, g/100g, as received	Moisture MU	Arsenic, As mg/kg, as received	Arsenic, As MU	Cadmium, Cd mg/kg, as received	Cadmium, Cd MU	Lead, Pb mg/kg, as received	Lead, Pb MU	Mercury, Hg mg/kg, as received	Mercury, Hg MU	Tin, Sn mg/kg, as received	Tin, Sn MU
69	10.37		0.813		0.391		0.964		0.317		1.49	
72	10.0	0.01	0.947	0.08	0.182	0.02	0.228	0.02	0.660	0.06	11.8	1.00
73A	9.53	0.38										
74	10.06											
75	7.153	0.057	0.741	0.042	0.472	0.020	1.035	0.025	0.509	0.010	7.732	0.754
76			0.87	0.17	0.53	0.02	0.97	0.11	0.44	0.02	1.39	0.21
81	10.3	0.0					1.10					
82A	9.37	0.13	0.50	0.09								
82B	9.37	0.13			0.493	0.076	1.11	0.27	0.553	0.077		
84			0.663	0.066	0.562	0.056	0.950	0.095	0.476	0.048	9.005	0.900
85	9.24	0.01										
88			0.724	0.004	0.074	0.002			0.561	0.004	0.314	0.004
91					0.576		3.56					
95									0.2344	0.059		

Natural Rice Flour Results - Table 1 of 2

LAB NUMBER	Moisture, g/100g, as received	Moisture MU	Nitrogen, g/100g, as received	Nitrogen MU	Ash, g/100g, as received	Ash MU	Sodium, Na mg/kg as received	Sodium, Na MU	Potassium, K mg/kg as received	Potassium, K MU	Calcium, Ca mg/kg as received	Calcium, Ca MU
3	11.881	0.205	1.109	0.032	0.300	0.004						
7	12.4	0.1	0.8		0.5	0.0	0.0	0.0				
10	13.68		1.15		0.32							
13							111		110		28.2	
14	13.402		1.148	0.012	0.322	0.005	241.893		174.502		89.342	
15	13.5						319		162		88.6	
16	12.3	0.08	1.15	0.12	0.34	0.01	343	22	164	16	114	11
18	12.9		1.32		0.200		355		178		77.4	
19	12.952		1.162		0.255						1330	
25	11.8		1.15		0.368		79.7	0.068	29.9	0.068	17.7	0.068
26	13.0	0.0792	1.14	0.0100	0.312	0.000469	383	24.5	219	13.1	143	7.72
28	13.1	0.773	1.14	0.0734	0.328	0.0964						
29	13.260	0.057	2.164	0.233	0.350	0.028	158.050	13.364	91.620	8.400		
31	12.85	0.45	1.19	0.03	0.45	0.02	295.004		159.113		128.840	
32	13.6	0.310	1.10	0.025	0.342	0.143	369	15.2	93.9	10.2	84.3	7.12
36	13.4	0.1	1.13	0.031	0.302	0.042						
38	12.5	0.205	1.12	0.304	0.297	0.0217	553	75.7	171	5.73	139	17.0
39	13.5		1.14		0.294		365		166		79.9	
41	13.46	0.109	1.147	0.040	0.302	0.015					0.000	

Natural Rice Flour Results - Table 1 of 2

LAB NUMBER	Moisture, g/100g, as received	Moisture MU	Nitrogen, g/100g, as received	Nitrogen MU	Ash, g/100g, as received	Ash MU	Sodium, Na mg/kg as received	Sodium, Na MU	Potassium, K mg/kg as received	Potassium, K MU	Calcium, Ca mg/kg as received	Calcium, Ca MU
42	13.2	0.221	1.12	0.00744	0.300	0.0107	260	9.88	199	14.3	862	55.2
43	13.75	0.220	1.17	0.079	0.507	0.032	296.23	6.18	146.15	0.860	98.44	18.88
44	13.2	0.20	1.15	0.010	0.337	0.165	380	42	122	4.1	141	17.0
47							310	3.49			80.3	0.726
48	13.481	0.130	1.185	0.100	0.295	0.050	281.159	3.074	139.500	8.533	108.806	4.363
49	13.32	0.67	0.99	0.05	0.26	0.02	252	13	148	7	104	5
50	13.6	0.227	1.14	0.025								
51					0.301	0.0164	297	23.5	143	5.86	106	4.34
52	13.770	0.122	1.121	0.112	0.373	0.0635	321.662		156.041		112.296	
53							327	3	163	1.55	103	6
54	12.4	0.1	1.12	0.104	0.532	0.081	2750	105	138	39	78.8	9.87
57	13.4	0.178	1.11	0.112								
58	13.4	0.89	1.17	0.03	0.318	0.01	271.8	21.1	183.5	2.60		
59	11.37	0.01			0.34	0.03	590.35	171.90	421.09	69.58	385.59	26.55
60	12.67		1.17		0.30		400		700		100	
61	13.2	2.00	1.14	0.05	0.31	0.00961	288	39.7	144	49.0	78	21.4
64	13.489	0.10									120.795	1.00
66	10.8	0.33										
69	12.60		1.105		0.528		315		153		424	
71	12.70	0.3990	1.18	0.0355	0.28	0.0794					0.04	0.0234
72	13.1	0.01	1.25	0.05	0.33	0.05	444	38.1	181	16.0	65.3	5.10
73A	12.87	0.51	1.18	0.12	0.27	0.07					0.02	0.0
73B											0.016	0
74	11.79											
75	10.608	0.085	< 0.100		0.442	0.024	405.095	15.902	153.754	4.177	91.130	5.827
76	13.65	0.36	1.20	0.01	0.31	0.01	209.84	11.33	128.51	2.65	36.84	3.81
77	13.44		1.27				103.62		87.55		152.34	
78	13.17	1.20	1.13	0.1	0.34	0.1	371	14	175	3	160	7.61
79	12.785	0.829	1.150	0.040	0.267	0.323						
81	13.2	0.1	1.12	0.01	0.300	0.016	317	7	163	6	71.8	3.1
82A	12.8	0.12					124	0.40	165	15.6	116	36.0
82B	12.8	0.12									89.6	8.34
84	13.63		1.22		0.330		323	32	115	12	82.3	8.2
85	12.24	0.04	1.03	0.01	0.67	0.07						
88	10.853	0.030	1.136	0.100	0.299	0.102	394.988	0.132	128.991	0.250	143.764	1.68
89	12.499	0.218	1.054	0.053	0.336	0.002	1706.497	25.597	674.758	10.121	26.393	0.396
91	13.4	0.01	1.13	0.05	0.324	0.016	323	14	34.8		58.3	
93	12.71		1.17		0.44		400		200		< 0.10	
94	13.49		1.1638		0.309		303		198		9.10	

Natural Rice Flour Results - Table 1 of 2

LAB NUMBER	Moisture, g/100g, as received	Moisture MU	Nitrogen, g/100g, as received	Nitrogen MU	Ash, g/100g, as received	Ash MU	Sodium, Na mg/kg as received	Sodium, Na MU	Potassium, K mg/kg as received	Potassium, K MU	Calcium, Ca mg/kg as received	Calcium, Ca MU
95	12.825	0.07	1.15	0.11	0.205	0.002	490	100	370	50	180	10
96	13.5				0.349							
98	12.6		1.17		0.27							

Natural Rice Flour Results - Table 2 of 2

LAB NUMBER	Iron, Fe mg/kg as received	Iron, Fe MU	Phosphorus, P mg/kg as received	Phosphorus, P MU	Copper, Cu mg/kg as received	Copper, Cu MU	Zinc, Zn mg/kg as received	Zinc, Zn MU	Amylose (Rice Starch) g/100g as received	Amylose (Potato Starch) g/100g as received	Total Dietary Fibre g/100g as received	Total Dietary Fibre MU
13	9.76				1.07		5.21					
14	4.636		694.558		1.659		11.248			26.674	0.484	
15	4.88				1.88		11.3		26.7			
16	6.18	0.62	865	9	1.45	0.15	13.2	1.3			3.17	0.32
18	10.3		862		1.45		11.8					
19			350								0.110	
25	2.46	0.068	76.8		1.35	0.068	2.91	0.068				
26	7.55	0.529			2.14	0.0474	11.6	1.01				
29	4.980	0.370	275.418	6.136	0.672	0.171	9.791	0.523			6.852	0.110
31	6.429		557.669	45.278	0.716	0.096	9.647	0.541		32.10	0.33	
32	3.55	0.983					12.7	0.920			1.42	0.046
38	4.53	0.134	859	1.77	4.65	1.76	10.9	0.561			2.35	0.403
39	4.67				1.14		9.69				0.554	
41			0.048									
42	5.68	0.410	644	11.6	1.60	0.0194	12.1	0.264				
43	4.06	0.030	939.28	165.28	1.69	0.100	12.26	1.45			7.35	0.729
44	10.1	3.7										
47	4.62	0.0635			1.72	0.0307	10.9	0.123				
48	4.939	0.373	754.990	32.044	1.722	0.188	11.628	0.213			0.927	0.150
49	34.7	1.7	818	41	0.271	0.014	16.1	0.8			1.65	0
51					4.16	0.366	12.7	0.581				
52	8.272						22.211					
53	5.21	0.07			2.07	0.10	14.78	0.6				
54	4.34	1.12	814	9	0.686	0.041	10.7	0.6			0.979	0.058
57							9.10	1.99				
58	9.77	1.98	761.8	72.51			39.3	2.32			4.55	1.94
59	7.28	1.38	830.94	32.22	1.82	0.39	7.38	0.70			0.29	0.01
60	200		800				300					

Natural Rice Flour Results - Table 2 of 2

LAB NUMBER	Iron, Fe mg/kg as received	Iron, Fe MU	Phosphorus, P mg/kg as received	Phosphorus, P MU	Copper, Cu mg/kg as received	Copper, Cu MU	Zinc, Zn mg/kg as received	Zinc, Zn MU	Amylose (Rice Starch) g/100g as received	Amylose (Potato Starch) g/100g as received	Total Dietary Fibre g/100g as received	Total Dietary Fibre MU
61	< 4.00	0.472	910	126	0.90	0.280	12.0	3.29			1.10	0.154
64	8.185	0.26					13.889	0.08				
69	5.18		895		2.60		12.3				8.572	
71			0.07	0.0715								
72	5.98	0.50			5.50	0.50	15.4	1.30				
73A			0.09	0.02			25.390	7.87				
75	5.612	0.473	1092.720	29.685	1.471	0.136	13.558	0.963				
76	3.70	0.18	848.69	0.47	1.90	0.24	11.15	1.30				
77	10.79		3.088		1.580		9.628					
78					2.58		11.9	0.2				
79			907.161						29.493			
81	6.25	1.07					11.9	1.8			2.31	0.19
82A	13.2	2.83					14.2	0.42				
82B					1.88	0.41						
84	4.68	0.47			1.63	0.16	11.4	0.11				
88	5.105	0.10	11.013	0.12	8.413	0.04	36.897			45.445	0.42	
89	28.201	0.423			7.221	0.108						
91	12.1				0.591		9.33					
94	2.60				1.80		10.1				1.02	
95			800	800			19.5	2				

Fish Meal Results - Table 1 of 3

LAB NUMBER	Moisture g/100g, as received	Moisture MU	Nitrogen g/100g, as received	Nitrogen MU	Fat g/100g, as received	Fat MU	Ash g/100g, as received	Ash MU	Sodium, Na mg/kg, as received	Sodium, Na MU	Potassium, K mg/kg, as received	Potassium, K MU
2	9.85	0.30	9.01	0.27	4.39	0.21	27.4					
5	9.291		8.606		6.382		27.186					
6	9.214	0.132	9.049	0.73	6.538	0.236	27.168	0.973	9325.727	1411.650	7905.979	863.276
7	8.9	0.1	5.1		7.8	0.2	27.9	0.4	515.3			
9	9.313		8.665		6.865		27.361					
11	9.30		8.60		6.16		27.48		10102.22		7152.92	
13									7520		3410	
14	9.216	0.580	8.980	0.171	8.873	0.016	27.547	1.057	9864.917		6827.015	
15	9.26		8.98		5.81		27.0					
16	9.20	0.16	9.02	0.27	7.82	0.12	27.3	0.01	11380	114	7965	80
17	9.294	0.110	9.660	0.180	7.019	0.502	27.168	0.317				
18	9.18		8.99		8.23		27.4		10300		7490	

Fish Meal Results - Table 1 of 3

LAB NUMBER	Moisture g/100g, as received	Moisture MU	Nitrogen g/100g, as received	Nitrogen MU	Fat g/100g, as received	Fat MU	Ash g/100g, as received	Ash MU	Sodium, Na mg/kg, as received	Sodium, Na MU	Potassium, K mg/kg, as received	Potassium, K MU
19	9.2926		8.918		7.265		27.184					
21	10.5	0.038	8.75		9.07		27.5	0.208	11289	29.123	6271	16.177
22	8.42		8.79		7.54		27.3		9589			
23	9.17		8.92		6.97		27.9		9690		7240	
24	8.78	0.14	9.16	0.296	7.26	0.11	27.24	0.21				
25	9.58		8.47		5.50		27.0		13000	0.068	7540	0.068
26	9.47	0.0530	8.85	0.0660	8.44	0.0521	27.4	0.0319	8220	518	6340	394
27	9.17	0.26	8.99	0.57	8.2	0.17	27.39	0.19				
31	9.14	0.32	8.78	0.21	9.65	0.29	25.00	0.98	7712.398		5594.160	
32	8.92	0.180	8.87	0.105	7.25	0.147	27.2	0.545				
33	10.8	1.51	8.71	0.24	7.11	0.55	26.9	0.58				
34	9.00		9.01	0.027	7.19	0.012	27.7	0.026	10400			
37	9.138						27.527		10181		7326	
38	9.62	0.202	8.88	0.599	9.03	1.15	27.14	0.0483	9860	1390	7140	251
39	7.78		8.87		8.16		27.5		10200		7340	
41	9.978	0.080	8.947	0.310	8.397	0.381	26.778	1.319				
42	9.76	0.109	9.15	0.220	8.26	0.0859	24.0	0.158	2530	102	9230	662
43	10.21	0.334	8.81	0.454	6.68	0.691	27.45	0.414	10455.69	145.09	7304.39	891.27
44	9.64	0.68	8.992	0.0016	3.94	0.07	27.1	1.25	9881	143	7131	356
45	9.113	0.113	8.924	0.343	6.858	0.269	27.457	0.077	8194.700	624.818	7108.332	256.463
46	7.68	0.0570										
48	9.088	0.160	8.739	0.130	8.823	0.230	27.405	0.110	9877.395	42.234	8230.217	122.969
49	10.2	0.2	8.51	0.42	6.82	0.34	27.5	1.4	8950	448	6850	343
50	10.5	0.227	8.99	0.194			26.9	0.115	10311	1126		
52	11.528	0.0987	8.596	0.0243	8.626	0.0616	27.240	0.148	9344.528		6827.414	
53			8.848	0.064	7.44	1.36			6687	66	7259	436
54	9.32	0.09	9.33	0.353	8.90	0.04	27.5	0.1	11000	412	7360	600
55	8.955	0.02	8.789	0.09	7.286	0.17	27.623	0.14	9905.294		7594.592	
58	8.77	0.18	9.13	0.26			27.6	6.35	9183.5	87.39	7845.0	296.47
60	9.08		8.99		6.94		27.39		100		23100	
61	9.56	1.45	8.82	0.388	7.3	0.934	26.96	0.836	9360	1290	6680	2270
63	9.19		8.83		8.49		27.2		10418		7548	
64	13.050	0.14										
66A	9.14	0.12			3.17	0.11						
66B	8.64	0.12			3.02	0.08						
66C	8.80	0.12			6.49	0.11						
67	9.09	0.25	9.01	0.24	6.62	0.29	27.2	0.59	1020		6750	
68	11.0		8.90		4.98		27.3					
69	8.69		8.757		7.419		26.89		9950		8010	
70	8.08	0.5					27.3	2.0				

Fish Meal Results - Table 1 of 3

LAB NUMBER	Moisture g/100g, as received	Moisture MU	Nitrogen g/100g, as received	Nitrogen MU	Fat g/100g, as received	Fat MU	Ash g/100g, as received	Ash MU	Sodium, Na mg/kg, as received	Sodium, Na MU	Potassium, K mg/kg, as received	Potassium, K MU
71	9.20	0.2896	8.98	0.2702	6.535	0.2337	27.03	2.1745				
72	8.19	0.01	9.80	0.05	6.83	0.12	27.32	0.05	13600	1160	91600	7790
73A	8.98	0.38	9.01	0.8	7.07	0.29	27.03	0.20				
74	8.48											
75	7.923	0.212	9.442	0.141	6.042	0.091	29.825	0.392	14444.777	739.290	8333.333	161.471
77	9.20		9.66		9.30		20.63		7199		6154	
78			8.80	0.1					10367	402	8025	148
79	8.295	0.738	8.854	0.306	8.174	0.142	27.261	0.337				
80	10.6		8.98				26.8					
81	8.97	0.01	8.60	0.10	8.67	0.14	27.2	0.5	9410	179	6760	222
82A	9.57	0.13							7880	570	7600	600
82B	9.57	0.13										
83	8.539	0.235	8.863	0.102	8.546	0.120	27.296	0.039	9632.630	389.259	7253.330	137.823
84	9.05		8.98		7.18		27.2		11600	1160	7680	768
85	8.88	0.01	9.01	0.02			27.47	0.01				
86	11.1	0.53	9.00	0.90	8.34	0.86	27.1	2.41	10261	614	7742	452
87	8.646	0.02	8.629	0.35	7.280	0.33	27.207	0.11	9754.389	62.80	8573.510	24.55
88	8.295	0.039	8.771	0.100	4.013	0.073	27.563	1.108	14255.505	0.132	6152.962	0.250
89	8.572	0.150	8.763	0.435	7.015	0.182	27.502	0.145	6549.232	98.238	6403.428	96.051
90	11.718	0.28	8.518	0.12	3.603	0.05	26.890	1.91	10014		6753	
91	9.82	0.01	8.70	0.05	8.15	0.029	27.1	0.016	10700	14	7530	
92	9.62		9.06		7.45		27.3		1030		833	
93	7.91		8.71				27.16		11200		7200	
94	11.2		9.21		9.42		27.7		12906		12408	
95	9.035	0.060	8.925	0.082	6.570	0.210	27.125	0.250	9830	1700	7240	830
96	10.0						26.6					
100	9.35	0.16	8.8	0.33	6.44	0.30	27.50	0.12				

Fish Meal Results - Table 2 of 3

LAB NUMBER	Calcium, Ca mg/kg, as received	Calcium, Ca MU	Magnesium, Mg mg/kg, as received	Magnesium, Mg MU	Iron, Fe mg/kg, as received	Iron, Fe MU	Phosphorus, P mg/kg, as received	Phosphorus, P MU	Copper, Cu mg/kg, as received	Copper, Cu MU	Lead, Pb mg/kg, as received	Lead, Pb MU
2							7820					
6	80262.327	4356.154	3353.128		1088.033		42733.866	1234.087	5.170		2.565	
11	88733.36		2810.91		1059.90		40554.22		6.42		1.72	
13	65100		978		670				1.61		0.970	
14	85718.063		2993.230		558.603		44782.615		2.357		2.079	
15							44000					

Fish Meal Results - Table 2 of 3

LAB NUMBER	Calcium, Ca mg/kg, as received	Calcium, Ca MU	Magnesium, Mg mg/kg, as received	Magnesium, Mg MU	Iron, Fe mg/kg, as received	Iron, Fe MU	Phosphorus, P mg/kg, as received	Phosphorus, P MU	Copper, Cu mg/kg, as received	Copper, Cu MU	Lead, Pb mg/kg, as received	Lead, Pb MU
16	96760	967	3514	35	1012	93	44538	445	3.84	0.25	1.39	0.14
18	31900		2710		1320		43800		2.47		4.81	
19	77300						43410					
20											0.8695	
21	109689	282.972	3549		842	2.172	115		0		7.74	
22	46298		2868		1141		4061		1.65		2.03	
23	84500		2960		846		43400		3.57		2.07	
25	64500	0.068	3000	0.068	992	0.068	42200		6.33	0.068	0.844	0.068
26	69800	3710	2830	142	1020	76.1			2.94	0.0652		
27									1.43	0.13	0.63	0.16
31	15721.057		837.504		22.680		38514.080	3127.057	1.510	0.202	< 0.011	
34	655.0				446.0				6.36		1.04	0.16398
37	82823		3286		1057		41268		2841			
38	74400	2760	2870	113	1150	93.0	47400	99.7	1.04	0.778	4.65	1.49
39	88800		3480		1120				5.87			
41	7.584						3.299					
42	72300	4620	2360	69.3	1060	76.7	42600	768	1.64	0.0198	< 0.040	
43	82240.65	3937.77	3332.37	166.55	797.53	124.01	43997.37	6525.04	3.47	0.400	2.63	0.280
44	81739	6224			837	94						
45	78682.423	3626.990	3137.668	123.976	970.451	33.620	43950.573	2576.507	4.983	0.273		
46									0.650	0.00916		
48	115694.555	207.025	5212.371	28.58	1120.729	27.841	44803.383	383.800	6.516	0.717	9.512	1.118
49	82100	3510	3000	151	1030	52	44100	367	0.280	0.014	1.52	0.08
50					700	86.6			5.51	0.705	29.4	9.28
52	84063.771				1175.211						1.884	
53	75807	4599	1988	56	860	92			3.10	0.77	1.43	0.14
54	79100	10000	3290	58	874	116	42441	299	2.08	0.17	2.27	0.16
55	83912.233		3255.344		855.632		43912.254		3.460			
58	85777.3	3950.2	3247.0	7.53	1145.1	36.2	41705.9	329.61			10.2	1.78
60	91100		3300		1100		35500					
61	77500	21200	2990	437	1030	122	33900	4710	6.50	2.02		
63	65787		3006		971				2.55		2.30	
64	81343.224	488			1063.032	3.03						
67	90300		3640		1160		43600	6100	7.87		1.60	
68							45703					
69	58200		2570		403		51400		5.76		1.69	
70											1.20	0.40
71	8.36	0.4975					4.46	0.1975				
72	72800	6920	3010	256	238	21.1			3.83	0.30	5.22	0.40

