ColdBlock™ Technologies Inc.

APPLICATION NOTE

NRC BRAN-1 Corn Bran

SUMMARY

The application note summarizes the digestion of BRAN-1, a Corn Bran Reference Material using ColdBlock™ Digestion Pro Series Technology.

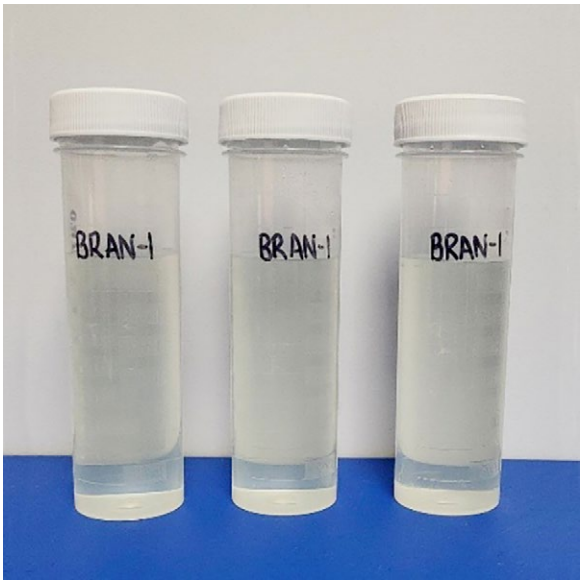
Instrument:	ColdBlock CBM sample digester, chiller & ICP-MS
Published:	March 2023
Digestion Time:	10 Minutes
Acid Used:	HNO_3 & H_2O_2
Average ColdBlock Recovery vs. CRM:	■ 94% Cadmium ■ 114% Lead ■ 99% Selenium

METHODOLOGY

1. Chiller temperature was set to -5°C
2. 0.5g of each sample was weighed and placed into a ColdBlock™ Digestion vessel
3. 15 mL of HNO_3 + 2mL H_2O_2 was added
4. Sample was digested at 70% power for 10 minutes
5. Samples were cooled and bulked to 40mL using 2% HNO_3 + 0.5% $HCl_{v/v}$

DISCUSSION

- A minor of amount of material settled on the bottom of the tube after bulking
- Samples were filtered prior to analysis



BRAN-1 is a Reference Material prepared from refined corn bran obtained from A.E Staley Manufacturing Co., Decatur, IL USA. BRAN-1, formerly known as RM 8433 was prepared by the Centre for Land and Biological resources Research, Agriculture Canada.

BRAN-1; Corn Bran; Reference Material; National Research Council Canada; Ottawa, Ontario Canada (September 2015)

NRC BRAN-1 Corn Bran

Results

NRC BRAN-1 (Corn Bran)										
Method:	**0.5g**	**15mL HNO_3 + 2mL H_2O_2 Digest at 60% power for 10 minutes.**								
Element	**Reference Value (mg/kg)**	**95% Confidence Limits**		**Sample A**	**Sample B**	**Sample C**	**Average (ppm)**	**Stdev**	**% RSD**	**% Recovery**
		Low	**High**							
Ca	420	382	458	326	486	461	424	70.349	16.6%	101%
Cd	0.012	0.007	0.017	0.011	0.011	0.012	0.011	0.0005	4.2%	94%
Cu	2.47	2.07	2.87	2.56	2.69	2.68	2.65	0.058	2.2%	107%
Fe	14.8	13	16.6	15.3	16.5	15.9	15.9	0.469	3.0%	107%
K	566	491	641	600	606	600	602	2.676	0.4%	106%
Mg	818	759	877	802	781	786	789	9.010	1.1%	97%
Mn	2.55	2.26	2.84	2.52	2.59	2.55	2.55	0.031	1.2%	100%
Na	430	399	461	432	422	433	429	4.955	1.2%	100%
Pb	0.14	0.106	0.174	0.147	0.17	0.163	0.16	0.010	6.0%	114%
Rb	0.5	0.2	0.8	0.5	0.5	0.5	0.5	0.030	6.3%	97%
Se	0.045	0.037	0.053	0.056	0.036	0.042	0.045	0.008	18.8%	99%
Sr	4.6	N/A	N/A	5.164	5.24	5.075	5.2	0.067	1.3%	112%
Zn	18.6	16.4	20.8	19.609	19.178	20.976	19.9	0.766	3.8%	107%

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