Fish Meal Results - Table 2 of 3

LAB NUMBER	Calcium, Ca mg/kg, as received	Calcium, Ca MU	Magnesium, Mg mg/kg, as received	Magnesium, Mg MU	Iron, Fe mg/kg, as received	Iron, Fe MU	Phosphorus, P mg/kg, as received	Phosphorus, P MU	Copper, Cu mg/kg, as received	Copper, Cu MU	Lead, Pb mg/kg, as received	Lead, Pb MU
73A	8.36	0.38			887.514	151.160	4.48	0.27				
73B	8.435	0.38										
75	92126.024	3488.409	4718.394	26.521	1005.942	84.861	62797.084	606.634	2.445	0.226	1.383	0.034
77	58955		2489		500.5		28245		6.12		< 0.01	
78	83871	2516	3293		1085	19			2.64	0.4		
79							276.660					
80							44600		3.36		1.50	
81	83700	2910			1160	129					1.60	
82A	60700	1040	2340	600	828	54.5						
82B	106000	5500							3.90	0.46	0.812	0.120
83	82605	3004.329	3288	4.856	931.400	29.914	46338.450	1033.350	4.006	0.040	1.772	0.106
84	110000	11000	3630	363	943	94			2.95	0.30	1.67	0.17
86	85816	4944	3294	212	984	72.8	41864	2550	3.70	0.23	1.88	0.16
87	65799.576	1709.87	3586.961	9.14	808.501	2.65	46994.088	136.82	3.495	0.19	5.290	0.14
88	51645.120	1.68	1529.122	0.04	362.592	2.49	4479.870	2.14				
89	16306.847	244.599	2057.767	30.866	27.015	0.405			2.362	0.035		
90	52977		3069		866		42624		4.392		0.344	
91	68100		3010		991				2.70		4.14	
92	9140		341		549		4355		8.06			
93	9800											
94	94926		3618		1226				36.0			
95	84100	2800	3260	360	914.5	37.0	43550	1700				

Fish Meal Results - Table 3 of 3

LAB NUMBER	Zinc, Zn mg/kg, as received	Zinc, ZN MU	Arsenic, As mg/kg, as received	Arsenic, As MU	Cholesterol mg/100g, as received	Cholesterol MU	Energy kJ/100 g, as received	Energy MU	Tryptophan mg/g, as received	Tryptophan MU	TVBN mg/100g, as received	TVBN MU
2					526		1150				187	
6	97.117		0.288								222.53	
11	969.01		0.75		514.32		1191.46					
12					244	30						
13	21.4		6.62									
14	76.115		5.730		577.877		304.361					
15							1190				232	
16	125	6	7.97	0.79	88.5	0.36	1242					
18	66.1		1.29				1590					
19											223.900	

Fish Meal Results - Table 3 of 3

LAB NUMBER	Zinc, Zn mg/kg, as received	Zinc, ZN MU	Arsenic, As mg/kg, as received	Arsenic, As MU	Cholesterol mg/100g, as received	Cholesterol MU	Energy kJ/100 g, as received	Energy MU	Tryptophan mg/g, as received	Tryptophan MU	TVBN mg/100g, as received	TVBN MU
20											262.32	
21	79.6		3.35		491		1258				312	
22	91.7		4.19				1234					
23	72.1		6.17		488		1573		4.62		221	
25	78.7	0.068										
26	73.5	6.37										
27	28.56	4.52	2.63	0.34							159.23	1.39
31	21.132	1.186	0.491	0.047	< 1.1		311.69					
32					457	18.0	1221					
34			11.6									
37	87.367				558.540							
38	67.1	3.17	0.796	0.0302			828					
39	79.7				554				4.25			
42	83.6	1.82			724	25.0						
43	103.90	5.57	9.16	0.480	645.93	138.63	1187.59	26.29	4.34	0.110	244.03	16.78
45	90.692	3.667									228.592	10.628
48	102.961	1.192	9.480	0.272	537.127	20.154	1247.43					
49	104	5	0.148	0.007	542	27	283	14			219	0
52	100.753		7.280									
53	75.9	9.7	7.66	0.25								
54	75.0	2.9	6.05	1.7	476	14						
55	83.226				441.938	11.04						
58	98.6	1.69	0.321	0.04	565.2	16.91					238.78	6.91
60	800						1391.77		4.0		233.12	
61	99.3	27.2			461	83.0	1230	332				
63	88.1		2.83		526		1259				282	
64	95.495	1.00										
67	98.6		0.370				1200				214	
68					522		272		4.17		222	
69	89.5		7.92		421.00		1240.76					
70			0.122	0.04								
71											224.88	6.7442
72	70.7	6.12	4.11	0.40	471	10	258	0.23				
73A	88.672	15.930									216.82	4.72
75	102.407	7.273	8.638	0.484								
77	92.96		< 0.001								35.42	
79					352.246		290					
80			7.88									
81	91.5	7.7			558		299	1				

Fish Meal Results - Table 3 of 3

LAB NUMBER	Zinc, Zn mg/kg, as received	Zinc, ZN MU	Arsenic, As mg/kg, as received	Arsenic, As MU	Cholesterol mg/100g, as received	Cholesterol MU	Energy kJ/100 g, as received	Energy MU	Tryptophan mg/g, as received	Tryptophan MU	TVBN mg/100g, as received	TVBN MU
82A	80.9	4.61	5.98	0.55								
83	81.220	0.472	8.480	0.075	453.500	12.500	1248.970		0.222	0.004	229.342	6.120
84	91.4	0.91	8.27	0.83	433	13	1230					
86	84.0	4.09	6.96	0.41	422	9.53	1266		3.05		241	
87	90.950	0.27	8.383	0.10	348.508	34.80	292.988	25.40			764.361	76.44
88	239.594	0.55	0.333	0.01	494.626	0.10	1161.859				248.537	0.24
89							210					
90	86.184		0.018				1104.404	2.36				
91	83.2						1230					
92									4.89	0.071	227	
94	58.0				527							
95	75.5	9									218.185	9.94

Defatted Soya Bean Flour Results - Table 1 of 2

LAB NUMBER	Moisture g/100g, as received	Moisture MU	Nitrogen g/100g, as received	Nitrogen MU	Fat g/100g, as received	Fat MU	Ash g/100g, as received	Ash MU	Sodium, Na mg/kg, as received	Sodium, Na MU	Potassium, K mg/kg, as received	Potassium, K MU	Calcium, Ca mg/kg, as received	Calcium, Ca MU
2	7.92		8.09		0.102		6.59							
4	8.07	0.13	7.99	0.22	1.61	0.12	6.20	0.16						
5	7.305		7.794		0.518		6.147							
6	7.079	0.101	8.084	0.65	0.111	0.004	6.058	0.210	53.324	9.143	24047.505	1825.964	2188.984	238.115
8	7.06	0.21					6.06	0.01						
9	7.278		7.808		0.144		6.121							
10	7.70		7.84		0.28		6.02							
11	8.06		7.54		0.00		6.69		406.52		24082.38		43816.27	
12	6.36	0.03	8.01	0.034	< LOD		6.44	0.04	287		21460		1720	140
13									15.6		4980		1120	
14	7.975	0.296	7.873	0.242	1.983	0.016	6.058	0.050	38.865		23499.660		1962.807	
15	7.81		8.02		0.664		6.02				22900		2080	
16	6.33	0.05	7.75	0.22	2.29	0.11	5.97	0.06	40	2	26149	260	2253	23
18	7.19		7.83		1.64		6.66		148		24600		1250	
19	7.1748		7.903		0.280		5.839						3970	
21	7.85	0.028	7.76		1.45		6.83	0.052	819	2.113	22835	58.909	2544	6.563
22	7.46		7.66		0.55		7.30		51.2				741	
23	7.47		8.02		< LOR		6.16		< LOD		24400		2020	
25	6.49		7.43		0.968		6.53		119	0.068	17300	0.068	1230	0.068

Defatted Soya Bean Flour Results - Table 1 of 2

LAB NUMBER	Moisture g/100g, as received	Moisture MU	Nitrogen g/100g, as received	Nitrogen MU	Fat g/100g, as received	Fat MU	Ash g/100g, as received	Ash MU	Sodium, Na mg/kg, as received	Sodium, Na MU	Potassium, K mg/kg, as received	Potassium, K MU	Calcium, Ca mg/kg, as received	Calcium, Ca MU
26	7.08	0.0432	7.88	0.232			5.92	0.00690	392	20.3	21700	1900	1990	112
27	6.77	0.26	8.70	0.57	1.41	0.17	7.79	0.19						
30	7.700		7.182		2.284		6.883							
31	7.13	0.25	7.82	0.18	2.20	0.07	6.65	0.26	551.510		18364.230		1875.768	
32	7.48	0.152	7.95	0.204	0.822	0.030	6.69	0.136			27953	4195		
35	6.62	0.36	7.86		0.67		7.18	0.12						
36														
37	8.170						6.296		33.178		22653		1998	
38	7.29	0.202	7.90	0.550	1.88	0.240	6.49	0.0244	303	43.6	22000	869	1740	82.0
39	7.89		7.93		1.35		6.21		30.6		22600		1920	
40	7.67	0.05					5.30	0.028						
41	7.525	0.060	7.951	0.276	2.039	0.090	6.108	0.298					0.300	
42	6.65	0.0745	7.84	0.188	0.780	0.00811	0.130	0.000858	157	6.38	30900	2220	1970	126
43	7.801	0.100	7.801	0.400	0.405	0.300	6.29	0.030	6.63	0.020	27680.54	833.73	2147.89	291.01
44	7.53	0.76	8.02	0.014	1.70	0.07	6.76	0.75			23106	1178	1575	132
45	6.924	0.184	7.960	0.524	0.178	0.013	6.715	0.077	58.496	4.345	22490.757	834.577	1947.451	66.739
48	7.645	0.190	7.718	0.150	1.446	0.110	6.479	0.140	328.746	6.959	22989.205	127.920	2482.471	23.620
49	3.67	0.18	6.94	0.36	4.04	0.20	6.67	0.33	42.4	2.1	23600	1180	1640	82
50	7.67	0.227	8.33	0.18	2.84	0.06	6.49	0.115	153	35.1	24189	1371	1585	86.1
53			7.86	0.088									2806	197
54	7.44	0.08	7.51	0.286	1.79	0.04	6.44	0.10			24000	2000	1920	233
55	7.898	0.06	7.700	0.08	1.162	0.04	6.206	0.04	35.136		13459.944		2033.750	
56	7.59	0.46	7.81	0.203	1.54	0.01	6.26	0.06						
58	7.65	0.26	7.85	0.23			6.46	0.58	10.2	2.75	22453.1	331.90	2052.7	22.62
59	5.78	0.02			0.70	0.01	6.16	0.06	415.60	171.66	43695.35	1394.22	1975.23	136.15
60	6.98		7.92		0.37		6.34		54		18800		2000	
61	7.46	1.13	7.82	0.344	1.50	0.101	6.08	0.188	< 10.0	1.38	20700	7040	1970	540
62	6.15						6.58							
63	7.83		7.97		1.87		6.10		57.1		21222		1785	
64	7.374	0.06											2191.759	28
65	4.978						6.196							
66A	6.95	0.25			0.11	0.08								
66B	5.76	0.10			0.06	0.04								
67	7.84	0.22	8.03	0.22	0.110	0.01	6.99	0.15	< 100		19200		2100	
68	8.19		7.88		1.84		6.60							
69	6.94		7.927		0.359		6.339		29.8		27000		2350	
70	4.85	0.5					6.64	0.5						
71	7.08	0.2228	7.98	0.2401	0.22	0.0766	5.92	0.4816					0.16	0.0250

Defatted Soya Bean Flour Results - Table 1 of 2

LAB NUMBER	Moisture g/100g, as received	Moisture MU	Nitrogen g/100g, as received	Nitrogen MU	Fat g/100g, as received	Fat MU	Ash g/100g, as received	Ash MU	Sodium, Na mg/kg, as received	Sodium, Na MU	Potassium, K mg/kg, as received	Potassium, K MU	Calcium, Ca mg/kg, as received	Calcium, Ca MU
72	7.02	0.01	8.01	0.05	1.12	0.12	6.58	0.05	286	26.1	29000	2470	1760	167
73A	7.02	0.25	8.00	0.7	0.26	0.09	6.02	0.13					0.17	0.06
73B													0.2	0.04
74	6.24													
75	7.138	0.057	9.610	0.165	2.220	0.033	7.315	0.399	78.822	3.094	36877.918	1001.835	2053.889	131.327
78			7.77	0.1					119	4.62	22672	390	2529	120
79	6.456	0.646	8.018	0.277	1.870	0.032	5.992	0.299						
80	8.04		7.86				6.02							
81	7.50	0.06	7.82	0.09	2.07	0.08	6.08	0.1	14.4	2.6	22500	2290	2150	123
82A	6.71	0.08							5.71	0.24	23500	1200	2340	66
82B	6.71	0.08											2470	140
83	6.319	0.221	7.929	0.047	11.083	0.410	6.096	0.337	4.282	0.585	23669.800	334.645	2259	39.979
84	7.92		8.12		0.442		6.16		< 50		26600	2700	2180	220
85	5.86	0.03	7.90	0.003			6.45	0.02						
86	9.30	0.40	7.98	0.75	0.467	0.050	6.24	0.69	7.57	0.78	23499	1168	1958	115
87	6.094	0.02	7.669	0.35	0.516	0.20	6.073	0.18	148.060	0.76	27697.551	87.29	2479.464	62.09
89	6.563	0.115	7.707	0.382	0.844	0.022	6.451	0.034	374.526	5.618	16721.316	250.819	2441.542	36.623
90	7.978	0.40	7.680	0.14	1.302	0.04	6.058	0.14	58.207		17926		2273	
91	7.53	0.01	7.72	0.05	0.645	0.029	6.28	0.016	1130	14	21300		2100	
92	7.47		7.95		0.203		6.32		16		1855		215	
93	7.34		7.61		1.48		6.17		600		23800		200	
94	8.10		8.24		2.48		6.31		28.2		29330		2496	
95	7.16	0.04	7.905	0.072	0.280	0.01	6.04	0.055	320	100	22340	2610	2060	770
96	8.31						5.61							
97	7.20						6.00							
98	7.11		7.82		0.22		6.31							
100	9.03	0.16	7.86	0.33	0.15	0.01	6.13	0.12						

Defatted Soya Bean Flour Results - Table 2 of 2

LAB NUMBER	Magnesium, Mg mg/kg, as received	Magnesium, Mg MU	Iron, Fe mg/kg, as received	Iron, Fe MU	Copper, Cu mg/kg, as received	Copper, Cu, MU	Zinc, Zn mg/kg, as received	Zinc, Zn MU	Phosphorus, P mg/kg, as received	Phosphorus, P MU	Total Dietary Fibre g/100g, as received	Total Dietary Fibre MU
2									0.782		18.5	
4											16.5	0.42
6	2715.273		84.040		13.210		48.605		7564.043	231.104		
11	2348.37		85.78		13.98		477.57		7619.56		17.99	

Defatted Soya Bean Flour Results - Table 2 of 2

LAB NUMBER	Magnesium, Mg mg/kg, as received	Magnesium, Mg MU	Iron, Fe mg/kg, as received	Iron, Fe MU	Copper, Cu mg/kg, as received	Copper, Cu, MU	Zinc, Zn mg/kg, as received	Zinc, Zn MU	Phosphorus, P mg/kg, as received	Phosphorus, P MU	Total Dietary Fibre g/100g, as received	Total Dietary Fibre MU
12	3750	121	74.6	7.0	12.2	0.5	32.2	3	8180		18.6	1.69
13	1800		53.2									
14	2568.001		68.280		11.009		40.899		7959.402		16.540	
15	2540		75.5		11.6		43.3					
16	2933	30	66.7	2.05	9.01	0.21	54.1	5.41	7895	78	27.7	0.27
18	2500		118		9.49		37.5		7740			
19									7470		1.824	
21	2673		73.5	0.19	10.6		30.5		52.4		9.23	
22	3259		91.7		14.4		50.1		741			
23	2620		68.3		12.0		39.8		8070			
25	1800	0.068	65.8	0.068	9.74	0.068	34.2	0.068	6150			
26	2550	128	82.2	5.85	10.3	0.230	39.5	3.43				
31	2337.466		56.056		11.255	1.508	33.148	1.860	7034.958	571.186	15.89	
32							47.0	3.75			16.5	0.255
36			71.0									
37	2577		77.153		12.889		4.908		6985			
38	2040	93.8	56.2	4.64	11.9	1.68	42.3	1.69	7970	16.8	18.5	3.32
39	2500		74.0		15.2		36.2				14.2	
41									0.712			
42	2890	84.9	75.6	5.45	1.64	0.0198	47.7	1.04	7980	144		
43	2745.94	199.72	72.65	9.74	12.21	0.530	45.95	1.02	8492.17	802.43	31.02	3.71
44			82.8	14.2								
45	2704.517	106.826	89.639	3.378	11.207	0.792	41.564	1.418	7870.000	457.898		
48	4126.266	61.817	73.468	5.999	12.378	0.583	45.851	1.474	7398.892	212.870	18.144	0.430
49	2700	135	102	5	9.96	0.50	40.6	2.0	8310	416	24.0	0
50	2552	102	55.3	1.41	11.3	0.282	44.2	2.43				
53	2260	31	83.3	4.6	12.7	0.4	50.1	2.3				
54	2772	36	74.1	2.6	10.5	0.4	38.4	1.0	7624	153	17.6	0.1
55	2709.560		73.008		12.600		45.885		8026.087		13.452	1.81
58	2648.6	49.45	79.3	2.03	13.9	0.93	47.1	0.16	8016.2	130.50	28.3	0.17
59	3519.67	380.35	76.91	13.81	1.13	0.24	35.28	3.36	7639.09	303.74	7.38	0.23
60	100		100				2900		7300			
61	2480	362	74.0	8.73	11.6	3.61	40.7	11.2	7770	1080	15.4	2.16
63	2642		96.6		10.5		39.5				16.7	
64			75.131	0.24			45.972	0.19				
67	3040		91.8		17.5		48.4		7300	1100	14.4	
68									7867		16.8	
69	2370		124		11.8		44.1		9010		16.257	
71									0.79	0.2850	5.27	0.0765

Defatted Soya Bean Flour Results - Table 2 of 2

LAB NUMBER	Magnesium, Mg mg/kg, as received	Magnesium, Mg MU	Iron, Fe mg/kg, as received	Iron, Fe MU	Copper, Cu mg/kg, as received	Copper, Cu, MU	Zinc, Zn mg/kg, as received	Zinc, Zn MU	Phosphorus, P mg/kg, as received	Phosphorus, P MU	Total Dietary Fibre g/100g, as received	Total Dietary Fibre MU
72	2620	223	80.0	6.80	12.7	1.10	45.2	4.10	7780	0.12		
73A			75.983	15.490			45.931	7.99	0.81	0.04		
75	4619.052	111.931	86.918	7.332	14.105	1.305	50.760	3.605	14095.560	382.923		
78	2785				13.10		36.2	0.61				
79									54.403			
80					15.2		40.7		7600			
81			96.2	4.1			43.4	1.9			16.9	0.9
82A	2290	84	68.9	9.08	13.9	6.05	45.5	1.42				
82B					13.5	1.30						
83	2830	34.348	63.960	0.848	13.000	0.049	41.970	1.045	8880.430	21.853	19.696	1.041
84	2910	290	74.6	7.5	12.4	1.2	43.7	4.4				
86	2584	152	67.9	4.95	11.3	0.67	38.2	2.19	7058	519	17.0	1.15
87	3077.107	7.99	76.526	0.19	12.117	0.18	44.245	0.12	8212.324	20.74		
89	2412.129	36.182	30.558	0.458	28.989	0.435						
90	2746		74.876		12.668		43.202		7994		6.962	2.28
91	2640		77.2		11.7		40.3					
92	300		88.6		14.1				828			
94	3057		78.1		12.8		41.2				16.76	
95	2810	310	74.5	3			43	5	8000	310		

Asia Pacific Food Analysis Network

Report of Methods Used for APFAN PT2 Proficiency Testing Study
(Spiked Rice Flour, Natural Rice Flour, Fish Meal, Defatted Soya Bean Flour)

Spiked Rice Flour Methods - Table 1 of 1

LAB NUMBER	Moisture Weight (g)	Drying Temperature °C	Drying Time (hours)	Moisture Reference	Heavy Metals Weight g	Digestion Technique	Digestion Medium	Instrument	Wavelength (nm or mass)	Recovery correction	Heavy Metals Reference
1					0.5071	Microwave, Nilestone Srl MA 176-0020SK15		ICP-MS 7800		N	AOAC 2015.01
3	5.000 ± 0.001	105	18	AOAC International (2001)							
13					0.5	Microwave	HNO3 10 mL + HCl 2 mL	ICP-MS Thermo Scientific (iCAP RQ)	M/z: Pb 208, Cd 111, Hg 202, As 75, Sn 118	N	Internal Method
14	2	130 ± 3	1	AOAC 925.10	0.5	Wet Digestion	HNO3, H2O2	ICP Horiba Jobin Yvon	Cd 228.802, Pb 220.353, Sn 189.989	Y	AOAC 999.10
15					0.5	Ultrawave Digestion	5% HNO3 + 0.5% HCl	ICP-MS (7900 Agilent)	Pb 238, Cd 111, Hg 202, As 75, Sn 118	N	Based on USFDA 4.7 version 1.1
16	1 to 2	105	3	SNI 01-2891-1992 Food & Beverage	2	Microwave	HNO3+H2O2	ICP-MS 7700X Agilent		N	In-house Method
18					2.0	Dry Ashing (Wet Digestion for Hg, Sn)	HCl (HNO3 for Hg, Sn)	ICP-OES Agilent (AAS-VGA Varian, Agilent for Hg, As)	Hg 253.7, As 193.7, Sn 283.998	N	SNI 19-2896-1998
19	5	105	3	AOAC 934.01							
25	4.0365 / 4.0393	103	4	Laboratory Handbook of Methods of Food Analysis, 3rd Ed, R. Lees	5.0160 / 5.0123 (Hg 0.2244 / 0.2245	HNO3-HCl (Hg Cold Vapour)	Water	ICP-OES (Hg Hydra IIAA)	Pb 220.353, Cd 226.502, Hg 254, As 188.98, Sn 189.925		USEPA Method 3050B (Hg EPA-SW 846, Method 7470A
26					5.0	Dry Ashing (Wet Ashing for Hg)	Water & HCl (1+1) (Nitric:Perchloric (1+1) for Hg)	AAS Shimadzu AA-7000 (plus MVU-1A Mercury Vapourizer Unit for Hg)	253.7 Hg	N	AOAC No. 999.11 using flame AAS, 977.15 for Hg
27					0.1	Microwave digestion	HNO3 65% suprapure	ICP-MS 7700x Agilent		N	Gray J.P., Mindak R.W., Cheng J., 2015, Elemental

Spiked Rice Flour Methods - Table 1 of 1

LAB NUMBER	Moisture Weight (g)	Drying Temperature °C	Drying Time (hours)	Moisture Reference	Heavy Metals Weight g	Digestion Technique	Digestion Medium	Instrument	Wavelength (nm or mass)	Recovery correction	Heavy Metals Reference
											Analysis Manual for Food and Related Product, USFDA Version 1.1
29	5	105	16	AOAC (1984)	3	Dry Ashing	HCl				
31	3	105	3	SNI	5 (1 for Hg)	Dry Ashing (Microwave for Hg)		AAS (Cold Vapour for Hg)		N	AOAC 999.11, (Hg: SNI 01-3751, As: AOAC 986.15, Sn: SNI 3551:2012)
32					0.5117 (As)	Microwave	HNO3	Hydride Vapour-AAS, Perkin Elmer	193.7	N	Modified AOAC 986.15
38	2.000	130	1 until constant weight	AOAC 925.10, 19th Ed 2012	1.000	Dry Ashing	0.1 M HNO3	Flame AAS, Shimadzu AA6300	Pb 283.30, Cd 228.8, Hg 253.7, As 193.70, Sn 286.30		Modified AOAC 999.11
39					0.5	Microwave		GF-AAS (Hg: Mercury analyzer, As: Hydride AAS)	Pb 283.3, Cd 228.8, Hg 253.7, As 193.7	Y	AOAC 999.10 (Hg: 977.15, As: plus 986.15)
41	2	135 ± 2	2	AOAC (2016) 930.15							
42	2	130	1	SNI 3549:2009 Lampiran A.10	10 (0.5 for Hg, Sn)	Dry Ashing (Microwave Digestion for Hg, Sn)	HNO3-HCl (HNO3 for Hg, Sn)	Cu, Zn: Flame AAS 280 FS, Pb, Cd, Sn: GFAAS Agilent 240 FS, Hg: HG AAS Perkin Elmer	Pb 217.0, Cd 228.8, Hg 253.7, Sn 286.3	N	AOAC 999.11.2005 (Hg: SNI 3549:2009. Lampiran A.16, Sn: BS EN 15764:2009)
43					0.5	Microwave	HNO3	ICP-OES, ICP-MS	Pb m/z 208, Cd m/z 111, Hg m/z 202, As m/z 75, Sn 189.925	N	AOAC
44					1.0	Dry Ashing		AAS, Thermoscientific	Pb 217.0, Cd 228.8	N	AOAC 19th Ed, 2012
47					5 (2 for As)	Dry Ashing (Colorimetric for As)	Nitric Acid (H2SO4-H2O2 for As)	AAS - Shimadzu 7000 (Uv-Vis Hanon i3 for As)	Pb 217, Cd 228.8, As 535		AOAC 999.11 (Modified method for As)
48	2	130	1	SNI 3549 2009	5 (0.5 for Hg and As)	Dry Digestion (Hg, As Microwave Digestion)		AA800 Perkin Elmer	Pb 283.3, Cd 228.8, Hg 253.7, As 193.7, Sn 286.3	N	MU-03/20 (AAS)
49	2	130	1	AOAC 20th Ed 2016	2	Dry Ashing	6 M HCl	ICP-OES 5110 Agilent Technologies	Cd 226.502, Pb 220.353, As 188.980, Sn 283.998	N	AOAC 20th Ed 2016
50	2.1804	130	1.0	AOAC 925.10							
53					0.3	Microwave	4 mL HNO3, 1 mL HCl, 1 mL H2O2	ICPMS Thermo			In house method

Spiked Rice Flour Methods - Table 1 of 1

LAB NUMBER	Moisture Weight (g)	Drying Temperature °C	Drying Time (hours)	Moisture Reference	Heavy Metals Weight g	Digestion Technique	Digestion Medium	Instrument	Wavelength (nm or mass)	Recovery correction	Heavy Metals Reference
54	1	105	5	AOAC 927.05	1	Microwave digestion	HNO3 / H2O2	ICP / Shimadzu	Pb 220.353, As 193.7, Sn 189.989	N	AOAC 984.27
58					1.0	Acid Digestion	HNO3, H2O2	ICP-OES (AAS-Hydride for As, Hg)	Hg 253.7, As 189, Sn 189.925		Acid Digestion and Quantitation by ICP-OES (AAS-hydride for As, Hg)
59					Pb, Cd, Sn: 2.5, Hg: 1, As: 12.5	Dry Ashing		AAS, Shimadzu	Pb 283, Cd 228.8, Hg 253.7, As 193.7, Sn 286.3	Y	As: IK A2-LM10 (AAS), Pb+Cd: SNI 3751:2009 point A.14.1, Hg: SNI 01-2354.6-2006, Sn: SNI 01-2896-1995 point 5
72	2	130	1	AOAC 925.10	4 (Hg 0.5)	Ashing (Hg Acid Digestion)	HNO3 (Hg Aqua regia)	ICP-OES, JY Ultima (Hg FIMS 400, Perkin Elmer)	Pb 220.353, Cd 228.802, Hg 253.7, As 193.695, Sn 286.333	N	AOAC 999.11 (Hg EPA 7471)
73A	5	105	3	FTC-01.01 (refers to AOAC 945.39)							
74	5.0	105	3	SNI 01-2891-1992 (part 5.1)							
75	2	105 ± 2	4	SNI 01-2891-1992 Butir 5.1	1	Wet digestion (hot block)	HNO3 + H2O2	ICP-OES Agilent 5100, ICP-MS Agilent 7700x	208 Pb, 111 Cd, Hg 253.7, 75 As 193.696, Sn 189.925	N	In House Method ICP-MS & ICP-OES
81	2.0293 mean	130	1 then 0.5 until <0.005 mg diff	AOAC 925.10	mean 0.5229 (Pb)	Pb: Microwave Digestion	Pb: conc HNO3 + 30% H2O2	Pb: Thermo iCe 3500	Pb 217.0	N	AOAC 999.10 Mod (Pb)
82A	1.00	105	7.5	Drying Oven	0.250	none	none	HPGe detector, Canberra		N	Neutron Activation Analysis (NAA)
82B	1.00	105	7.5	Drying Oven	1.00	Microwave	Nitric Acid	Pb, Cd, As: AAS, Agilent, Hg, Cu: AAS GBC		Y	Pb, Cd, As: Graphite SSA, Cu: Flame SSA, Hg: Hydride Generation SSA
84					0.5	Microwave Digestion	HNO3 / H2O2	ICP-MS		N	AOAC 999.10:2005
85	2	105	3	SNI 01-2896-1992							
88					0.3 (Cu, Zn 3)	Microwave (Cu, Zn Dry Ashing)	H2O2 2 ml + HNO3 8 mL (Cu, Zn: HNO3 10 mL)	AAS GBC Hydride vapour (Cu, Zn: AAS GBC Flame, Cd: AAS-GF)	Cu 324.70, Pb 217.0, Hg 253.70, As 193.70, Sn 235.50, Zn	N	In house method (AAS)

Spiked Rice Flour Methods - Table 1 of 1

LAB NUMBER	Moisture Weight (g)	Drying Temperature °C	Drying Time (hours)	Moisture Reference	Heavy Metals Weight g	Digestion Technique	Digestion Medium	Instrument	Wavelength (nm or mass)	Recovery correction	Heavy Metals Reference
									213.90, Cd 228.8		

Natural Rice Flour Methods - Table 1 of 3

LAB NUMBER	Moisture Weight g	Drying Temperature °C	Drying Time (hours)	Moisture Reference	Nitrogen Weight (g)	Catalyst	Acid Volume (mL)	Receiver Solution	Titrant	N-Conversion Factor to Protein	Nitrogen Reference
3	5.000 ± 0.001	105	18	AOAC International (2001)	2.000 ± 0.001	CaSO4, CuSO4	12 mL H2SO4	25 mL 4% Boric Acid	0.2 M HCl		AOAC International (2001)
7	1.0306/1.1313	105	5	AOAC	1.0006/1.0116	Kjeltab	25	25	HCL/0.1097		AOAC
10	2	130	1	AOAC 2012, 32.2.09 A, Chapt 32	1	Selenium mixture	25 mL conc H2SO4	50 mL 4% H3BO4	HCl 0.1 M		AOAC 2012, 32.2.09 C, Chapt 32
14	2	130 ± 3	1	AOAC 925.10	1	K2SO4:CuSO4.5H2O (9:1)	H2SO4 15 mL	4% Boric Acid 30 mL	0.1 M HCl		AOAC 991.20
15	2	130	1	AOAC (2016) 925.10							
16	1 to 2	105	3	SNI 01-2891-1992 Food & Beverage	0.5 - 1	Selenium	Sulphuric Acid 25 mL	Boric Acid 50 mL	HCl 0.1 N		SNI 01-2891-1992 Food & Beverage
18	2.0	105	3	SNI 01-2891-1992	2.0	CuSO4, SeO2	H2SO4, 25 mL	H3BO3 2%, 25 mL	HCl 0.1 M		SNI 01-2891-1992
19	5	105	3	AOAC 934.01	1	Kjeltabs, 2 pcs	Sulphuric Acid 15 mL	Boric Acid 1%, 15 mL	HCl, 15 mL	6.25	AOAC 988.05, AN300 FOSS 2003
25	5.1390 / 5.1625	103	4	Laboratory Handbook of Methods of Food Analysis, 3rd Ed, R. Lees	0.0517 / 0.0511	Copper Sulphate	Digestion Reagent, 10 mL	Indicating Boric Sol'n, 10 mL	0.02 N H2SO4		Laboratory Handbook of Methods of Food Analysis, 3rd Ed, R. Lees
26	2.0	100	5	AOAC No. 925.09B	2.0	Copper (II) sulphate pentahydrate	Conc H2SO4, 15 mL	0.1 N HCl	0.1 N NaOH	5.71	AOAC No. 2001.11
28	2.0	130	1	AOAC 925.10 (Air Oven Method)	1.0	CuSO4 / Na2SO4	H2SO4 15 mL	50 mL 0.1 N HCl	0.1 N NaOH		Kjeldahl Method
29	5	105	16	AOAC (1984)	2	CuSO4:K2SO4	15 mL conc H2SO4	1% boric acid with indicators bromocresol green and methyl red	0.1 N HCl		AOAC (2005)

Natural Rice Flour Methods - Table 1 of 3

LAB NUMBER	Moisture Weight g	Drying Temperature °C	Drying Time (hours)	Moisture Reference	Nitrogen Weight (g)	Catalyst	Acid Volume (mL)	Receiver Solution	Titrant	N-Conversion Factor to Protein	Nitrogen Reference
31	3	105	3	SNI	0.3	Selenium	H2SO4 (8 mL)	H3BO3 3% (50 mL)	HCl 0.05 N		SNI 01-2891
32	1.100	130	3	AOAC 925.10	1.3500	K2SO4, CuSO4.5H2O	Conc H2SO4, 25 mL	4% Boric Acid 50 mL	0.099970 M HCl	NA	Block Digestion - Kjeldahl
36	2.00	130	1	AOAC 925.10 18th Ed	0.500	CuSO4	H2SO4 20 mL	Erlenmeyer Flask 500 mL	0.2 M H2SO4	NA	Buchi Nitrogen and Protein Determination by Kjeldahl Method
38	2.000	130	1 until constant weight	AOAC 925.10, 19th Ed 2012	1.000	Salt mixture	H2SO4 12 mL	4% H3BO3, 20 mL	0.2 N HCl		AOAC 991.2, 19th Ed 2012
39	2	130 ± 3	1	AOAC 925.10	0.5	Cu	H2SO4 / 10	Boric acid 30 mL	0.1 M HCl		AOAC 991.20
41	2	135 ± 2	2	AOAC (2016) 930.15	0.5	K2SO4:CuSO4	Sulphuric acid 15 mL	Boric acid 25 mL	0.1000	6.25	AOAC 2001.11
42	2	130	1	SNI 3549:2009 Lampiran A.10	0.5	Selenium	H2SO4	H3BO3 1% 30 mL	HCl 0.1 N		SNI 01-2891-1992. point 7.1
43	2	130	2 to constant weight	AOAC, National Standard	1	Mix selenium	H2SO4, 12 mL	H3BO3, 25 mL	HCl 0.2 M	1.4007	National Standard, inhouse method
44	2.0314	130	1.0	AOAC 19th Ed, 2012	2.0120	Na2SO4, CuSO4	Conc H2SO4 20 mL	50 mL 0.1 N H2SO4	0.2 N NaOH	6.25	AOAC 19th Ed, 2012
48	2	130	1	SNI 3549 2009	1	Selenium Mixture reagent	20	30	0.1	1	MU-01/04
49	2	130	1	AOAC 20th Ed 2016	1, 2	Kjeltabs	Conc H2SO4 20 mL	Boric Acid 50 mL	0.2 N H2SO4	5.7	AOAC 20th Ed 2016
50	2.1804	130	1.0	AOAC 925.10	1.1567	Cu	H2SO4, 15.0 mL	Boric Acid, 75.0 mL	HCl, 0.0902	Fish M 6.25, Rice F 5.7	AOAC 984.13
52	2.0	130	1.0	AOAC 925.10	1.0	K2SO4, CuSO4	9.711, 11.164	Boric Acid (60mL)	0.09788 N HCl	5.95	Automated Kjeldahl Method
54	1	105	5	AOAC 927.05	1	Kjeltabs	H2SO4 12 mL	25 mL 4% Boric Acid	0.3 M H2SO4	5.95	AOAC 920.87
57	2.0059	130	5	AOAC 925.10	1.0064	Kjeldahl Tablet	H2SO4, 10 mL	20 mL Boric Acid	HCl, 0.10 M	6.25	AOAC 979.09
58	2 to 5	130 / 105	3	Based on AOAC 20th Ed 2016	0.5			Boric Acid	0.25 HCl	1.0	Based on AOAC 20th Ed 2016
59	1 to 2	105	3	SNI 01-2891-1992 point 5.1							
60				SNI 01-2891-1992 Butir 5.1							AOAC (2012) 2011.11

Natural Rice Flour Methods - Table 1 of 3

LAB NUMBER	Moisture Weight g	Drying Temperature °C	Drying Time (hours)	Moisture Reference	Nitrogen Weight (g)	Catalyst	Acid Volume (mL)	Receiver Solution	Titrant	N-Conversion Factor to Protein	Nitrogen Reference
61	3	130	1.5	A6801 130C Air oven	1	K2SO4/CuSO4 Kjeltab catalyst tablets	H2SO4 20 mL	Boric Acid 50 mL	0.1 M HCl	6.25	A6501 Kjeldahl/Boric Acid Method
64	2.0216	130	1	AOAC 925.10							
66	10.0032, 10.0016, 10.0000	130.0	0.50	AOCS Official Method Ca 2c-25, 7th Ed., 2017							
71	4.9991, 4.9956	105	3	AOAC 925.45	1.0050, 1.0048	Kjeltabs 3.5 g, K2SO4 0.4 g, CuSO4.5H2O	H2SO4 15 mL	Boric acid	0.2 N HCl		AOAC 2001.11
72	2	130	1	AOAC 925.10	2	K2SO4, CuSO4, SeO2	25	4% Boric acid 25 mL	0.05 M H2SO4	6.25	AOAC 920.87
73A	5	105	3	FTC-01.01 (refers to AOAC 945.39)	1	2 Kjeltabs (each 3.5 g K2SO4, 0.4 g CuSO4.5H2O)	H2SO4 15 mL	1% Boric acid, 1% BCG 0.1% soln, 0.7% Methyl Red 0.1% soln (30 mL)	HCl 0.2 M	6.25	FTC-02.01 (refers to AOAC 2001.11, 979.09)
74	5.0	105	3	SNI 01-2891-1992 (part 5.1)							
75	2	105 ± 2	4	SNI 01-2891-1992 Butir 5.1	0.5	CuSO4	H2SO4, 5 mL	H3BO3, 20 mL	HCl, 0.1 M	N/A (report as Nitrogen)	SNI 01-2891-1992 Butir 7.1
78	2	100	1, to constant weight	AOAC 19th Ed	2	Kjeltabs	Conc H2SO4, 15 mL	4% Boric acid, 25 mL	0.1 N HCl		AOAC 19th Ed
79	1 to 2	105	3	SNI 01-2891-1992 Butir 5.1	0.1 to 0.15						IK/02/5.4.1/LDITP/Analisis Protein
81	2.0629 mean	130	1 then 0.5 until <0.005 mg diff	AOAC 925.10	1.0324 mean	K2SO4 and CuSO4.5H2O	20 mL H2SO4	60 mL 2% Boric Acid soln	0.09597 N HCl	5.95	Automated Kjeldahl Method
82A	1.00	105	7.5	Drying Oven							
82B	1.00	105	7.5	Drying Oven							
84	2	130	1	SNI 3549.2009	1	KJELCAT 12-0328	H2SO4 98% 20 mL	H3BO3 4%, 60 mL	HCl 0.1 M		KJELDAHL
85	2	105	3	SNI 01-2896-1992	0.2						DuMaster Protein Analyzer (Buchi)
88	1.5	105	3	SM 01-2891-1992 Point 5.1	0.5	Tablet Kjeldahl	Conc H2SO4 10 mL	H3BO3 2% 50 mL	HCl 0.0515 N		SM 3751-2009
89	2	100 to 105	4	AOAC 925.23	0.5	CuSO4	HCl	25 mL Boric Acid	0.1 N HCl		AOAC 991.2

Natural Rice Flour Methods - Table 1 of 3

LAB NUMBER	Moisture Weight g	Drying Temperature °C	Drying Time (hours)	Moisture Reference	Nitrogen Weight (g)	Catalyst	Acid Volume (mL)	Receiver Solution	Titrant	N-Conversion Factor to Protein	Nitrogen Reference
93	2	130 ± 3	1	AOAC 925.10	2	H2O2 5 mL, Kjeltabs: 3.5 g K2SO4, 0.4 g CuSO4,5H2O	H2SO4 12 mL	Boric acid 25 mL	0.05 N H2SO4	5.95	AOAC 945.18-B
94	1	130	5	AOAC (2000) 925.10	1	CuSO4.5H2O and K2SO4	Conc H2SO4 / 13 mL	1% Boric acid	0.1 M HCl		AOAC (2012) 991.20
96	3	125	4	TCVN 4846:1989							
98	~2.0	100 ± 5	5	AOAC 930.15	~1.0	7g K2SO4, 0.8 g CuSO4	15 mL H2SO4	30 mL 4% Boric Acid	0.2 N HCl		AOAC 976.05

Natural Rice Flour Methods - Table 2 of 3

LAB NUMBER	Ash Weight (g)	Pre-Charring (Y/N)	Ash Temperature (°C)	Ash Time (hours)	Ash Reference	Macro Metals Weight (g)	Digestion Technique	Digestion Medium	Instrument	Wavelength (nm)	Recovery Correction (Y/N)	Macro Metals Reference
3	5.000 + 0.001	On Hotplate until black	550	18	AOAC International (2001) modified							
7	1.0039/1.0316	None	550	5 or until white ash	AOAC	1.0039/1.0316	Ashing	HCL	Flame Photometer		N	
10	2		600	2	AOAC 2012, 32.2.09 B, Chapt 32							
13						0.5	Microwave	HNO3 10 mL + HCl 2 mL	Analytikal Jena ContrAA 800 D	Na 588, K 766, Mg 285, Ca 422	N	Internal Method
14	5	Charring	559	5	AOAC 923.03	0.8	Ashing	50% HNO3, 50% HCl	ICP Horiba Jobin Yvon	Na 588.995, K 766.49, Ca 393.366, Fe 259.94, P 213.618	Y	AOAC 975.03, 984.27
15						0.5	Ultrawave Digestion	5% HNO3 + 0.5% HCl	ICP-MS (7900 Agilent)	Ca 44, K 39, Mg 24, Fe 56	N	Based on USFDA 4.7 version 1.1
16	2 to 3		550	8	SNI 01-2891-1992 Food & Beverage	0.5	Hot plate	HNO3+H2O 2	ICP-OES Optima 7000 DV Perkin Elmer	Na 588.995, K 769.896, Ca 317.933, Mg 279.077, Fe 238.204	N	In-house Method
18	2.0	Charring	550	4	SNI 01-2891-1992	2.0	Dry Ashing	HNO3	AAS, Varian	Various	N	AOAC 968.08
19	1		600	3	AOAC 942.05	1	By Furnace	HNO3:H2O (1:1)	Ca Manual by Buret, P by UV-Vis Spectro.	P 400	N	AOAC 927.02, 944.03, 965.17

Natural Rice Flour Methods - Table 2 of 3

LAB NUMBER	Ash Weight (g)	Pre-Charring (Y/N)	Ash Temperature (°C)	Ash Time (hours)	Ash Reference	Macro Metals Weight (g)	Digestion Technique	Digestion Medium	Instrument	Wavelength (nm)	Recovery Correction (Y/N)	Macro Metals Reference
25	5.0202 / 5.0205	Addition of HNO3	550	8	Laboratory Handbook of Methods of Food Analysis, 3rd Ed, R. Lees	5.0202 / 5.0205	HNO3-HCl Digestion	Water	ICP-OES	Na 588.995, K 766.491, Ca 396.847, Mg 280.27, Fe 238.204		USEPA Method 3050B
26	4.0	Drying at 150°C	525	24	AOAC No. 923.03	4.0	Dry ashing	Water & HCl (1+1)	AAS Shimadzu AA-7000	Na 589.0, K 766.5, Ca 422.7, Mg 285.2, Fe 248.3	N	AOAC No. 975.03
28	2.0	Charring	550	4	AOAC Method 923.05 (Direct Method)							
29	3	Charring	550	16	AOAC (1984)	3	Dry Ashing	HCl				
31	3		600	10	SNI 01-2891	5	Dry Ashing		AAS, Agilent		N	AOAC 985.35
32	1.1000	Charring	550	8	AOAC 923.03	2.0541	Ashing	HCl	Flame AAS, Shimadzu 6300	Na 589.0, K 766.5, Ca 422.7, Fe 248.3	N	Modified AOAC 969.32
36	3.00	Charring	550	8	AOAC 923.10 18th Ed							
38	2.000	Charring	550	2 until light grey	AOAC 923.03, 19th Ed 2012	1.000	Dry Ashing	1N HNO3 (0.1M HNO3 for Fe)	Flame AAS, Shimadzu AA6300	Na 589.0, K 766.50, Ca 422.70, Fe 248.30		AOAC 985.35, 19th Ed 2012 (Fe modified AOAC 999.11)
39	2	Charring	550	5 to 6	AOAC 923.03	0.5	Microwave		AAS	Na 589.0, K 766.5, Ca 422.7, Mg 285.2, Fe 248.3	Y	AOAC 985.35
41	2		600	2	AOAC	2						
42	3		550	5	SNI 3549:2009 Lampiran A.11	5	Dry Ashing	HNO3-HCl	Flame AAS, Agilent 280 FS	Na 589.9, K 769.9, Ca 422.7, Mg 202.6, Fe 248.3	N	AOAC 985.35.2005
43	2	Charring	550	3 to constant weight	National Standard	0.5	Microwave	HNO3	ICP-OES	Na 568.821, K 766.491, Ca 317.933, Mg 285.213	N	AOAC
44	1.000	Charring	520	8.0	AOAC 19th Ed, 2012	1.0000	Dry Ashing		AAS, Thermoscientific	Na 589, K 766.5, Ca 422.7, Fe 248.3	N	AOAC 19th Ed, 2012
47						5	Dry Ashing	Nitric Acid	AAS - Shimadzu 7000	Na 589, Ca 422.7, Fe 248.3		AOAC 985.35 (Fe 999.11)

Natural Rice Flour Methods - Table 2 of 3

LAB NUMBER	Ash Weight (g)	Pre-Charring (Y/N)	Ash Temperature (ºC)	Ash Time (hours)	Ash Reference	Macro Metals Weight (g)	Digestion Technique	Digestion Medium	Instrument	Wavelength (nm)	Recovery Correction (Y/N)	Macro Metals Reference
48	3	Charring	550	3 then 1 then 1	SNI 3549 2009	5	Dry Digestion		AA800 Perkin Elmer	Na 330.2, K 766.5, Ca 422.7, Mg 285.2, Fe 248.3	N	MU-03/21 (AAS)
49	1, 3	Charring	555	6	AOAC 20th Ed 2016	1, 3	Dry Ashing	Conc Nitric acid	AAS / AA-7000 Shimadzu	Na 589.0, K 766.5, Ca 422.7, Mg 285.2, Fe 248.3	N	AOAC 20th Ed 2016
51	3.00	Charring	550	To grey ash + constant weight	AOAC 923.03	1	Dry Ashing	Nitric - HCl	AAS Shimadzu 7000	Ca 422.7, Na 589	N	AOAC 999.11
52	3.0	Charring	550	8	AOAC 923.03	0.5 (Ca, Fe), 1.0 (K, Na)	Dry Ashing (Ca, Fe), Wet Digestion (K, Na)	1 N HNO3 (Ca, Fe), 2% HNO3 (K, Na)	Flame AAS (Shimadzu AA6300)	Ca 422.7, Fe 248.3, Na 589.0, K 766.5	N	Modified AOAC 985.35 (Ca, Fe), 999.10 (K, Na)
53						0.3	Microwave	4 mL HNO3, 1 mL HCl, 1 mL H2O2	ICPMS Thermo			In house method
54	1	Charring	525	5	AOAC 92.03	1	Dry Ashing	HNO3	ICP / Shimadzu	Mg 279.553, Fe 259.940, Ca 317.933, Na 589.592	N	AOAC 984.27
58	3.0		550	8	Based on AOAC 20th Ed 2016	3.0	Dry Ash	HCl	ICP-OES			Dry Ashing and Quantitation by ICP-OES
59	2 to 3		550	15	SNI 01-2891-1992 point 6.1	1.5	Dry Ashing		AAS, Shimadzu	Na 589, K 766.5, Ca 422.7, Mg 285.2, Fe 248.3	Y	AOAC 18th Ed 985.35 (Fe: SNI 3751:2009 point A.10)
60					SNI 01-2891-1992 Butir 6							AOAC (2012) 968.08 (Ca, Mg), 965.17 (P), MP37-BPMSP (AAS) (Na, K), SNI 01-2896-1998 (Fe)
61	2	N/A	550	15	A6401 550C Ash	1	Acid block digestion	HNO3 (HNO3/HCLO4 for P)	Varian AA240 FS Fast Sequential AAS (Shimadzu	Ca 422.7, Fe 248.3, Mg 285.2, K 769.9, Na 589.6	N	A6407-26 AAS (A6417 Spectro Method for P)

Natural Rice Flour Methods - Table 2 of 3

LAB NUMBER	Ash Weight (g)	Pre-Charring (Y/N)	Ash Temperature (ºC)	Ash Time (hours)	Ash Reference	Macro Metals Weight (g)	Digestion Technique	Digestion Medium	Instrument	Wavelength (nm)	Recovery Correction (Y/N)	Macro Metals Reference
									UV-2700 for P)			
64						0.5063	Dry Ashing	1 N HNO3	Shimadzu AA6300	Fe 248.3, Ca 422.7	N	Modified AOAC 985.35
71	1.0039, 1.0018		600	3	AOAC 942.05	1.0018, 1.0039	Acid Digestion	HCl (1:3)				AOAC 927.02, Titration
72	2	Charring	550	4	AOAC 923.03	3	Ashing	HNO3	AAS / Analytik Jena	Na 589.0, K 766.5, Ca 422.7, Mg 285.2, Fe 589.0	N	AOAC 985.35
73A	1	N	600	3.5	FTC-05.01 (refers to AOAC 942.05)	1	Dry ashing	Hot plate	AAS (280FS AA, Agilent Technology)	Ca 422.7, Fe 248.3	N	FTC-46.01 (refers to AOAC 968.08, 965.09)
73B						1	Dry ashing	Hot plate	AAS (280FS AA, Agilent Technology)	Ca 422.7		
75	2		550	4	SNI 01-2891-1992 Butir 6.1	1	Wet digestion (hot block)	HNO3 + H2O2	ICP-OES Agilent 5100	Na 589.592, K 766.491, Ca 317.933, Mg 279.078, Fe 238.204	N	In House Method ICP-OES
78	2	Gradual increase of temp	550	1	AOAC 19th Ed	0.5	Mircowave Digestion	Acid Digestion	Berghof Speedwave 4 Microwave Digestion Unit	Na 589.592, K 766.490, Ca 393.366, Mg 279.08, Fe 371.993		MP-AES
79	2 to 3		550		SNI 01-2891-1992 Butir 6.1							
81	3.0873 mean	Charring	550	10	AOAC 923.03	mean: Na, K 1.0025, Ca 2.0042, Fe 2.0027	Wet Digestion (Na, K), Dry Ashing (Ca, Fe)	1 N HNO3 and 30% H2O2 (Na, K), 1 N HNO3 (Ca, Fe)	Shimadzu AAS AA 6300	Na 589.0, K 766.5, Ca 422.7, Fe 248.3	N	AOAC 999.10 Mod (Na, K), 985.35 Mod (Ca, Fe)
82A						0.250	none	none	HPGe detector, Canberra			Neutron Activation Analysis (NAA)
82B						1.00	Microwave	Nitric Acid	AAS, GBC		Y	Flame SSA
84	2	Charring	550	6	SNI 3549.2009	0.5	Microwave Digestion	HNO3 / H2O2	ICP-OES, ICP-MS	Na 589.592, K 766.490, Ca 317.933	N	AOAC 999.10:2005
85	2		550	3	SNI 01-2896-1992							
88	2.5		550	24	SM 01-2891-1997	3	Dry Ashing	HNO3 conc 10 mL	AAS GBC Flame	Na 587.60, K 765.20, Ca 422.3, Mg	N	In house method (AAS)

Natural Rice Flour Methods - Table 2 of 3

LAB NUMBER	Ash Weight (g)	Pre-Charring (Y/N)	Ash Temperature (°C)	Ash Time (hours)	Ash Reference	Macro Metals Weight (g)	Digestion Technique	Digestion Medium	Instrument	Wavelength (nm)	Recovery Correction (Y/N)	Macro Metals Reference
										285.20, Fe 248.3		
89	2	Charring on hotplate	550	16	AOAC 930.30	2	Dry Ashing	1.5% HNO3	AAS Agilent	Various	N	AOAC 985.35
93	3 to 5	Charring	550	18	AOAC 923.03	0.05	Charring, Dry ashing	Hotplate, Furnace	Flame Photometer, Sherwood	N/A	N/A	AOAC 985.35
94	2	Charring	550	5	AOAC (2012) 945.46	1.5	Dry ashing (Fe: Wet ashing)		ICP-OES / Perkin Elmer	Na 589.0, K 766.5, Ca 317.9, Mg 383.2, Cu 324.7, Fe 259.9	Y	AOAC (2012) 984.27
96	3		550	4	TCVN 8124:2009							
98	~2.0	N	600	4	AOAC 942.05							

Natural Rice Flour Methods - Table 3 of 3

LAB NUMBER	Heavy Metals Weight g	Digestion Technique	Digestion Medium	Instrument and Manufacturer	Wavelength (nm)	Recovery correction	Heavy Metals Reference	Total Dietary Fibre Weight (g)	Digestion Technique	Digestion Medium	Total Dietary Fibre Reference
13	0.5	Microwave	HNO3 10 mL + HCl 2 mL	ICP-MS Thermo Scientific (iCAP RQ)	M/z Cu: 63, Zn 66, Fe 57	N	Internal Method				
14	0.8	Ashing	50% HNO3, 50% HCl	ICP Horiba Jobin Yvon	Cu 224.70, Zn 213.856 189.042	Y	AOAC 975.03, 984.27	0.5	Enzymatic - Gravimetric Method	α - amylase 97.5 ± 2.5°C 30 min, Protease 60 ± 1°C 30 min, Amyloglucosidase 60 ±1 °C 30 min	AOAC 985.29
15	0.5	Ultrawave Digestion	5% HNO3 + 0.5% HCl	ICP-MS (7900 Agilent)	Cu 65, Zn 66	N	Based on USFDA 4.7 version 1.1				
16	2	Microwave	HNO3+H2O2	ICP-MS 7700X Agilent		N	In-house Method	1			AOAC 985.29
18	2.0	Dry Ashing (Wet Digestion for Hg, Sn)	HCl (HNO3 for Hg, Sn)	ICP-OES Agilent (AAS-VGA Varian, Agilent for Hg, As)	Hg 253.7, As 193.7, Sn 283.998	N	SNI 19-2896-1998				
19								1	Acid Digestion H2SO4 1.25%, 95°C 30 min	Base Digestion, NaOH 1, 1.25%, 95°C 30 min	AOAC 978.10, AN 304, FOSS, 2003
25	5.0202 / 5.0205	HNO3-HCl	Water	ICP-OES	Cu 327.395, Zn 202.548		USEPA Method 3050B				

Natural Rice Flour Methods - Table 3 of 3

LAB NUMBER	Heavy Metals Weight g	Digestion Technique	Digestion Medium	Instrument and Manufacturer	Wavelength (nm)	Recovery correction	Heavy Metals Reference	Total Dietary Fibre Weight (g)	Digestion Technique	Digestion Medium	Total Dietary Fibre Reference
26	4.0 for Cu, Zn	Dry Ashing	Water & HCl (1+1)	AAS Shimadzu AA-7000		N	AOAC No. 975.03				
29	3	Dry Ashing	HCl					0.5	Enzymatic-Gravimetric Method	MES-TRIS Buffer	AOAC (2005)
31	5	Dry Ashing		AAS		N	AOAC 999.11				
32	2.0541 (Zn)	Ashing	HCl	Flame AAS, Shimadzu 6300	213.9	N	Modified AOAC 969.32	1.150	Enzymatic Gravimetric	Buffer	AOAC 991.42
38	5.000	Dry Ashing	1 N HNO3	Flame AAS, Shimadzu AA6300	Cu 324.80, Zn 213.90		AOAC 985.35 19th Ed 2012	1.000	Enzymatic Digestion	Phosphate buffer	AOAC 985.29 19th Ed 2012
39	0.3	Microwave		AAS	324.8	Y	AOAC 985.35	1	Enzyme	Buffer solution	AOAC 985.29
42	10	Dry Ashing	HNO3-HCl	Cu, Zn: Flame AAS 280 FS, Pb, Cd: GFAAS Agilent 240 FS	Cu 324.8, Zn 213.9, Pb 217.0, Cd 228.8	N	AOAC 999.11.2005				
43	0.5	Microwave	HNO3	ICP-OES, ICP-MS	Cu 327.395, Zn 213.857	N	AOAC	1			AOAC
47	5	Dry Ashing	Nitric Acid	AAS - Shimadzu 7000	Cu 324.8, Zn 213.9		AOAC 999.11				
48	5	Dry Digestion (As Microwave Digestion)		AA800 Perkin Elmer	Cu 324.8, Zn 213.9	N	MU-03/20 (AAS)	1	Enzymatic	Amylase, protease, amyloglucosidase	AOAC 985.29 19th Ed 2012
49	2 (1, 3 for Zn)	Dry Ashing	6 M HCl (Conc HNO3 for Zn)	ICP-OES 5110 Agilent (AAS / AA-7000 Shimadzu for Zn)	Cu 327.395, Zn 213.9	N	AOAC 20th Ed 2016	0.5	Enzymatic	Alpha-Amylase, Protease, Amyloglucosidase	AOAC 20th Ed 2016 / Sigma Kit
51	5	Dry Ashing	HCl-HNO3	AAS Shimadzu 7000	Zn 213.9, Cu 324.8	N	AOAC 999.11				
52	0.5	Microwave Digestion (Dry Ashing for Zn)	5 mL conc HNO3 / Peroxide (1N HNO3 for Zn)	GFAAS - Thermo iCE 3500 (Flame AAS - Shimadzu AA6300 for Zn)	Pb 217.0, As 193.7, Zn 213.9	N	Modified AOAC 999.10 (985.35 for Zn)				
53	0.3	Microwave	4 mL HNO3, 1 mL HCl, 1 mL H2O2	ICPMS Thermo			In house method				
54	1	Microwave digestion	HNO3 / H2O2	ICP / Shimadzu	Zn 213.856, Cu 324, Pb 220.353	N	AOAC 984.27	1	Enzymatic	Phosphate buffer / Enzyme	AOAC 985.29
57	3.0255	Dry Ashing	HCl, HNO3	AAS	213.9	Y	AOAC 999.11				

Natural Rice Flour Methods - Table 3 of 3

LAB NUMBER	Heavy Metals Weight g	Digestion Technique	Digestion Medium	Instrument and Manufacturer	Wavelength (nm)	Recovery correction	Heavy Metals Reference	Total Dietary Fibre Weight (g)	Digestion Technique	Digestion Medium	Total Dietary Fibre Reference
58	1.0	Acid Digestion	HNO3, H2O2	ICP-OES (AAS-Hydride for As, Hg)	Hg 253.7, As 189, Sn 189.925		Acid Digestion and Quantitation by ICP-OES (AAS-hydride for As, Hg)	1.0			Based on AOAC 20th Ed 2016
59	Cu, Zn: 10, Pb, Cd, Sn: 2.5, Hg: 1, As: 12.5	Dry Ashing		AAS, Shimadzu	Cu 324, Pb 283, Zn 213.9, Cd 228.8, Hg 253.7, As 193.7, Sn 286.3	Y	Cu+As: IK A2-LM06 (AAS) (LM10 for As), Pb+Cd+Zn: SNI 3751:2009 point A.14.1 (11 for Zn), Hg: SNI 01-2354.6-2006, Sn: SNI 01-2896-1995 point 5	1 to 2	Enzymatic		AOAC 18th Ed 985.29
60							SNI 01-2896-1998 (Zn)				
61	1	Acid block digestion	HNO3	Varian AA240 FS Fast Sequential AAS	Cu 324.8, Zn 213.9	N	A6407-26 AAS	0.5	Enzymatically Digested with protease and amyloglucosidase	Methylated spirits	A6234 (ANKOM automated TDF instrument)
64	0.5063	Dry Ashing	1 N HNO3	Shimadzu AA6300	Zn 213.9	N	Modified AOAC 985.35				
72	4	Ashing	HNO3	ICP-OES, JY Ultima	Cu 324.754, Zn 213.9	N	AOAC 999.11				
73A	1	Dry Ashing	Hot plate	AAS (280FS AA, Agilent Technology)	213.9	N	FTC-46.01 (refers to AOAC 968.08, 965.09)				
75	1	Wet digestion (hot block)	HNO3 + H2O2	ICP-OES Agilent 5100, ICP-MS Agilent 7700x	63 Cu 324.754, 66 Zn 213.857	N	In House Method ICP-MS & ICP-OES				
81	mean 2.0042 (Zn)	Zn: Dry Ashing	Zn: 1 N HNO3	Zn: Shimadzu AAS AA 6300	Zn 213.9	N	AOAC 985.35 Mod (Zn)	mean 0.9985	Enzymatic Digestion (Heat-stable alpha-amylase, protease, amyloglucosidase)	MES-TRIS Buffer	AOAC 991.43 (Modified)
82A	0.250	none	none	HPGe detector, Canberra		N	Neutron Activation Analysis (NAA)				
82B	1.00	Microwave	Nitric Acid	Pb, Cd, As: AAS, Agilent, Hg, Cu: AAS GBC		Y	Pb, Cd, As: Graphite SSA, Cu: Flame SSA, Hg: Hydride Generation SSA				
84	0.5	Microwave Digestion	HNO3 / H2O2	ICP-MS		N	AOAC 999.10:2005				

Natural Rice Flour Methods - Table 3 of 3

LAB NUMBER	Heavy Metals Weight g	Digestion Technique	Digestion Medium	Instrument and Manufacturer	Wavelength (nm)	Recovery correction	Heavy Metals Reference	Total Dietary Fibre Weight (g)	Digestion Technique	Digestion Medium	Total Dietary Fibre Reference
88	0.3 (Cu, Zn 3)	Microwave (Cu, Zn Dry Ashing)	H2O2 2 ml + HNO3 8 mL (Cu, Zn: HNO3 10 mL)	AAS GBC Hydride vapour (Cu, Zn: AAS GBC Flame, Cd: AAS-GF)	Cu 324.70, Pb 217.0, Hg 253.70, As 193.70, Sn 235.50, Zn 213.90, Cd 228.8	N	In house method (AAS)	1	Enzymatic	Buffer Phosphat, HCl & NaOH	In house method (enzymatic)
89	2	Dry Ashing	1.5% HNO3	AAS Agilent	Various	N	AOAC 985.35				
94								1			AOAC (2012) 985.29

Fish Meal Methods - Table 1 of 4

LAB NUMBER	Moisture Weight (g)	Drying Temp (°C)	Drying Time (hours)	Moisture Reference	Nitrogen Weight	Catalyst	Acid Volume (mL)	Receiver Solution and Vol	Titrant	N-Conversion Factor to Protein	Nitrogen Reference
2	2.00	125	2	AOAC (2016) 950.46 (B)	0.50	CuSO4+K2SO4	20	50	HCl 0.1 M	6.25	AOAC (2016) 981.10
5	5.0000	103	4	ISO 6496:1999	1.0000	CuSO4+K2SO4	13 mL conc H2SO4	30 mL 4% Boric Acid	0.5 N H2SO4		AOAC 20th Ed, 2016, 2001.11
6	5.0000	103	4.00	ISO 6496	0.5074	K2PO4 + CuPO4	15	55 mL 4% Boric Acid	0.2036 N H2SO4	1.4007	ISO 5983-2
7	1.0306/1.1313	105	5	AOAC	1.0006/1.0116	Kjeltab	25	25	HCL/0.1097		AOAC
9	5 to 10	105	4	Based on ISO 6496:1999	1	K2SO4/CuSO4	H2SO4 / 12.5 mL	Boric acid 30 mL	0.5 N H2SO4		Based on AOAC 20th Ed, 2016, 2001.11, Chapter 4
11	5.0000	103	4	AOAC (2016) 925.10	0.5000	1 mL	H2SO4 / 25 mL	Boric acid solution 25 mL	0.1 N H2SO4	6.25	Manual on fertilizer analysis, Arsrod, Doa 12/2551
14	5	103 ± 2	4	ISO6496:1999	0.5	K2SO4:CuSO4.5H2O (9:1)	H2SO4 12 mL	4% Boric Acid 30 mL	0.1 M HCl	6.25	ISO 5983-2:2005
15	5	103	4	ISO 6496:1999	0.13	CuSO4.5H2O, K2SO4	H2SO4 12 mL	1% H3BO4	0.1 M HCl	6.25	ISO 5983-2:2009
16	1 to 2	105	3	SNI 01-2891-1992 Food & Beverage	0.5 - 1	Selenium	Sulphuric Acid 25 mL	Boric Acid 50 mL	HCl 0.1 N		SNI 01-2891-1992 Food & Beverage
17	2.000	125	2	AOAC							
18	2.0	105	3	SNI 01-2891-1992	2.0	CuSO4, SeO2	H2SO4, 25 mL	H3BO3 2%, 25 mL	HCl 0.1 M		SNI 01-2891-1992
19	5	105	3	AOAC 934.01	1	Kjeltabs, 2 pcs	Sulphuric Acid 15 mL	Boric Acid 1%, 15 mL	HCl, 15 mL	6.25	AOAC 988.05, AN300 FOSS 2003
21	2	130	2	AOAC 925.10 (2016)	0.5 to 1.0	Se, K2SO4	H2SO4 15 mL	Boric acid (AR) 25 mL	HCl (AR) 0.1 N		AOAC 930.29 (2016)
23	5.00	103	4	ISO 6496	0.20						AOAC 992.15

Fish Meal Methods - Table 1 of 4

LAB NUMBER	Moisture Weight (g)	Drying Temp (°C)	Drying Time (hours)	Moisture Reference	Nitrogen Weight	Catalyst	Acid Volume (mL)	Receiver Solution and Vol	Titrant	N-Conversion Factor to Protein	Nitrogen Reference
24	2.000	105	3 until constant weight	SNI 01-2891-1992	1.000	Kjeltab Se/3.5	Sulphuric Acid 12.5 mL	H3BO3 1%, 25 mL	HCl-Titrisol 0.2 N	6.25	SNI 01-2891-1992
25	5.1206 / 5.1702	103	4	Laboratory Handbook of Methods of Food Analysis, 3rd Ed, R. Lees	0.0524 / 0.0532	Copper Sulphate	Digestion Reagent, 10 mL	Indicating Boric Sol'n, 10 mL	0.02 N H2SO4		Laboratory Handbook of Methods of Food Analysis, 3rd Ed, R. Lees
26	5.0	100	4	AOAC No. 952.08 A	5.0	Copper (II) sulphate pentahydrate	Conc H2SO4, 15 mL	0.1 N HCl	0.1 N NaOH	6.25	AOAC No. 2001.11
27	2	105	22	SNI 2354.2:2015	0.5	K2SO4 / Se	10	30	0.2000		SNI 01-2354.4-2006 Modified
31	3	105	3	SNI	0.3	Selenium	H2SO4 (8 mL)	H3BO3 3% (50 mL)	HCl 0.05 N		SNI 01-2891
32	1.9794	100	8	AOAC 934.04	1.0789	K2SO4, CuSO4.5H2O	Conc H2SO4, 25 mL	4% Boric Acid 50 mL	0.50987 M HCl	6.25	Block Digestion - Kjeldahl
33	2.0139, 2.0447, 2.0303	135	2	Method 930.15, OMA AOAC, 18th Ed	0.7437, 0.7455	Kjeltabs	36 N H2SO4, 15 mL	Boric acid soln, 25 mL	0.1040	None	Method 976.05, OMA AOAC 18th Ed
34	2.000	105	18	SNI 01.2354.2:2006	0.750	Kjeldahl	H2SO4 15 mL plus H2O2 3 mL	H3BO3 25 mL	HCl 0.1952 N		SNI 01.2354.4:2017
37	3	105	4	AOAC (2016) 925.45							
38	2.000	135	2	AOAC 930.15, 19th Ed 2012	0.400	Salt mixture	H2SO4 12 mL	4% H3BO3, 20 mL	0.2 N HCl		AOAC 991.2, 19th Ed 2012
39	1	100 ± 2	4	AOAC 952.08	0.5	Cu	H2SO4 / 10	Boric acid 30 mL	0.1 M HCl		AOAC 991.20
41	2	135 ± 2	2	AOAC (2016) 930.15	0.5	K2SO4:CuSO4	Sulphuric acid 15 mL	Boric acid 25 mL	0.1000	6.25	AOAC 2001.11
42	2	135	2	AOAC 2005	0.1	Selenium	H2SO4	H3BO3 1% 30 mL	HCl 0.1 N		SNI 01-2891-1992. point 7.1
43	2	130	2 to constant weight	AOAC, National Standard	1	Mix selenium	H2SO4, 12 mL	H3BO3, 25 mL	HCl 0.2 M	1.4007	National Standard, inhouse method
44	2.0034	135	2.0	AOAC 19th Ed, 2012	0.5062	Na2SO4, CuSO4	Conc H2SO4 20 mL	50 mL 0.1 N H2SO4	0.2 N NaOH	6.25	AOAC 19th Ed, 2012
45	5 ± 0.3	103 ± 2	4 ± 1	ISO 6496	1	7g K2SO4 + 0.8 g CuSO4.5H2O	98% H2SO4 15 mL	4.0% Boric acid 30 mL	0.5 N H2SO4	6.25	ISO 5983-2
46	3.00	120.0	NA	In House Developed Method							
48	1	105	3 then 1 then 1	SNI 01-2891-1992	0.5	Selenium Mixture reagent	20	30	0.1	1	MU-01/04

Fish Meal Methods - Table 1 of 4

LAB NUMBER	Moisture Weight (g)	Drying Temp (ºC)	Drying Time (hours)	Moisture Reference	Nitrogen Weight	Catalyst	Acid Volume (mL)	Receiver Solution and Vol	Titrant	N-Conversion Factor to Protein	Nitrogen Reference
49	2	135	2	AOAC 20th Ed 2016	0.5, 1	Kjeltabs	Conc H2SO4 20 mL	Boric Acid 50 mL	0.2 N H2SO4	6.25	AOAC 20th Ed 2016
50	2.1804	130	1.0	AOAC 925.10	1.1567	Cu	H2SO4, 15.0 mL	Boric Acid, 75.0 mL	HCl, 0.0902	Fish M 6.25, Rice F 5.7	AOAC 984.13
52	2.0	135	2.0	AOAC 930.15	1.0	K2SO4, CuSO4	9.711, 11.164	Boric Acid (60mL)	0.09788 N HCl	6.25	Automated Kjeldahl Method
53					0.2	Selenium	H2SO4 8 mL	H3BO3 3% 25 mL	HCl 0.0958 N	6.25	SNI-01-2891-1992
54	1	105	5	AOAC 927.05	1	Kjeltabs	H2SO4 12 mL	25 mL 4% Boric Acid	0.3 M H2SO4	5.95	AOAC 920.87
55	10	100	4	AOAC (2012) 952.08	0.5	K2SO4 / Se	H2SO4 15 mL	250 mL Erlenmeyer flask, 25 mL 4% Boric Acid	HCl 0.1 M		AOAC (2012) 991.20
58	2 to 5	130 / 105	3	Based on AOAC 20th Ed 2016	0.5			Boric Acid	0.25 HCl	1.0	Based on AOAC 20th Ed 2016
60				SNI 01-2891-1992 Butir 5.1							AOAC (2012) 2011.11
61	3	130	1.5	A6801 130C Air oven	1	K2SO4/CuSO4 Kjeltab catalyst tablets	H2SO4 20 mL	Boric Acid 50 mL	0.1 M HCl	6.25	A6501 Kjeldahl/Boric Acid Method
64	2.0356	135	2 hours ± 5 mins	AOAC 930.15							
66A	10.0029	130.0	0.50	AOCS Official Method Ca 2c-25, 7th Ed., 2017							
66B	10.0637	130.0	0.50	AOCS Official Method Ca 2c-25, 7th Ed., 2017							
66C	10.0124	130.0	0.50	AOCS Official Method Ca 2c-25, 7th Ed., 2017							
67	5.0xxx	103	4.0	ISO 6496	0.5xxx	CuSO4+K2SO4	H2SO4 15 mL	Boric acid 50 mL	0.2 N H2SO4	6.25	Inhouse based on ISO 5988.2
68	2	135	2	AOAC	0.5	Kjeltabs	17	50	0.1 N HCl	6.25	AOAC
70	5	105	5								
71	4.9997, 4.9989	105	3	AOAC 934.01	1.0038, 0.9934	Kjeltabs 3.5 g, K2SO4 0.4 g, CuSO4.5H2O	H2SO4 15 mL	Boric acid	0.2 N HCl		AOAC 2001.11
72	2	130	1	AOAC 925.10	2	K2SO4, CuSO4, SeO2	25	4% Boric acid 25 mL	0.05 M H2SO4	6.25	AOAC 920.87
73A	5	105	3	FTC-01.01 (refers to AOAC 945.39)	1	2 Kjeltabs (each 3.5 g K2SO4, 0.4 g CuSO4.5H2O)	H2SO4 15 mL	1% Boric acid, 1% BCG 0.1% soln, 0.7% Methyl Red	HCl 0.2 M	6.25	FTC-02.01 (refers to AOAC 2001.11, 979.09)

Fish Meal Methods - Table 1 of 4

LAB NUMBER	Moisture Weight (g)	Drying Temp (°C)	Drying Time (hours)	Moisture Reference	Nitrogen Weight	Catalyst	Acid Volume (mL)	Receiver Solution and Vol	Titrant	N-Conversion Factor to Protein	Nitrogen Reference
								0.1% soln (30 mL)			
74	5.0	105	3	SNI 01-2891-1992 (part 5.1)							
75	2	105 ± 2	4	SNI 01-2891-1992 Butir 5.1	0.5	CuSO4	H2SO4, 5 mL	H3BO3, 20 mL	HCl, 0.1 M	N/A (report as Nitrogen)	SNI 01-2891-1992 Butir 7.1
78	2	100	1, to constant weight	AOAC 19th Ed	2	Kjeltabs	Conc H2SO4, 15 mL	4% Boric acid, 25 mL	0.1 N HCl		AOAC 19th Ed
79	1 to 2	105	3	SNI 01-2891-1992 Butir 5.1	0.1 to 0.15						IK/02/5.4.1/LDITP/Analisis Protein
80	2.xx	135	2	AOAC 930.15	0.25 to 0.5	TAP/S3.5	25	40	0.1	6.25	AOAC 984.13
81	4.0921 mean	100	4 then 0.5 until <0.005 mg diff	AOAC 952.08A Modified	0.5247 mean	K2SO4 and CuSO4.5H2O	20 mL H2SO4	60 mL 2% Boric Acid soln	0.09597 N HCl	6.25	Automated Kjeldahl Method
82A	1.00	105	7.5	Drying Oven							
82B	1.00	105	7.5	Drying Oven							
83	2	105	5	SNI-01-2891-1992	0.5	CuSO4	H2SO4	Boric Acid, Bromocresol green, Methanol, Methyl red, 30 mL	HCl (0.1)	6.25	SNI-01-2891-1992
84	2	100	5	AOAC 934.01	1	KJELCAT 12-0328	H2SO4 98% 20 mL	H3BO3 4%, 60 mL	HCl 0.1 M		KJELDAHL
85	2	105	3	SNI 01-2896-1992	0.2						DuMaster Protein Analyzer (Buchi)
86	2	135	2	AOAC (2012) 930.15	0.5	3.5g K2SO4 + 3.5 mg Se	Conc H2SO4 12.5 mL	4% Boric Acid 30 mL	0.1 N HCl		AOAC (2012) 981.10
87	1.5	105	3	MTD/FOD/CHM-01	0.51	K2SO4+Se	Sulphuric Acid; 25 mL	Boric Acid; 15 mL	HCl 0.01 N	14	MTD/FOD/CHM-03
88	1.5	105	3	SM 01-2891-1992 Point 5.1	0.5	Tablet Kjeldahl	Conc H2SO4 10 mL	H3BO3 2% 50 mL	HCl 0.0515 N		SM 3751-2009
89	2	100 to 105	4	AOAC 925.23	0.5	CuSO4	HCl	25 mL Boric Acid	0.1 N HCl		AOAC 991.2
90	2	130	1	AOAC (2016) 930.15	0.3	K2SO4, Se	15		0.1 M HCl		AOAC (2016) 2001.11
92	5	103	4	ISO 6494	1	CuSO4	H2SO4	Boric	HCl	6.25	
93	2	95 to 100	5	AOAC 934.01	2	H2O2 5 mL, Kjeltabs: 3.5 g K2SO4, 0.4 g CuSO4,5H2O	H2SO4 12 mL	Boric acid 25 mL	0.05 N H2SO4	6.25	AOAC 945.18-B

Fish Meal Methods - Table 1 of 4

LAB NUMBER	Moisture Weight (g)	Drying Temp (°C)	Drying Time (hours)	Moisture Reference	Nitrogen Weight	Catalyst	Acid Volume (mL)	Receiver Solution and Vol	Titrant	N-Conversion Factor to Protein	Nitrogen Reference
94	1	130	5	AOAC (2000) 925.10	1	CuSO4.5H2O and K2SO4	Conc H2SO4 / 13 mL	1% Boric acid	0.1 M HCl		AOAC (2012) 991.20
96	3	125	4	TCVN 4846:1989							
100	5	103	4	ISO 6496	0.5	CuSO4 and K2SO4	H2SO4 / 15 mL	4% Boric Acid 50 mL	0.2 N H2SO4	6.25	Inhouse based on ISO 5983-2 (2009)

Fish Meal Methods - Table 2 of 4

LAB NUMBER	Fat Weight (g)	Hydrolysis (Y/N)	Extraction Solvent	Extraction Time (hours)	Fat Reference	Ash Weight	Pre-Charring (Y/N)	Ash Temperature (°C)	Ash Time (hours)	Ash Reference
2	2.00	N	Petroleum Ether	8	AOAC (2016) 920.39	4.00	Hot plate	550	4	AOAC (2016) 923.03
5	2.0000	N	Petroleum Ether	1.5	AOAC 20th Ed, 2016, 2003.05	2.0000		550	3	ISO 5984:2002
6	3.0000	N	Diethyl Ether	80 min	AOAC 2003.05	1.0000	Pre-burn on Hotplate	600	4	AOAC (2016) 942.05 4.1.10
7	1.0051	N	Pet Ether	1	AOAC	1.0039/1.0316	None	550	5 or until white ash	AOAC
9	2	N	Petroleum Ether	1.5	Based on AOAC 20th Ed, 2016, 2003.05, Chapter 4	1 to 2		550	2.5	Based on ISO 5984:2002
11	4.0000	N	Petroleum Ether	16-18 hr	AOAC (2016) 922.06	2.0000	Pre heat 3 hour	550	3	ISO (5984) 2002 (E)
14	2	Y	Diethyl Ether and Petroleum Ether	3	AOAC 954.02	2	Charring	600	2	AOAC 942.05
15	1	Y	Petroleum Ether	1	ISO 11085:2015	2		600	2	AOAC (2016) 942.05
16	2	Y	Diethyl Ether + Petroleum Ether		SNI 01-2891-1992 Food & Beverage	2 to 3		550	8	SNI 01-2891-1992 Food & Beverage
17	3.000	N	Petroleum Ether	110 minutes	AOAC	2.000	Charring	550	2	AOAC
18	2.0	Y	Petroleum Benzine	6	SNI 01-2891-1992	2.0	Charring	550	4	SNI 01-2891-1992
19	1	N	Petroleum Benzene	1	AOAC 2003.05, AN305, FOSS, 2005	1		600	3	AOAC 942.05
21	0.5 to 1.0	Y	Diethyl Ether Petroleum Ether	2	AOAC 932.06 (2016)	1	4	550	6	AOAC 923.03 (2016)
23	1.90	N	Petroleum Ether	1	AOCS Am5-04	2.00		550	3	ISO 5984
24	1.000	N	Petroleum Benzine	20 mins	SNI 01-2891-1992	2.000	N	550	8	SNI 01-2891-1992
25	5.1206	N	Hexane	8	Laboratory Handbook of Methods of Food Analysis, 3rd Ed, R. Lees	5.0208 / 5.0213	Addition of HNO3	550	4	Laboratory Handbook of Methods of Food Analysis, 3rd Ed, R. Lees
26	4.0	Y	Diethyl Ether, anhydrous and Petroleum Ether	4.0	AOAC No.948.15	4.0	Drying at 150°C	525	24	AOAC No. 900.02A
27	2	Y	Diethyl Ether	2	SNI 2354-3:2017	2	Drying in vacuum	550	8	SNI 2354.1:2010

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LAB NUMBER	Fat Weight (g)	Hydrolysis (Y/N)	Extraction Solvent	Extraction Time (hours)	Fat Reference	Ash Weight	Pre-Charring (Y/N)	Ash Temperature (°C)	Ash Time (hours)	Ash Reference
							oven 105°C 22 hours then 2 hours at 300°C in furnace			
31	3.5	Y	Petroleum Benzene	4	SNI 01-2891	3		600	10	SNI 01-2891
32	2.0528	Y	Petroleum Ether	20 cycles (2 hours)	Acid Hydrolysis	2.0391	Charring	600	8	AOAC 942.05
33	2.5122, 2.5207, 2.5241	Y	Petroleum Ether	1.5	Method 932.06, OMA AOAC, 18th Ed	2.1007, 2.0308, 2.0282	Charring	600	2	Method 942.05, OMA AOAC, 18th Ed
34	1.000	Y	CHCl3	1.5	SNI 2354.3:2017	2.000		550	18	SNI 2354.1:2010
37						3	Free flame by hotplate	550	4	AOAC (2016) 938.08
38	2.000	Y	Diethyl Ether, Petroleum Ether	1 min each	AOAC 922.06, 19th Ed 2012 (total fat)	2.000	NA	600	2	AOAC 942.05, 19th Ed 2012
39	1	Y	Diethyl Ether:Petroleum Ether (1:1)	6 min	AOAC 922.06	2	Charring	550	5 to 6	AOAC 942.05
41	2	Y	Petroleum Ether / Diethyl Ether		AOAC 954.02	2		600	2	AOAC
42	3	Y	Hexane	2	SNI 01-2891-1992. point 8.2	3		600	5	AOAC 942.05 2005
43	2	N	Hexane	3	National Standard	2	Charring	550	3 to constant weight	National Standard
44	2.0066	N	Anhydrous Ether	16.0	AOAC 19th Ed, 2012	1.0000	Charring	520	8	AOAC 19th Ed, 2012
45	1.5	N	Petroleum Ether	2.25	ISO 11085	2		550 ± 20	3	ISO 5984
48	1	Y	Diethyl Ether	3 x 20 mins	MU-01/02	2	Charring	550	3 then 1 then 1	SNI 01-2891-1992
49	2	Y	Petroleum Ether	1 minute	AOAC 20th Ed 2016	1, 2	Charring	555	6	AOAC 20th Ed 2016
50	2.0000	Y	Pet. Ether	2.0	AOAC 920.85	2.0118	Charring	550	6.0	AOAC 923.03
52	2.0	Y	Diethyl Ether	3	Indirect Solvent Extraction (Soxhlet) and Acid Hydrolysis	2.0	Charring	600	8	AOAC 942.05
53	1.0	Y	Petroleum Benzene	80 mins	SNI-01-2891-1992					
54	1	Y	1:1 Mixed ether	5	AOAC 923.03	1	Charring	525	5	AOAC 92.03
55	8	Y	Ether, Petroleum ether	1	AOAC (2012) 948.15	2	Charring	550	2	AOAC (2012) 920.153
58						3.0		550	8	Based on AOAC 20th Ed 2016
60					AOAC (2012) 2003.06					SNI 01-2891-1992 Butir 6
61	2	N (Y)	Petroleum Spirits (Diethyl Ether:Hexane)	1 (-)	A6301 Soxtec (A6302 Acid Hydrolysis)	2	N/A	550	15	A6401 550C Ash
66A	1.5101	N	Petroleum Ether	0.75	AOAC 963.15, 20th Ed 2016 (Crude Fat)					

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LAB NUMBER	Fat Weight (g)	Hydrolysis (Y/N)	Extraction Solvent	Extraction Time (hours)	Fat Reference	Ash Weight	Pre-Charring (Y/N)	Ash Temperature (°C)	Ash Time (hours)	Ash Reference
66B	1.5005	N	Petroleum Ether	0.75	AOAC 963.15, 20th Ed 2016 (Crude Fat)					
66C	3.5127	N	Petroleum Ether	0.75	AOAC 963.15, 20th Ed 2016 (Crude Fat)					
67	1.0xxx	N	Petroleum Ether	1.30	Inhouse based on AOAC 920.39	2.0xxx		600	2	AOAC 942.05
68	2	N	Petroleum ether	6	AOAC	2	Y	600	2	AOAC
70						1		550	5	
71	1.0032, 1.0039	N	Petroleum Ether	2	AOAC 2003.05	1.0019, 1.0048		600	3	AOAC 942.05
72	2	Y	Petroleum ether, Diethyl ether	1 min	AOAC 922.06	2	Charring	550	4	AOAC 923.03
73A	1	N	Petroleum Benzine	1	FTC-06.01 (refers to AOAC 2003.05)	1	N	600	3.5	FTC-05.01 (refers to AOAC 942.05)
75	2	Y	Hexane	4	SNI 01-2891-1992 Butir 8.2	2		550	4	SNI 01-2891-1992 Butir 6.1
78						2	Gradual increase of temp	550	1	AOAC 19th Ed
79	1	Y			SNI 01-2891-1992 Butir 8.2	2 to 3		550		SNI 01-2891-1992 Butir 6.1
80						2.xx	N/A	600	Constant weight	AOAC 942.05
81	2.0211 mean	Y	Anhydrous Diethyl ether	20 cycles	Soxhlet Method	2.0678 mean	Charring	600	10	AOAC 942.05
83	1.5	Y	HCC & Petroleum ether	2	SNI-01-2891-1992	2		550	4	SNI-01-2891-1992
84	2	N	Petroleum Ether	16	AOAC 920.39	2	Charring	600	2	AOAC 942.05
85						2		550	3	SNI 01-2896-1992
86	2	Y	Ether / Petroleum ether	0.75	AOAC (2012) 954.02	2	Charring	600	2	AOAC (2012) 942.05
87	1.5	Y	Hexane	2	MTD/FOD/CHM-04	2.50	Heating on hotplate	550	Overnight	MTD/FOD/CHM-02
88	5	Y	Hexane	3	In house method (soxhlet)	2.5		550	24	SM 01-2891-1997
89	5	Y	Petroleum Ether	16	AOAC 963.15	2	Charring on hotplate	550	16	AOAC 930.30
90	2		Diethyl Ether		AOAC (2016) 954.02	2		550	3	AOAC (2016) 942.05
92	1	N	Petroleum Ether	1		5		550	3	
93	2 to 10	Y	Petroleum ether	20 mins	Velp manual	2	Charring	600	2	AOAC 942.05
94	2	Y	Diethyl Ether and Petroleum Ether		AOAC (2012) 922.06	2	Charring	550	5	AOAC (2012) 945.46
96						3		550	4	TCVN 8124:2009
100	1.5	N	Petroleum Ether	60 mins	AOAC AM5-04 reapprove 2009	2		600	2	AOAC (2016) 942.05

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LAB NUMBER	Macro Metals Weight (g)	Digestion Technique	Digestion Medium	Instrument	Wavelength	Recovery Correction (Y/N)	Macro Metals Reference	Heavy Metals Weight (g)	Digestion Technique	Digestion Medium	Instrument	Wavelength (nm or mass)	Recovery Correction (Y/N)	Heavy Metals Reference
6	1.0000	Acid	HCl:HNO3:H2O	AAS	Ca 422.7, Na 589.0, K 766.5	Y	AOAC (2016), 20th Ed, 928.08, 985.35 (50.1.14)	Cu 6.0000, Zn 1.0000, Pb, As 5.0000	Acid Digestion	HCl:HNO3:H2O	AAS		Y	AOAC (2016) 20th Ed, 968.08
7	1.0039/1.0316	Ashing	HCL	Flame Photometer		N								
11	2.0000	Dry Ashing	HCL:H2O	AAS	Na 330.3, K 404.4, Ca 239.9, Mg -, Fe 248.3	Y	AOAC (2016), 975.03, 985.35	2.0000	Dry Ashing	HCl:H2O	AAS	Cu 324.8, Pb 217, Zn 213.9, As 193.7	Y	AOAC (2016) 975.03, Pb: 999.11, As: 986.15
13	0.5	Microwave	HNO3 10 mL + HCl 2 mL	Analytikal Jena ContrAA 800 D	Na 588, K 766, Mg 285, Ca 422	N	Internal Method	0.5	Microwave	HNO3 10 mL + HCl 2 mL	ICP-MS Thermo Scientific (iCAP RQ)	M/z Cu: 63, Pb 208, Zn 66, As 75, Fe 57	N	Internal Method
14	0.1 - 0.2	Ashing	Conc HNO3, Conc HClO4	ICP Horiba Jobin Yvon	Na 588.995, K 766.49, Ca 393.366, Mg 279.553, Fe 259.94, P 213.618, Cu 224.70, Zn 213.856	Y	AOAC 975.03, 984.27	0.4	Wet digestion	HNO3, H2O2	ICP Horiba Jobin Yvon	Pb 220.353, As 189.042	Y	AOAC 999.10
16	0.5	Hot plate	HNO3+H2O2	ICP-OES Optima 7000 DV Perkin Elmer	Na 588.995, K 769.896, Ca 317.933, Mg 279.077, Fe 238.204	N	In-house Method	2	Microwave	HNO3+H2O2	ICP-MS 7700X Agilent		N	In-house Method
18	2.0	Dry Ashing	HNO3	AAS, Varian	Various	N	AOAC 968.08	2.0	Dry Ashing (Wet Digestion for Hg, Sn)	HCl (HNO3 for Hg, Sn)	ICP-OES Agilent (AAS-VGA Varian, Agilent for Hg, As)	Hg 253.7, As 193.7, Sn 283.998	N	SNI 19-2896-1998
19	1	By Furnace	HNO3:H2O (1:1)	Ca Manual by Buret, P by UV-Vis Spectro.	P 400	N	AOAC 927.02, 944.03, 965.17							
20								0.5	Furnace		AAS Analytic Jena, ZEEnit 700	283.3	0.9781	SNI 2354.5:2011

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LAB NUMBER	Macro Metals Weight (g)	Digestion Technique	Digestion Medium	Instrument	Wavelength	Recovery Correction (Y/N)	Macro Metals Reference	Heavy Metals Weight (g)	Digestion Technique	Digestion Medium	Instrument	Wavelength (nm or mass)	Recovery Correction (Y/N)	Heavy Metals Reference
21	0.1	Microwave	180°C	Mar Xpress (CEM)		Y	AOAC 2011.14 (2016)	0.1	Microwave	180°C	Mar Xpress (CEM)	Cu 324.754, Pb 405.781, Zn 213.228, Cd 228.802, Hg 253.652, As 193.695, Sn 303.412	Y	AOAC 2011.14 (2016)
22	0.2 to 0.3	Microwave	HNO3	ICP-MS Perkin Elmer			AOAC 2015.06	0.2 to 0.3 (As 0.2)	Microwave	HNO3	ICP-MS Perkin Elmer			AOAC 2015.01, 2015.06
23	1.00	Dry Ashing		ICP-OES	589, 766, 422, 285, 238		AOAC 985.01	1.00	Dry-Ashing (Wet-Microwave for As)		ICP-OES (Mercury Analyzer for Hg)	327, 220, 213, 228, 188		AOAC 985.01, EPA 7473 (Hg), AOAC 2013.06 (As)
25	5.0208 / 5.0213	HNO3-HCl	Water	ICP-OES	Na 588.995, K 766.491, Ca 396.847, Mg 280.27, Fe 238.204		USEPA Method 3050B	5.0202 / 5.0205 (As 5.0208 / 5.0213)	HNO3-HCl	Water	ICP-OES	Cu 327.395, Pb 220.353, Zn 202.548, As 188.98		USEPA Method 3050B
26	4.0	Dry ashing	Water & HCl (1+1)	AAS Shimadzu AA-7000	Na 589.0, K 766.5, Ca 422.7, Mg 285.2, Fe 248.3	N	AOAC No. 975.03	5.0 (4.0 for Cu, Zn)	Dry Ashing	Water & HCl (1+1)	AAS Shimadzu AA-7000		N	AOAC No. 975.03, 999.11 using flame AAS
27								0.1	Microwave digestion	HNO3 65% suprapure	ICP-MS 7700x Agilent		N	Gray J.P., Mindak R.W., Cheng J., 2015, Elemental Analysis Manual for Food and Related Product, USFDA Version 1.1

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LAB NUMBER	Macro Metals Weight (g)	Digestion Technique	Digestion Medium	Instrument	Wavelength	Recovery Correction (Y/N)	Macro Metals Reference	Heavy Metals Weight (g)	Digestion Technique	Digestion Medium	Instrument	Wavelength (nm or mass)	Recovery Correction (Y/N)	Heavy Metals Reference
31	5	Dry Ashing		AAS, Agilent		N	AOAC 985.35	5	Dry Ashing		AAS		N	AOAC 999.11, (As: AOAC 986.15)
34	2.000	Dry Ashing	HNO3 and HCl	AAS Flame	Na 589, Ca 422.7, Fe 372	92% (Na)	AOAC	Pb 0.300, Cu 2.000, As 0.500	Pb Microwave, Cu Dry Ashing, As Mircowave and Furnace	HNO3 and H2O2 (HNO3 and HCl for Cu)	Pb: AAS Agilent S200 Graphite Furnace, Cu: AAS Flame, As: HG AAS	Pb 283.3, Cu 324.70, As 193.7	Pb 94%, Cu 93%, As 96.8%	AOAC (Pb SNI 2354.5:2011)
37	1	Wet Digestion	Nitric + perchloric	ICP-OES (Perkin Elmer Optima 8000)	Na 589.592, K 766.490, Ca 317.933, Mg 285,213, Fe 238.204, P 213.617	N	AOAC (2016) 984.27	1	Wet Digestion	Nitric + perchloric	ICP-OES (Perkin Elmer Optima 8000)	Cu 327.393, Zn 206.200	N	AOAC (2016) 984.27
38	1.000	Dry Ashing	1N HNO3 (0.1M HNO3 for Fe)	Flame AAS, Shimadzu AA6300	Na 589.0, K 766.50, Ca 422.70, Mg 285.20, Fe 248.30	N	AOAC 985.35, 19th Ed 2012 (Fe modified AOAC 999.11)	1.000 (5.000 for Cu)	Dry Ashing	0.1 M HNO3 (1 N HNO3 for Cu)	Flame AAS, Shimadzu AA6300	Pb 283.30, Cu 324.80, As 193.70		Modified AOAC 999.11 (AOAC 985.35 for Cu)
39	0.5	Microwave		AAS	Na 589.0, K 766.5, Ca 422.7, Mg 285.2, Fe 248.3	Y	AOAC 985.35	0.3	Microwave		AAS	324.8	Y	AOAC 985.35
41	2													
42	5	Dry Ashing	HNO3-HCl	Flame AAS, Agilent 280 FS	Na 589.9, K 769.9, Ca 422.7, Mg 202.6, Fe 248.3	N	AOAC 985.35.2005	10	Dry Ashing	HNO3-HCl	Cu, Zn: Flame AAS 280 FS, Pb, Cd: GFAAS Agilent 240 FS	Cu 324.8, Zn 213.9, Pb 217.0, Cd 228.8	N	AOAC 999.11.2005
43	0.5	Microwave	HNO3	ICP-OES	Na 568.821, K 766.491, Ca 317.933, Mg 285.213	N	AOAC	0.5	Microwave	HNO3	ICP-OES, ICP-MS	Cu 327.395, Pb m/z 208, Zn 213.857, Cd m/z 111, As m/z 75	N	AOAC
44	1.0000	Dry Ashing		AAS, Thermoscientific	Na 589, K 766.5, Ca	N	AOAC 19th Ed							

Fish Meal Methods - Table 3 of 4

LAB NUMBER	Macro Metals Weight (g)	Digestion Technique	Digestion Medium	Instrument	Wavelength	Recovery Correction (Y/N)	Macro Metals Reference	Heavy Metals Weight (g)	Digestion Technique	Digestion Medium	Instrument	Wavelength (nm or mass)	Recovery Correction (Y/N)	Heavy Metals Reference
					422.7, Fe 248.3									
45	4	Dry Ashing	HCl+HNO3+DI (2+2+70 mL) on hotplate	AAS (Flame, Varian)	Na 589.0, K 766.5, Ca 422.7, Mg 285.2, Fe 248.3	N	AOAC 968.08	2 (for Cu, Zn)	Dry Ashing	HCl+HNO3+DI (2+2+70 mL) on hotplate	AAS (Flame, Varian)	Cu 324.8, Zn 213.9	N	AOAC 968.08
46								0.5042 (Cu)	Microwave	Nitric acid + H2O2	GFAAS (Agilent)	324.8	N	USFDA
48	5	Dry Digestion		AA800 Perkin Elmer	Na 330.2, K 766.5, Ca 422.7, Mg 285.2, Fe 248.3	N	MU-03/21 (AAS)	5 (As 0.5)	Dry Digestion (As Microwave Digestion)		AA800 Perkin Elmer	Cu 324.8, Pb 283.3, Zn 213.9, As 193.7	N	MU-03/20 (AAS)
49	1, 2	Dry Ashing	Conc Nitric acid	AAS / AA-7000 Shimadzu	Na 589.0, K 766.5, Ca 422.7, Mg 285.2, Fe 248.3	N	AOAC 20th Ed 2016	5 (1, 2 for Zn)	Dry Ashing	6 M HCl (Conc HNO3 for Zn)	ICP-OES 5110 Agilent (AAS / AA-7000 Shimadzu for Zn)	Cu 327.395, Pb 220.353, Zn 213.9, As 188.98	N	AOAC 20th Ed 2016
50	2.0000	Wet	Acid	Flame AAS (Varian)	330.3, 404.4, 422.7, 248.3	N	AOAC 985.35	2.0000	Wet	Acid	Flame AAS (Varian)	217.0, 213.9	N	AOAC 985.35
52	1.0 (Ca, Fe), 0.5 (K, Na)	Dry Ashing (Ca, Fe), Wet Digestion (K, Na)	1 N HNO3 (Ca, Fe), 2% HNO3 (K, Na)	Flame AAS (Shimadzu AA6300)	Ca 422.7, Fe 248.3, Na 589.0, K 766.5	N	Modified AOAC 985.35 (Ca, Fe), 999.10 (K, Na)	0.5 (1.0 for Zn)	Microwave Digestion (Dry Ashing for Zn)	5 mL conc HNO3 / Peroxide (1N HNO3 for Zn)	Graphite Furnace AAS - Thermo iCE 3500 (Flame AAS - Shimadzu AA6300 for Zn)	Pb 217.0, As 193.7, Zn 213.9	N	Modified AOAC 999.10 (985.35 for Zn)
53	0.3	Microwave	4 mL HNO3, 1 mL HCl, 1 mL H2O2	ICPMS Thermo			In house method	0.3	Microwave	4 mL HNO3, 1 mL HCl, 1 mL H2O2	ICPMS Thermo			In house method
54	1	Dry Ashing	HNO3	ICP / Shimadzu	Mg 279.553, Fe 259.940, Ca 317.933, Na 589.592	N	AOAC 984.27	1	Microwave digestion	HNO3 / H2O2	ICP / Shimadzu	Zn 213.856, Cu 324, Pb 220.353	N	AOAC 984.27
55	1.5	Wet digestion		ICP-OES	Na 589.592, Ca 317.933, K 766.491,	Y	AOAC (2012) 984.27	1.5	Wet digestion		ICP-OES	324.754	Y	AOAC (2012) 984.27

Fish Meal Methods - Table 3 of 4

LAB NUMBER	Macro Metals Weight (g)	Digestion Technique	Digestion Medium	Instrument	Wavelength	Recovery Correction (Y/N)	Macro Metals Reference	Heavy Metals Weight (g)	Digestion Technique	Digestion Medium	Instrument	Wavelength (nm or mass)	Recovery Correction (Y/N)	Heavy Metals Reference
					Mg 280.270, Fe 259.940									
58	3.0	Dry Ash	HCl	ICP-OES			Dry Ashing and Quantitation by ICP-OES	1.0	Acid Digestion	HNO3, H2O2	ICP-OES (AAS-Hydride for As)	As 189		Acid Digestion and Quantitation by ICP-OES (AAS-hydride for As)
60							AOAC (2012) 968.08 (Ca, Mg), 965.17 (P), MP37-BPMSP (AAS) (Na, K), SNI 01-2896-1998 (Fe)							SNI 01-2896-1998 (Zn)
61	1	Acid block digestion	HNO3 (HNO3/HCLO4 for P)	Varian AA240 FS Fast Sequential AAS (Shimadzu UV-2700 for P)	Ca 422.7, Fe 248.3, Mg 285.2, K 769.9, Na 589.6	N	A6407-26 AAS (A6417 Spectro Method for P)	1	Acid block digestion	HNO3	Varian AA240 FS Fast Sequential AAS	Cu 324.8, Zn 213.9	N	A6407-26 AAS
64	0.5048	Dry Ashing	1 N HNO3	Shimadzu AA6300	Fe 248.3, Ca 422.7	N	Modified AOAC 985.35	0.5048	Dry Ashing	1 N HNO3	Shimadzu AA6300	Zn 213.9	N	Modified AOAC 985.35
67	2.0xxx	Dry Ash	Wet chemical	AAS, Perkin Elmer	Na 589.00, K 766.49, Ca 422.67, Mg 285.21, Fe 248.33	N	AOAC 968.08	2.0xxx (1.0xxx for Hg)	Wet chemical		AAS, Perkin Elmer	Cu 324.75, Zn 213.86, Pb 283.31, Cd 228.80, Hg 253.63, As 193.70	Y	AOAC 968.08, 986.75, 977.15
70								1	Ash		Z-2700 Hitachi	Pb 283.3, As 193.7		
71	1.0020, 1.0062	Acid Digestion	HCl (1:3)				AOAC 927.02, Titration							
72	3	Ashing	HNO3	AAS / Analytik Jena	Na 589.0, K 766.5, Ca 422.7, Mg 285.2, Fe 589.0	N	AOAC 985.35	4	Ashing	HNO3	ICP-OES, JY Ultima	Cu 324.754, Pb 220.353, Zn 213.9, Cd 228.802, As 193.695	N	AOAC 999.11

Fish Meal Methods - Table 3 of 4

LAB NUMBER	Macro Metals Weight (g)	Digestion Technique	Digestion Medium	Instrument	Wavelength	Recovery Correction (Y/N)	Macro Metals Reference	Heavy Metals Weight (g)	Digestion Technique	Digestion Medium	Instrument	Wavelength (nm or mass)	Recovery Correction (Y/N)	Heavy Metals Reference
73A	1	Dry ashing	Hot plate	AAS (280FS AA, Agilent Technology)	Ca 422.7, Fe 248.3	N	FTC-46.01 (refers to AOAC 968.08, 965.09)	1	Dry Ashing	Hot plate	AAS (280FS AA, Agilent Technology)	213.9	N	FTC-46.01 (refers to AOAC 968.08, 965.09)
73B	1	Dry ashing	Hot plate	AAS (280FS AA, Agilent Technology)	Ca 422.7	N	FTC-46.01 (refers to AOAC 968.08, 965.09)							
75	1	Wet digestion (hot block)	HNO3 + H2O2	ICP-OES Agilent 5100	Na 589.592, K 766.491, Ca 317.933, Mg 279.078, Fe 238.204	N	In House Method ICP-OES	1	Wet digestion (hot block)	HNO3 + H2O2	ICP-OES Agilent 5100, ICP-MS Agilent 7700x	63 Cu 324.754, 208 Pb, 66 Zn 213.857, 75 As 193.696, Sn 189.925	N	In House Method ICP-MS & ICP-OES
78	0.5	Mircowave Digestion	Acid Digestion	Berghof Speedwave 4 Microwave Digestion Unit	Na 589.592, K 766.490, Ca 393.366, Mg 279.08, Fe 371.993		MP-AES							
81	mean: Na,K 0.5060, Ca 1.0024, Fe 0.2558	Wet Digestion (Na, K), Dry Ashing (Ca, Fe)	1 N HNO3 and 30% H2O2 (Na, K), 1 N HNO3 (Ca, Fe)	Shimadzu AAS AA 6300	Na 589.0, K 766.5, Ca 422.7, Fe 248.3	N	AOAC 999.10 Mod (Na, K), 985.35 Mod (Ca, Fe)	mean 1.0024 (Zn), 0.5083 (Pb)	Zn: Dry Ashing, Pb: Microwave Digestion	Zn: 1 N HNO3, Pb: conc HNO3 + 30% H2O2	Zn: Shimadzu AAS AA 6300, Pb: Thermo iCe 3500	Zn 213.9, Pb 217.0	N	AOAC 985.35 Mod (Zn), 999.10 Mod (Pb)
82A	0.250	none	none	HPGe detector, Canberra			Neutron Activation Analysis (NAA)	0.250	none	none	HPGe detector, Canberra		N	Neutron Activation Analysis (NAA)
82B	1.00	Microwave	Nitric Acid	AAS, GBC		Y	Flame SSA	1.00	Microwave	Nitric Acid	Pb, Cd, As: AAS, Agilent, Hg, Cu: AAS GBC		Y	Pb, Cd, As: Graphite SSA, Cu: Flame SSA, Hg: Hydride Generation SSA
83	0.3	Microwave Digestion with HNO3		Microwave digester Mars Xpress, ICP MS Nex Ion		Y	Application Note, Perkin Elmer	0.3	Microwave Digestion with HNO3		Microwave digester Mars Xpress, ICP MS Nex Ion		Y	Application Note, Perkin Elmer

Fish Meal Methods - Table 3 of 4

LAB NUMBER	Macro Metals Weight (g)	Digestion Technique	Digestion Medium	Instrument	Wavelength	Recovery Correction (Y/N)	Macro Metals Reference	Heavy Metals Weight (g)	Digestion Technique	Digestion Medium	Instrument	Wavelength (nm or mass)	Recovery Correction (Y/N)	Heavy Metals Reference
				(Perkin Elmer)							(Perkin Elmer)			
84	0.5	Microwave Digestion	HNO3 / H2O2	ICP-OES, ICP-MS	Na 559.592, K 766.490, Ca 317.933, Mg 285.213	N	AOAC 999.10:2005	0.5	Microwave Digestion	HNO3 / H2O2	ICP-MS		N	AOAC 999.10:2005
86	1.0000	Wet Digest		ICP-OES	Na 589.5, K 769.8, Ca 315.8, Mg 280.2, Fe 259.9	Y	AOAC (2012) 984.27	1.0000	Wet Digest		ICP-OES (As: ICP-MS)	Cu 324.7, Pb 220.3, Zn 206.2, Cd 214.4, As Mass 75	Y	AOAC (2012) 984.27, (As: 2011.19)
87	2.5	Dry Ashing	HNO3	Furnace Thermolyne	ICP-OES	N	MTD/FOD/CHM-09	0.5	Wet Ashing	HNO3, H2O2	Microwave Digestion, Berghoff, Speedwave ENTRY	ICP-OES	N	MTD/FOD/CHM-09
88	3	Dry Ashing	HNO3 conc 10 mL	AAS GBC Flame	Na 587.60, K 765.20, Ca 422.3, Mg 285.20, Fe 248.3	N	In house method (AAS)	0.3 (Cu, Zn 3)	Microwave (Cu, Zn Dry Ashing)	H2O2 2 ml + HNO3 8 mL (Cu, Zn: HNO3 10 mL)	AAS GBC Hydride vapour (Cu, Zn: AAS GBC Flame, Cd: AAS-GF)	Cu 324.70, Pb 217.0, Hg 253.70, As 193.70, Sn 235.50, Zn 213.90, Cd 228.8	N	In house method (AAS)
89	2	Dry Ashing	1.5% HNO3	AAS Agilent	Various	N	AOAC 985.35	2	Dry Ashing	1.5% HNO3	AAS Agilent	Various	N	AOAC 985.35
90	1	Ultrawave		ICP-OES	Na 589.592, K 766.490, Ca 422.673, Mg 285.213, Fe 238.204			1 (As 0.3)	Ultrawave		ICP-OES	Cu 324.752, Pb 220.353, Zn 213.857		
92	1	Ashing	HNO3	ICP-OES				Ashing	HNO3		ICP-OES			
93	0.05	Charring, Dry ashing	Hotplate, Furnace	Flame Photometer, Sherwood	N/A	N/A	AOAC 985.35							
94	1.5	Dry ashing (Fe: Wet ashing)		ICP-OES / Perkin Elmer	Na 589.0, K 766.5, Ca 317.9, Mg 383.2, Cu 324.7, Fe 259.9	Y	AOAC (2012) 984.27							

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LAB NUMBER	Cholesterol Weight (g)	Digestion Technique	Digestion Medium	Derivatization	Cholesterol Reference	Tryptophan Reference	TVBN Weight (g)	TVBN Reference
14	0.25	Saponification	95% Ethanol, 50% KOH	Hexamethyldisilazane, Trimethylchlorosilane	AOAC 994.10			
60						MP46-BPMSP		SNI 2354.8-2009 (Kjeldahl)

Defatted Soya Bean Flour Methods - Table 1 of 4

LAB NUMBER	Moisture Weight	Drying Temp (°C)	Drying Time (hours)	Moisture Reference	Nitrogen Weight	Catalyst	Acid Volume (mL)	Receiver Solution	Titrant	N-Conversion Factor to Protein	Nitrogen Reference
2	2.00	135	2	AOAC (2016) 930.15	0.50	CuSO4+K2SO4	20	50	HCl 0.1 M	6.25	AOAC (2016) 981.10
4	2.xxxx	130 ± 3	1	Based on AOAC	0.9xxx	K2SO4 and Selenium	25 mL H2SO4	NaOH 100 mL	H2SO4 0.08-0.1 N		Based on AOAC
5	5.0000	103	4	ISO 6496:1999	1.0000	CuSO4+K2SO4	13 mL conc H2SO4	30 mL 4% Boric Acid	0.5 N H2SO4		AOAC 20th Ed, 2016, 2001.11, Chapt 4
6	5.0000	103	4.00	ISO 6496	0.5074	K2PO4 + CuPO4	15	55 mL 4% Boric Acid	0.2036 N H2SO4	1.4007	ISO 5983-2
8	5	105 ± 2	2	SLS 898:1990							
9	5 to 10	105	4	Based on ISO 6496:1999	1	K2SO4/CuSO4	H2SO4 / 12.5 mL	Boric acid 30 mL	0.5 N H2SO4		Based on AOAC 20th Ed, 2016, 2001.11, Chapt 4
10	2	130	1	AOAC 2012, 32.2.09 A, Chapter 32	1	Selenium mixture	25 mL conc H2SO4	50 mL 4% H3BO4	HCl 0.1 M		AOAC 2012, 32.2.09 C, Chapt 32
11	5.0000	103	4	AOAC (2016) 925.10	0.5000	1 mL	H2SO4 / 25 mL	Boric acid solution 25 mL	0.1 N H2SO4	6.25	Manual on fertilizer analysis, Arsrod, Doa 12/2551
12	1	100 ± 1	3	AOAC (2016) 952.08	1	K2SO4, CuSO4	H2SO4, 20 mL	H3BO4, 100 mL	0.1 M HCl	5.71	AOAC (2016) 992.23
14	2	130 ± 3	1	AOAC 925.10	1	K2SO4:CuSO4.5H2O (9:1)	H2SO4 15 mL	4% Boric Acid 30 mL	0.1 M HCl		AOAC 991.20
15	2	130	1	AOAC (2016) 925.10	0.2	CuSO4.5H2O, K2SO4	H2SO4 20 mL	1% H3BO4	0.1 M HCl	6.25	Based on AOAC (2016) 991.20
16	1 to 2	105	3	SNI 01-2891-1992 Food & Beverage	0.5 - 1	Selenium	Sulphuric Acid 25 mL	Boric Acid 50 mL	HCl 0.1 N		SNI 01-2891-1992 Food & Beverage
18	2.0	105	3	SNI 01-2891-1992	2.0	CuSO4, SeO2	H2SO4, 25 mL	H3BO3 2%, 25 mL	HCl 0.1 M		SNI 01-2891-1992
19	5	105	3	AOAC 934.01	1	Kjeltabs, 2 pcs	Sulphuric Acid 15 mL	Boric Acid 1%, 15 mL	HCl, 15 mL	6.25	AOAC 988.05, AN300 FOSS 2003
21	2	130	2	AOAC 925.10 (2016)	0.5 to 1.0	Se, K2SO4	H2SO4 15 mL	Boric acid (AR) 25 mL	HCl (AR) 0.1 N		AOAC 930.29 (2016)
23	5.00	103	4	ISO 6496	0.20						AOAC 992.15

Defatted Soya Bean Flour Methods - Table 1 of 4

LAB NUMBER	Moisture Weight	Drying Temp (°C)	Drying Time (hours)	Moisture Reference	Nitrogen Weight	Catalyst	Acid Volume (mL)	Receiver Solution	Titrant	N-Conversion Factor to Protein	Nitrogen Reference
25	5.1745 / 5.1797	103	4	Laboratory Handbook of Methods of Food Analysis, 3rd Ed, to R. Lees	0.0521 / 0.0517	Copper Sulphate	Digestion Reagent, 10 mL	Indicating Boric Sol'n, 10 mL	0.02 N H2SO4		Laboratory Handbook of Methods of Food Analysis, 3rd Ed, R. Lees
26	2.0	100	5	AOAC No. 925.09B	2.0	Copper (II) sulphate pentahydrate	Conc H2SO4, 15 mL	0.1 N HCl	0.1 N NaOH	5.95	AOAC No. 2001.11
27	2	105	22	SNI 2354.2:2015	0.5	K2SO4 / Se	10	30	0.2000		SNI 01-2354.4-2006 Modified
30	2.0018, 2.0008	130	1	AOAC (2016) 925.10	1.0023, 1.0030	K2SO4:CuSO4.5H2O:TiO2 (10:0.3:0.3)	Sulphuric acid 20 mL	Erlenmeyer Flask 250 mL	H2SO4 0.05 N		ISO 20483:2006 (E)
31	3	105	3	SNI	0.3	Selenium	H2SO4 (8 mL)	H3BO3 3% (50 mL)	HCl 0.05 N		SNI 01-2891
32	2.1003	130	3	AOAC 945.39	2.1110	K2SO4, CuSO4.5H2O	Conc H2SO4, 25 mL	4% Boric Acid 50 mL	0.50987 M HCl	5.71	Block Digestion - Kjeldahl
35	5.3873	100 ± 5	2	Sri Lanka Standard 1011:1994 specification for Soya Flour	1.0626	Anhyd Na2SO4: Anhyd CuSO4 (97:3)	H2SO4 25 mL	2% Boric Acid 100 mL	0.1 N H2SO4	6.25	Sri Lanka Standard 1011:1994 specification for Soya Flour
37	3	130	3	AOAC (2016) 925.10							
38	2.000	130	1, to constant weight	AOAC 925.10, 19th Ed 2012	0.400	Salt mixture	H2SO4 12 mL	4% H3BO3, 20 mL	0.2 N HCl		AOAC 991.2, 19th Ed 2012
39	5	130 ± 3	2	AOAC 945.39	0.5	Cu	H2SO4 / 10	Boric acid 30 mL	0.1 M HCl		AOAC 991.20
41	2	135 ± 2	2	AOAC (2016) 930.15	0.5	K2SO4:CuSO4	Sulphuric acid 15 mL	Boric acid 25 mL	0.1000	6.25	AOAC 2001.11
42	2	105	3	SNI 01-2891-1992. point 5.1	0.5	Selenium	H2SO4	H3BO3 1% 30 mL	HCl 0.1 N		SNI 01-2891-1992. point 7.1
43	2	130	2 to constant weight	AOAC, National Standard	1	Mix selenium	H2SO4, 12 mL	H3BO3, 25 mL	HCl 0.2 M	1.4007	National Standard, inhouse method
44	2.0056	130	1.0	AOAC 19th Ed, 2012	0.5063	Na2SO4, CuSO4	Conc H2SO4 20 mL	50 mL 0.1 N H2SO4	0.2 N NaOH	5.71	AOAC 19th Ed, 2012
45	5 ± 0.3	103 ± 2	4 ± 1	ISO 6496	1	7g K2SO4 + 0.8 g CuSO4.5H2O	98% H2SO4 15 mL	4.0% Boric acid 30 mL	0.5 N H2SO4	6.25	ISO 5983-2
48	2	130	1	SNI 3549 2009	1	Selenium Mixture reagent	20	30	0.1	1	MU-01/04
49	2	130	1	AOAC 20th Ed 2016	1, 2	Kjeltabs	Conc H2SO4 20 mL	Boric Acid 50 mL	0.2 N H2SO4	5.7	AOAC 20th Ed 2016

Defatted Soya Bean Flour Methods - Table 1 of 4

LAB NUMBER	Moisture Weight	Drying Temp (°C)	Drying Time (hours)	Moisture Reference	Nitrogen Weight	Catalyst	Acid Volume (mL)	Receiver Solution	Titrant	N-Conversion Factor to Protein	Nitrogen Reference
50	2.1804	130	1.0	AOAC 925.10	1.1567	Cu	H2SO4, 15.0 mL	Boric Acid, 75.0 mL	HCl, 0.0902	Fish M 6.25, Rice F 5.7	AOAC 984.13
53					0.3	Selenium	H2SO4 8 mL	H3BO3 3% 25 mL	HCl 0.0958 N	5.71	SNI-01-2891-1992
54	1	105	5	AOAC 927.05	1	Kjeltabs	H2SO4 12 mL	25 mL 4% Boric Acid	0.3 M H2SO4	5.95	AOAC 920.87
55	5	130	1	AOAC (2012) 945.39A	1	K2SO4 / Se	H2SO4 15 mL	250 mL Erlenmeyer flask, 25 mL 4% Boric Acid	HCl 0.1 M		AOAC (2012) 991.20
56	2.03250	130 ± 3	1	AOAC Intl 20th Ed, 2016 925.10	1.01193	Kjeltabs (Foss)	H2SO4 12.0 mL	Boric Acid Soln 25 mL	0.09729 M HCl	6.25	AOAC Intl 20th Ed, 2016 981.10
58	2 to 5	130 / 105	3	Based on AOAC 20th Ed 2016	0.5			Boric Acid	0.25 HCl	1.0	Based on AOAC 20th Ed 2016
59	1 to 2	105	3	SNI 01-2891-1992 point 5.1							
60				SNI 01-2891-1992 Butir 5.1							AOAC (2012) 2011.11
61	3	130	1.5	A6801 130C Air oven	1	K2SO4/CuSO4 Kjeltab catalyst tablets	H2SO4 20 mL	Boric Acid 50 mL	0.1 M HCl	6.25	A6501 Kjeldahl/Boric Acid Method
64	2.0577	130	1	AOAC 925.10							
65	4.8006	105	2.5	Oven drying							
66A	10.0032	130.0	0.50	AOCS Official Method Ca 2c-25, 7th Ed., 2017							
66B	10.0010	130.0	0.50	AOCS Official Method Ca 2c-25, 7th Ed., 2017							
67	2.0xxx	130	1.0	AOAC 925.10	0.5xxx	CuSO4+K2SO4	H2SO4 15 mL	Boric acid 50 mL	0.2 N H2SO4	6.25	Inhouse based on ISO 5988.2
68	2	135	2	AOAC	0.5	Kjeltabs	17	50	0.1 N HCl	6.25	AOAC
70	5	105	5								
71	4.9979, 5.0033	105	3	AOAC 930.15	1.0075, 0.9934	Kjeltabs 3.5 g, K2SO4 0.4 g, CuSO4.5H2O	H2SO4 15 mL	Boric acid	0.2 N HCl		AOAC 2001.11
72	2	130	1	AOAC 925.10	2	K2SO4, CuSO4, SeO2	25	4% Boric acid 25 mL	0.05 M H2SO4	6.25	AOAC 920.87
73A	5	105	3	FTC-01.01 (refers to AOAC 945.39)	1	2 Kjeltabs (each 3.5 g K2SO4, 0.4 g CuSO4.5H2O)	H2SO4 15 mL	1% Boric acid, 1% BCG 0.1% soln, 0.7% Methyl Red 0.1% soln (30 mL)	HCl 0.2 M	6.25	FTC-02.01 (refers to AOAC 2001.11, 979.09)
74	5.0	105	3	SNI 01-2891-1992 (part 5.1)							

Defatted Soya Bean Flour Methods - Table 1 of 4

LAB NUMBER	Moisture Weight	Drying Temp (°C)	Drying Time (hours)	Moisture Reference	Nitrogen Weight	Catalyst	Acid Volume (mL)	Receiver Solution	Titrant	N-Conversion Factor to Protein	Nitrogen Reference
75	2	105 ± 2	4	SNI 01-2891-1992 Butir 5.1	0.5	CuSO4	H2SO4, 5 mL	H3BO3, 20 mL	HCl, 0.1 M	N/A (report as Nitrogen)	SNI 01-2891-1992 Butir 7.1
78	2	100	1, to constant weight	AOAC 19th Ed	2	Kjeltabs	Conc H2SO4, 15 mL	4% Boric acid, 25 mL	0.1 N HCl		AOAC 19th Ed
79	1 to 2	105	3	SNI 01-2891-1992 Butir 5.1	0.1 to 0.15						IK/02/5.4.1/LDITP/Analisis Protein
80	2.xx	135	2	AOAC 930.15	0.25 to 0.5	TAP/S3.5	25	40	0.1	6.25	AOAC 984.13
81	2.0309 mean	130	1 then 0.5 until <0.005 mg diff	AOAC 925.10	1.0140 mean	K2SO4 and CuSO4.5H2O	20 mL H2SO4	60 mL 2% Boric Acid soln	0.09597 N HCl	5.71	Automated Kjeldahl Method
82A	1.00	105	7.5	Drying Oven							
82B	1.00	105	7.5	Drying Oven							
83	2	105	5	SNI-01-2891-1992	0.5	CuSO4	H2SO4	Boric Acid, Bromocresol green, Methanol, Methyl red, 30 mL	HCl (0.1)	6.25	SNI-01-2891-1992
84	2	130	1	AOAC 945.39	1	KJELCAT 12-0328	H2SO4 98% 20 mL	H3BO3 4%, 60 mL	HCl 0.1 M		KJELDAHL
85	2	105	3	SNI 01-2896-1992	0.2						DuMaster Protein Analyzer (Buchi)
86	2	130	2	AOAC (2012) 945.39A	0.5	3.5g K2SO4 + 3.5 mg Se	Conc H2SO4 12.5 mL	4% Boric Acid 30 mL	0.1 N HCl		AOAC (2012) 981.10
87	1.5	105	3	MTD/FOD/CHM-01	0.51	K2SO4+Se	Sulphuric Acid; 25 mL	Boric Acid; 15 mL	HCl 0.01 N	14	MTD/FOD/CHM-03
89	2	100 to 105	4	AOAC 925.23	0.5	CuSO4	HCl	25 mL Boric Acid	0.1 N HCl		AOAC 991.2
90	2	130	1	AOAC (2016) 930.15	0.3	K2SO4, Se	15		0.1 M HCl		AOAC (2016) 2001.11
92	5	103	4	ISO 6494	1	CuSO4	H2SO4	Boric	HCl	6.25	
93	2	130 ± 3	1	AOAC 925.10	2	H2O2 5 mL, Kjeltabs: 3.5 g K2SO4, 0.4 g CuSO4,5H2O	H2SO4 12 mL	Boric acid 25 mL	0.05 N H2SO4	5.95	AOAC 945.18-B
94	1	130	5	AOAC (2000) 925.10	1	CuSO4.5H2O and K2SO4	Conc H2SO4 / 13 mL	1% Boric acid	0.1 M HCl		AOAC (2012) 991.20
96	3	125	4	TCVN 4846:1989							
97	5	105	2	Sri Lanka Standard 1011:1994							
98	~2.0	100 ± 5	5	AOAC 930.15	~1.0	7g K2SO4, 0.8 g CuSO4	15 mL H2SO4	30 mL 4% Boric Acid	0.2 N HCl		AOAC 976.05

Defatted Soya Bean Flour Methods - Table 1 of 4

LAB NUMBER	Moisture Weight	Drying Temp (ºC)	Drying Time (hours)	Moisture Reference	Nitrogen Weight	Catalyst	Acid Volume (mL)	Receiver Solution	Titrant	N-Conversion Factor to Protein	Nitrogen Reference
100	5	130	2	AOAC 945.39	0.5	$CuSO_4$ and K_2SO_4	H_2SO_4 / 15 mL	4% Boric Acid 50 mL	0.2 N H_2SO_4	6.25	Inhouse based on ISO 5983-2 (2009)

Defatted Soya Bean Flour Methods - Table 2 of 4

LAB NUMBER	Fat weight (g)	Hydrolysis (Y/N)	Extraction Solvent	Extraction Time (hours)	Fat Reference	Ash Weight	Pre-Charring (Y/N)	Ash Temperature (ºC)	Ash Time (hours)	Ash Reference
2	2.00	N	Petroleum Ether	8	AOAC (2016) 920.39	2.00	Hot plate	600	2	AOAC (2016) 942.05
4	1.xxxx	Y	Diethyl Ether and Petroleum Ether		Based on AOAC					
5	2.0000	N	Petroleum Ether	1.5	AOAC 20th Ed, 2016, 2003.05, Chapt 4	2.0000		550	3	ISO 5984:2002
6	3.0000	N	Diethyl Ether	80 min	AOAC 2003.05	2.0000	Pre-burn on Hotplate	600	4	AOAC (2016) 942.05 4.1.10
8						5	Char 30 minutes	600 $\pm$ 20	Until grey ash	SLS 898:1990
9	2	N	Petroleum Ether	1.5	Based on AOAC 20th Ed, 2016, 2003.05, Chapt 4	1 to 2		550	2.5	Based on ISO 5984:2002
10	2	N	Petroleum Ether	5	AOAC 2012, 32.2.09 E, Chapt 32	2		600	2	AOAC 2012, 32.2.09 B, Chapt 32
11	4.0000	N	Petroleum Ether	16-18 hr	AOAC (2016) 922.06	2.0000	Pre heat 3 hour	550	3	ISO (5984) 2002 (E)
12	2	Yes, Acid digestion	Petroleum Ether	2	AOAC (2016) 984.15	0.5	Charring on hot plate and Bunsen	550	2	AOAC (2016) 930.30, 945.46
14	2	Y	Diethyl Ether and Petroleum Ether	3	AOAC 922.06	5	Charring	550	5	AOAC 923.03
15	1	Y	Petroleum Ether	1	Based on ISO 1443:1973	4		550	8	AOAC (2016) 923.03
16	2	Y	Diethyl Ether + Petroleum Ether		SNI 01-2891-1992 Food & Beverage	2 to 3		550	8	SNI 01-2891-1992 Food & Beverage
18	2.0	Y	Petroleum Benzine	6	SNI 01-2891-1992	2.0	Charring	550	4	SNI 01-2891-1992
19	1	N	Petroleum Benzene	1	AOAC 2003.05, AN305, FOSS, 2005	1		600	3	AOAC 942.05
21	0.5 to 1.0	Y	Diethyl Ether Petroleum Ether	2	AOAC 932.06 (2016)	1	4	550	6	AOAC 923.03 (2016)
23	1.90	N	Petroleum Ether	1	AOCS Am5-04	2.00		550	3	ISO 5984
25	7.1745	N	Hexane	8	Laboratory Handbook of Methods of Food Analysis, 3rd Ed, R. Lees	5.0205 / 5.0206	Addition of HNO3	550	4	Laboratory Handbook of Methods of Food Analysis, 3rd Ed, R. Lees
26						4.0	Drying at 150ºC	525	24	AOAC No. 923.03

Defatted Soya Bean Flour Methods - Table 2 of 4

LAB NUMBER	Fat weight (g)	Hydrolysis (Y/N)	Extraction Solvent	Extraction Time (hours)	Fat Reference	Ash Weight	Pre-Charring (Y/N)	Ash Temperature (°C)	Ash Time (hours)	Ash Reference
27	2	Y	Diethyl Ether	2	SNI 2354-3:2017	2	Drying in vacuum oven 105°C 22 hours then 2 hours at 300°C in furnace	550	8	SNI 2354.1:2010
30	2.0039, 2.0027	Y	Diethyl Ether, Petroleum Ether	3	AOAC (2016) 925.10	3.5037, 3.5033		550	10	AOAC (2016) 923.03
31	3.5	Y	Petroleum Benzene	4	SNI 01-2891	3		600	10	SNI 01-2891
32	2.0832	Y	Petroleum Ether	20 cycles (2 hours)	Acid Hydrolysis	2.0151	Charring	550	8	AOAC 923.03
35	5.5793	N	Petroleum Ether 60-40 °C	16	Sri Lanka Standard 1011:1994 specification for Soya Flour	5.3337	Charring on Bunsen burner	550 ± 25	3	Sri Lanka Standard 1011:1994 specification for Soya Flour
37						3	Free flame by hotplate	550	4	AOAC (2016) 938.08
38	2.000	Y	Diethyl Ether, Petroleum Ether	1 min each	AOAC 922.06, 19th Ed 2012 (total fat)	2.000	Charring	550	2	AOAC 923.03, 19th Ed 2012
39	1	Y	Diethyl Ether:Petroleum Ether (1:1)	6 min	AOAC 922.06	2	Charring	550	5 to 6	AOAC 942.05
41	2	Y	Petroleum Ether / Diethyl Ether		AOAC 954.02	2		600	2	AOAC
42	3	Y	Hexane	2	SNI 01-2891-1992. point 8.2	3		600	5	SNI 01-2891-1992. point 6.1
43	2	N	Hexane	3	National Standard	2	Charring	550	3 to constant weight	National Standard
44	2.0495	Y	Petroleum Ether, Anhydrous Ether	2 mins	AOAC 19th Ed, 2012	1.0000	Charring	520	8.0	AOAC 19th Ed, 2012
45	1.5	N	Petroleum Ether	2.25	ISO 11085	2		550 ± 20	3	ISO 5984
48	1	Y	Diethyl Ether	3 x 20 mins	MU-01/02	3	Charring	550	3 then 1 then 1	SNI 3549 2009
49	2	Y	Petroleum Ether	1 minute	AOAC 20th Ed 2016	1, 3	Charring	555	6	AOAC 20th Ed 2016
50	2.0000	Y	Pet. Ether	2.0	AOAC 920.85	2.0118	Charring	550	6.0	AOAC 923.03
53										
54	1	Y	1:1 Mixed ether	5	AOAC 923.03	1	Charring	525	5	AOAC 92.03
55	2	Y	Ether, Petroleum ether	1	AOAC (2012) 992.06	3	Charring	550	2	AOAC (2012) 923.03
56	1.01512	Y	Petroleum ether	5 mins	AOAC Intl 20th Ed, 2016 945.44	4.02388	None	550	8	AOAC Intl 20th Ed, 2016 923.03
58						3.0		550	8	Based on AOAC 20th Ed 2016
59	1 to 2	Y	Petroleum Benzine	4	SNI 01-2891-1992 point 8.2	2 to 3		550	15	SNI 01-2891-1992 point 6.1

Defatted Soya Bean Flour Methods - Table 2 of 4

LAB NUMBER	Fat weight (g)	Hydrolysis (Y/N)	Extraction Solvent	Extraction Time (hours)	Fat Reference	Ash Weight	Pre-Charring (Y/N)	Ash Temperature (°C)	Ash Time (hours)	Ash Reference
60					AOAC (2012) 2003.06					SNI 01-2891-1992 Butir 6
61	2	N (Y)	Petroleum Spirits (Diethyl Ether:Hexane)	1 (-)	A6301 Soxtec (A6302 Acid Hydrolysis)	2	N/A	550	15	A6401 550C Ash
65						5.1881		545	2.5	Drying method
66A	3.5586	N	Petroleum Ether	0.75	AOAC 963.15, 20th Ed 2016 (Crude Fat)					
66B	1.5005	N	Petroleum Ether	0.75	AOAC 963.15, 20th Ed 2016 (Crude Fat)					
67	1.0xxx	N	Petroleum Ether	1.30	Inhouse based on AOAC 920.39	3.0xxx		550	2	AOAC 923.03
68	2	N	Petroleum ether	6	AOAC	2	Y	600	2	AOAC
70						1		550	5	
71	1.0026, 1.0032	N	Petroleum Ether	2	AOAC 2003.05	1.0055, 1.0063		600	3	AOAC 942.05
72	2	Y	Petroleum ether, Diethyl ether	1 min	AOAC 922.06	2	Charring	550	4	AOAC 923.03
73A	1	N	Petroleum Benzine	1	FTC-06.01 (refers to AOAC 2003.05)	1	N	600	3.5	FTC-05.01 (refers to AOAC 942.05)
75	2	Y	Hexane	4	SNI 01-2891-1992 Butir 8.2	2		550	4	SNI 01-2891-1992 Butir 6.1
78						2	Gradual increase of temp	550	1	AOAC 19th Ed
79	1	Y			SNI 01-2891-1992 Butir 8.2	2 to 3		550		SNI 01-2891-1992 Butir 6.1
80						2.xx	N/A	600	Constant weight	AOAC 942.05
81	2.0327 mean	Y	Anhydrous Diethyl ether	20 cycles	Soxhlet Method	3.0341 mean	Charring	550	10	AOAC 923.03
83	1.5	Y	HCC & Petroleum ether	2	SNI-01-2891-1992	2		550	4	SNI-01-2891-1992
84	5	Y	Petroleum Ether	4	SNI 01-2891-1992	2	Charring	600	6	AOAC 945.39
85						2		550	3	SNI 01-2896-1992
86	2	Y	Hexane	0.75	AOAC (2012) 922.06	2	Charring	600	2	AOAC (2012) 945.39B
87	1.5	Y	Hexane	2	MTD/FOD/CHM-04	2.50	Heating on hotplate	550	Overnight	MTD/FOD/CHM-02
89	5	Y	Petroleum Ether	16	AOAC 963.15	2	Charring on hotplate	550	16	AOAC 930.30
90	2		Diethyl Ether		AOAC (2016) 954.02	2		550	3	AOAC (2016) 942.05
92	1	N	Petroleum Ether	1		5		550	3	
93	2	H2O2 5 mL, Kjeltabs: 3.5 g K2SO4, 0.4 g CuSO4,5H2O	H2SO4 12 mL	Boric acid 25 mL	0.05 N H2SO4	2	Charring	600	2	AOAC 942.05, 945.39

Defatted Soya Bean Flour Methods - Table 2 of 4

LAB NUMBER	Fat weight (g)	Hydrolysis (Y/N)	Extraction Solvent	Extraction Time (hours)	Fat Reference	Ash Weight	Pre-Charring (Y/N)	Ash Temperature (°C)	Ash Time (hours)	Ash Reference
94	2	Y	Diethyl Ether and Petroleum Ether		AOAC (2012) 922.06	2	Charring	550	5	AOAC (2012) 945.46
96						3		550	4	TCVN 8124:2009
97						3		600	5	Sri Lanka Standard 1011:1994
98	~1.5	N	Petroleum Ether		Ankom Filter bag Technique	~2.0	N	600	4	AOAC 942.05
100	1.5	N	Petroleum ether	60 mins	AOAC AM5-04 reapprove 2009	2	-	600	2	AOAC (2016) 942.05

Defatted Soya Bean Flour Methods - Table 3 of 4

LAB NUMBER	Macro Metals Weight (g)	Digestion Technique	Digestion Medium	Instrument	Wavelength (nm or mass)	Recovery Correction (Y/N)	Macro Metals Reference
6	2.0000	Acid	HCl:HNO3:H2O	AAS	Ca 422.7, Na 589.0, K 766.5	Y	AOAC (2016, 20th Ed, 928.08, 985.35 (50.1.14)
11	2.0000	Dry Ashing	HCL:H2O	AAS	Na 330.3, K 404.4, Ca 239.9, Mg -, Fe 248.3	Y	AOAC (2016), 975.03, 985.35
12	0.5	Closed vessel	HNO3	Flame AAS	Na 589.0, K 776.5, Ca 422.7	N	AOAC (2016), 985.35
13	0.5	Microwave	HNO3 10 mL + HCl 2 mL	Analytikal Jena ContrAA 800 D	Na 588, K 766, Mg 285, Ca 422	N	Internal Method
14	0.5	Ashing	50% HNO3, 50% HCl	ICP Horiba Jobin Yvon	Na 588.995, K 766.49, Ca 393.366, Mg 279.553, Fe 259.94, P 213.618, Cu 224.70, Zn 213.856	Y	AOAC 975.03, 984.27
15	0.5	Ultrawave Digestion	5% HNO3 + 0.5% HCl	ICP-MS (7900 Agilent)	Ca 44, K 39, Mg 24, Fe 56	N	Based on USFDA 4.7 version 1.1
16	0.5	Hot plate	HNO3+H2O2	ICP-OES Optima 7000 DV Perkin Elmer	Na 588.995, K 769.896, Ca 317.933, Mg 279.077, Fe 238.204	N	In-house Method
18	2.0	Dry Ashing	HNO3	AAS, Varian	Various	N	AOAC 968.08
19	1	By Furnace	HNO3:H2O (1:1)	Ca Manual by Buret, P by UV-Vis Spectro.	P 400	N	AOAC 927.02, 944.03, 965.17
21	0.1	Microwave	180°C	Mar Xpress (CEM)		Y	AOAC 2011.14 (2016)
22	0.2 to 0.3	Microwave	HNO3	ICP-MS Perkin Elmer			AOAC 2015.06
23	1.00	Dry Ashing		ICP-OES	589, 766, 422, 285, 238		AOAC 985.01
25	5.0205 / 5.0206	HNO3-HCl	Water	ICP-OES	Na 588.995, K 766.491, Ca 396.847, Mg 280.27, Fe 238.204		USEPA Method 3050B
26	4.0	Dry ashing	Water & HCl (1+1)	AAS Shimadzu AA-7000	Na 589.0, K 766.5, Ca 422.7, Mg 285.2, Fe 248.3	N	AOAC No. 975.03
31	5	Dry Ashing		AAS, Agilent		N	AOAC 985.35
32	1.0068	Ashing	HCl	Flame AAS, Shimadzu 6300	K: 766.5	N	Modified AOAC 969.32

Defatted Soya Bean Flour Methods - Table 3 of 4

LAB NUMBER	Macro Metals Weight (g)	Digestion Technique	Digestion Medium	Instrument	Wavelength (nm or mass)	Recovery Correction (Y/N)	Macro Metals Reference
36	15 (Fe)	Dry Ashing	NA	UV-Vis (Agilent 8453)	510	N	AOAC 944.02 18th Ed
37	1	Wet Digestion	Nitric + perchloric	ICP-OES (Perkin Elmer Optima 8000)	Na 589.592, K 766.490, Ca 317.933, Mg 285.213, Fe 238.204, P 213.617	N	AOAC (2016) 984.27
38	1.000	Dry Ashing	1N HNO3 (0.1M HNO3 for Fe)	Flame AAS, Shimadzu AA6300	Na 589.0, K 766.50, Ca 422.70, Mg 285.20, Fe 248.30		AOAC 985.35, 19th Ed 2012 (Fe modified AOAC 999.11)
39	0.5	Microwave		AAS	Na 589.0, K 766.5, Ca 422.7, Mg 285.2, Fe 248.3	Y	AOAC 985.35
41	2						
42	5	Dry Ashing	HNO3-HCl	Flame AAS, Agilent 280 FS	Na 589.9, K 769.9, Ca 422.7, Mg 202.6, Fe 248.3	N	AOAC 985.35.2005
43	0.5	Microwave	HNO3	ICP-OES	Na 568.821, K 766.491, Ca 317.933, Mg 285.213	N	AOAC
44	1.0000	Dry Ashing		AAS, Thermoscientific	K 766.5, Ca 422.7, Fe 248.3	N	AOAC 19th Ed
45	4	Dry Ashing	HCl+HNO3+DI (2+2+70 mL) on hotplate	AAS (Flame, Varian)	Na 589.0, K 766.5, Ca 422.7, Mg 285.2, Fe 248.3	N	AOAC 968.08
48	5	Dry Digestion		AA800 Perkin Elmer	Na 330.2, K 766.5, Ca 422.7, Mg 285.2, Fe 248.3	N	MU-03/21 (AAS)
49	1, 3	Dry Ashing	Conc Nitric acid	AAS / AA-7000 Shimadzu	Na 589.0, K 766.5, Ca 422.7, Mg 285.2, Fe 248.3	N	AOAC 20th Ed 2016
50	2.0000	Wet	Acid	Flame AAS (Varian)	330.3, 404.4, 422.7, 248.3	N	AOAC 985.35
53	0.3	Microwave	4 mL HNO3, 1 mL HCl, 1 mL H2O2	ICPMS Thermo			In house method
54	1	Dry Ashing	HNO3	ICP / Shimadzu	Mg 279.553, Fe 259.940, Ca 317.933, Na 589.592	N	AOAC 984.27
55	1.5	Wet digestion		ICP-OES	Na 589.592, Ca 317.933, K 766.491, Mg 280.270, Fe 259.940	Y	AOAC (2012) 984.27
58	3.0	Dry Ash	HCl	ICP-OES			Dry Ashing and Quantitation by ICP-OES
59	1.5	Dry Ashing		AAS, Shimadzu	Na 589, K 766.5, Ca 422.7, Mg 285.2, Fe 248.3	Y	AOAC 18th Ed 985.35 (Fe: SNI 3751:2009 point A.10)
60							AOAC (2012) 968.08 (Ca, Mg), 965.17 (P), MP37-BPMSP (AAS) (Na, K), SNI 01-2896-1998 (Fe)

Defatted Soya Bean Flour Methods - Table 3 of 4

LAB NUMBER	Macro Metals Weight (g)	Digestion Technique	Digestion Medium	Instrument	Wavelength (nm or mass)	Recovery Correction (Y/N)	Macro Metals Reference
61	1	Acid block digestion	HNO3 (HNO3/HCLO4 for P)	Varian AA240 FS Fast Sequential AAS (Shimadzu UV-2700 for P)	Ca 422.7, Fe 248.3, Mg 285.2, K 769.9, Na 589.6	N	A6407-26 AAS (A6417 Spectro Method for P)
64	0.5070	Dry Ashing	1 N HNO3	Shimadzu AA6300	Fe 248.3, Ca 422.7	N	Modified AOAC 985.35
67	2.0xxx	Dry Ash	Wet chemical	AAS, Perkin Elmer	Na 589.00, K 766.49, Ca 422.67, Mg 285.21, Fe 248.33	N	AOAC 968.08
71	1.0036, 1.0063	Acid Digestion	HCl (1:3)				AOAC 927.02, Titration
72	3	Ashing	HNO3	AAS / Analytik Jena	Na 589.0, K 766.5, Ca 422.7, Mg 285.2, Fe 589.0	N	AOAC 985.35
73A	1	Dry ashing	Hot plate	AAS (280FS AA, Agilent Technology)	Ca 422.7, Fe 248.3	N	FTC-46.01 (refers to AOAC 968.08, 965.09)
73B	1	Dry ashing	Hot plate	AAS (280FS AA, Agilent Technology)	Ca 422.7	N	FTC-46.01 (refers to AOAC 968.08, 965.09)
75	1	Wet digestion (hot block)	HNO3 + H2O2	ICP-OES Agilent 5100	Na 589.592, K 766.491, Ca 317.933, Mg 279.078, Fe 238.204	N	In House Method ICP-OES
78	0.5	Mircowave Digestion	Acid Digestion	Berghof Speedwave 4 Microwave Digestion Unit	Na 589.592, K 766.490, Ca 393.366, Mg 279.08, Fe 371.993		MP-AES
81	mean: Na 1.0054, K 1.0034, Ca 1.0027, Fe 0.5034	Wet Digestion (Na, K), Dry Ashing (Ca, Fe)	1 N HNO3 and 30% H2O2 (Na, K), 1 N HNO3 (Ca, Fe)	Shimadzu AAS AA 6300	Na 589.0, K 766.5, Ca 422.7, Fe 248.3	N	AOAC 999.10 Mod (Na, K), 985.35 Mod (Ca, Fe)
82A	0.250	none	none	HPGe detector, Canberra			Neutron Activation Analysis (NAA)
82B	1.00	Microwave	Nitric Acid	AAS, GBC		Y	Flame SSA
83	0.3	Microwave Digestion with HNO3		Microwave digester Mars Xpress, ICP MS Nex Ion (Perkin Elmer)		Y	Application Note, Perkin Elmer
84	0.5	Microwave Digestion	HNO3 / H2O2	ICP-OES, ICP-MS	Na 589.592, K 766.490, Ca 317.933, Mg 285.213	N	AOAC 999.10:2005
86	1.0000	Wet Digest		ICP-OES	Na 589.5, K 769.8, Ca 315.8, Mg 280.2, Fe 259.9	Y	AOAC (2012) 984.27
87	2.5	Dry Ashing	HNO3	Furnace Thermolyne	ICP-OES	N	MTD/FOD/CHM-09
89	2	Dry Ashing	1.5% HNO3	AAS Agilent	Various	N	AOAC 985.35
90	1	Ultrawave		ICP-OES	Na 589.592, K 766.490, Ca 422.673, Mg 285.213, Fe 238.204		
92	1	Ashing	HNO3	ICP-OES			
93	0.05	Charring, Dry ashing	Hotplate, Furnace	Flame Photometer, Sherwood	N/A	N/A	AOAC 985.35

Defatted Soya Bean Flour Methods - Table 3 of 4

LAB NUMBER	Macro Metals Weight (g)	Digestion Technique	Digestion Medium	Instrument	Wavelength (nm or mass)	Recovery Correction (Y/N)	Macro Metals Reference
94	1.5	Dry ashing (Fe: Wet ashing)		ICP-OES / Perkin Elmer	Na 589.0, K 766.5, Ca 317.9, Mg 383.2, Cu 324.7, Fe 259.9	Y	AOAC (2012) 984.27

Defatted Soya Bean Flour Methods - Table 4 of 4

LAB NUMBER	Heavy Metals Weight (g)	Digestion Technique	Digestion Medium	Instrument and Manufacturer	Wavelength	Recovery Correction (Y/N)	Heavy Metals Reference	Total Dietary Fibre Weight (g)	Digestion Technique	Digestion Medium	Total Dietary Fibre Reference
2								0.50	Enzyme Digestion		AOAC (2016) 985.29
4								1.xxxx	Enzymatic	Buffer	Based on AOAC
6	Cu, Zn 2.0000	Acid Digestion	HCl:HNO3:H2O	AAS		Y	AOAC (2016) 20th Ed, 968.08				
11	2.0000	Dry Ashing	HCl:H2O	AAS	Cu 324.8, Pb 217, Zn 213.9, As 193.7	Y	AOAC (2016) 975.03, Pb: 999.11, As: 986.15	0.5000	Enzyme	HCl	Based on AOAC (2016) 985.29
12	0.5	Closed vessel	HNO3	ICP-OES	Mg 285.213, Fe 239.562, Cu 324.752, Zn 213.857	N	AOAC (2016), 984.27	0.3	Enzymatic	Phosphate buffer	AOAC (2016) 985.29
13	0.5	Microwave	HNO3 10 mL + HCl 2 mL	ICP-MS Thermo Scientific (iCAP RQ)	M/z Fe 57	N	Internal Method				
14								0.5	Enzymatic - Gravimetric Method	α - amylase 97.5 ± 2.5°C 30 min, Protease 60 ± 1°C 30 min, Amyloglucosidase 60 ±1 °C 30 min	AOAC 985.29
15	0.5	Ultrawave Digestion	5% HNO3 + 0.5% HCl	ICP-MS (7900 Agilent)	Cu 65, Zn 66	N	Based on USFDA 4.7 version 1.1				
16	2	Microwave	HNO3+H2O2	ICP-MS 7700X Agilent		N	In-house Method	1			AOAC 985.29
18	2.0	Dry Ashing (Wet Digestion for Hg, Sn)	HCl (HNO3 for Hg, Sn)	ICP-OES Agilent (AAS-VGA Varian, Agilent for Hg, As)	Hg 253.7, As 193.7, Sn 283.998	N	SNI 19-2896-1998				
19								1	Acid Digestion H2SO4 1.25%, 95°C 30 min	Base Digestion, NaOH 1, 1.25%, 95°C 30 min	AOAC 978.10, AN

Defatted Soya Bean Flour Methods - Table 4 of 4

LAB NUMBER	Heavy Metals Weight (g)	Digestion Technique	Digestion Medium	Instrument and Manufacturer	Wavelength	Recovery Correction (Y/N)	Heavy Metals Reference	Total Dietary Fibre Weight (g)	Digestion Technique	Digestion Medium	Total Dietary Fibre Reference
											304, FOSS, 2003
21	0.1	Microwave	180°C	Mar Xpress (CEM)	Cu 324.754, Pb 405.781, Zn 213.228, Cd 228.802, Hg 253.652, As 193.695, Sn 303.412	Y	AOAC 2011.14 (2016)	1.0	Water bath	100 °C 15 min	AOAC 985.29 (2016)
22	0.2 to 0.3 (As 0.2)	Microwave	HNO3	ICP-MS Perkin Elmer			AOAC 2015.01, 2015.06				
23	1.00	Dry-Ashing (Wet-Microwave for As)		ICP-OES (Mercury Analyzer for Hg)	327, 220, 213, 228, 188		AOAC 985.01, EPA 7473 (Hg), AOAC 2013.06 (As)				
25	5.0205 / 5.0206	HNO3-HCl	Water	ICP-OES	Cu 327.395, Zn 202.548		USEPA Method 3050B				
26	4.0 for Cu, Zn	Dry Ashing	Water & HCl (1+1)	AAS Shimadzu AA-7000		N	AOAC No. 975.03				
31	5 (1 for Hg)	Dry Ashing (Microwave for Hg)		AAS (Cold Vapour for Hg)		N	AOAC 999.11, (Hg: SNI 01-3751, As: AOAC 986.15, Sn: SNI 3551:2012)	1	Enzimatik		AOAC 991.43
32	1.0068 (Zn)	Ashing	HCl	AAS 6300 Shimadzu	213.9	N	Modified AOAC 969.32	1.0100	Enzymatic Gravimetric	Buffer	AOAC 991.42
37	1	Wet Digestion	Nitric + perchloric	ICP-OES (Perkin Elmer Optima 8000)	Cu 327.393, Zn 206.200	N	AOAC (2016) 984.27				
38	5.000 (1.000 for Zn)	Dry Ashing	1 N HNO3	Flame AAS, Shimadzu AA6300	Cu 324.80, Zn 213.9		AOAC 985.35, 19th Ed 2012	1.000	Enzymatic Digestion	Phosphate buffer	AOAC 985.29, 19th Ed 2012
39	0.3	Microwave		AAS	324.8	Y	AOAC 985.35	1	Enzyme	Buffer solution	AOAC 985.29
42	10	Dry Ashing	HNO3-HCl	Cu, Zn: Flame AAS 280 FS, Pb, Cd: GFAAS Agilent 240 FS	Cu 324.8, Zn 213.9, Pb 217.0, Cd 228.8	N	AOAC 999.11.2005				
43	0.5	Microwave	HNO3	ICP-OES, ICP-MS	Cu 327.395, Zn 213.857, Cd m/z 111	N	AOAC	1			AOAC

Defatted Soya Bean Flour Methods - Table 4 of 4

LAB NUMBER	Heavy Metals Weight (g)	Digestion Technique	Digestion Medium	Instrument and Manufacturer	Wavelength	Recovery Correction (Y/N)	Heavy Metals Reference	Total Dietary Fibre Weight (g)	Digestion Technique	Digestion Medium	Total Dietary Fibre Reference
45	2 (for Cu, Zn)	Dry Ashing	HCl+HNO3+DI (2+2+70 mL) on hotplate	AAS (Flame, Varian)	Cu 324.8, Zn 213.9	N	AOAC 968.08				
48	5	Dry Digestion (As Microwave Digestion)		AA800 Perkin Elmer	Cu 324.8, Zn 213.9	N	MU-03/20 (AAS)	1	Enzymatic	Amylase, protease, amyloglucosidase	AOAC 985.29 19th Ed 2012
49	2 (1, 3 for Zn)	Dry Ashing	6 M HCl (Conc HNO3 for Zn)	ICP-OES 5110 Agilent (AAS / AA-7000 Shimadzu for Zn)	Cu 327.395, Zn 213.9	N	AOAC 20th Ed 2016	0.5	Enzymatic	Alpha-Amylase, Protease, Amyloglucosidase	AOAC 20th Ed 2016 / Sigma Kit
50	2.0000	Wet	Acid	Flame AAS (Varian)	217.0, 213.9	N	AOAC 985.35				
53	0.3	Microwave	4 mL HNO3, 1 mL HCl, 1 mL H2O2	ICPMS Thermo			In house method				
54	1	Microwave digestion	HNO3 / H2O2	ICP / Shimadzu	Zn 213.856, Cu 324, Pb 220.353	N	AOAC 984.27	1	Enzymatic	Phosphate buffer / Enzyme	AOAC 985.29
55	1.5	Wet digestion		ICP-OES	324.754	Y	AOAC (2012) 984.27	0.5	Enzymatic-Gravimetric		AOAC (2012) 985.29
58	1.0	Acid Digestion	HNO3, H2O2	ICP-OES (AAS-Hydride for As, Hg)	Hg 253.7, As 189, Sn 189.925		Acid Digestion and Quantitation by ICP-OES (AAS-hydride for As, Hg)	1.0			Based on AOAC 20th Ed 2016
59	Cu, Zn: 10, Pb, Cd, Sn: 2.5, Hg: 1, As: 12.5	Dry Ashing		AAS, Shimadzu	Cu 324, Pb 283, Zn 213.9, Cd 228.8, Hg 253.7, As 193.7, Sn 286.3	Y	Cu+As: IK A2-LM06 (AAS) (LM10 for As), Pb+Cd+Zn: SNI 3751:2009 point A.14.1 (11 for Zn), Hg: SNI 01-2354.6-2006, Sn: SNI 01-2896-1995 point 5	1 to 2	Enzymatic		AOAC 18th Ed 985.29
60							SNI 01-2896-1998 (Zn)				
61	1	Acid block digestion	HNO3	Varian AA240 FS Fast Sequential AAS	Cu 324.8, Zn 213.9	N	A6407-26 AAS	0.5	Enzymatically Digested with protease and amyloglucosidase	Methylated spirits	A6234 (ANKOM automated TDF instrument)
64	0.5070	Dry Ashing	1 N HNO3	Shimadzu AA6300	Zn 213.9	N	Modified AOAC 985.35				

Defatted Soya Bean Flour Methods - Table 4 of 4

LAB NUMBER	Heavy Metals Weight (g)	Digestion Technique	Digestion Medium	Instrument and Manufacturer	Wavelength	Recovery Correction (Y/N)	Heavy Metals Reference	Total Dietary Fibre Weight (g)	Digestion Technique	Digestion Medium	Total Dietary Fibre Reference
67	2.0xxx (1.0xxx for Hg)	Wet chemical		AAS, Perkin Elmer	Cu 324.75, Zn 213.86, Pb 283.31, Cd 228.80, Hg 253.63, As 193.70	Y	AOAC 968.08, 986.75, 977.15	1.0xxx	Enzyme Digestion		AOAC 985.29
68								0.5	Enzyme		AOAC
70	1	Ash		Z-2700 Hitachi	Pb 283.3, As 193.7						
71								1.0018, 1.0008	Neutral Detergent / heat stable alpha amylase		ISO 16472:2006
72	4	Ashing	HNO3	ICP-OES, JY Ultima	Cu 324.754, Zn 213.9	N	AOAC 999.11				
73A	1	Dry Ashing	Hot plate	AAS (280FS AA, Agilent Technology)	213.9	N	FTC-46.01 (refers to AOAC 968.08, 965.09)				
75	1	Wet digestion (hot block)	HNO3 + H2O2	ICP-OES Agilent 5100, ICP-MS Agilent 7700x	63 Cu 324.754, 66 Zn 213.857	N	In House Method ICP-MS & ICP-OES				
81	mean 1.0027 (Zn)	Zn: Dry Ashing	Zn: 1 N HNO3	Zn: Shimadzu AAS AA 6300	Zn 213.9	N	AOAC 985.35 Mod (Zn)	mean 1.0003	Enzymatic Digestion (Heat-stable alpha-amylase, protease, amyloglucosidase)	MES-TRIS Buffer	AOAC 991.43 (Modified)
82A	0.250	none	none	HPGe detector, Canberra		N	Neutron Activation Analysis (NAA)				
82B	1.00	Microwave	Nitric Acid	Pb, Cd, As: AAS, Agilent, Hg, Cu: AAS GBC		Y	Pb, Cd, As: Graphite SSA, Cu: Flame SSA, Hg: Hydride Generation SSA				
83	0.3	Microwave Digestion with HNO3		Microwave digester Mars Xpress, ICP MS Nex Ion (Perkin Elmer)		Y	Application Note, Perkin Elmer	1	Enzimatic gravimetry		AOAC 991.43
84	0.5	Microwave Digestion	HNO3 / H2O2	ICP-MS		N	AOAC 999.10:2005				
86	1.0000	Wet Digest		ICP-OES (As: ICP-MS)	Cu 324.7, Pb 220.3, Zn 206.2, Cd 214.4, As Mass 75	Y	AOAC (2012) 984.27, (As: 2011.19)	0.5	Enzymatic - Gravimetric Method		AOAC (2012) 985.29

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LAB NUMBER	Heavy Metals Weight (g)	Digestion Technique	Digestion Medium	Instrument and Manufacturer	Wavelength	Recovery Correction (Y/N)	Heavy Metals Reference	Total Dietary Fibre Weight (g)	Digestion Technique	Digestion Medium	Total Dietary Fibre Reference
87	0.5	Wet Ashing	HNO3, H2O2	Microwave Digestion, Berghoff, Speedwave ENTRY	ICP-OES	N	MTD/FOD/CHM-09				
89	2	Dry Ashing	1.5% HNO3	AAS Agilent	Various	N	AOAC 985.35				
90	1 (As 0.3)	Ultrawave		ICP-OES	Cu 324.752, Pb 220.353, Zn 213.857			0.5	Fibertec		AOAC (2016) 985.29
92	Ashing	HNO3		ICP-OES							
94								1			AOAC (2012) 985.29