

ColdBlock in the Food Sector



Sample digestion in the food industry is an important step in elemental analysis for the purpose of quality, nutritional composition, and safety of foods. Factors such as an increased focus on consumer health, evolving industrial practices and changing international regulations mean that food companies, government and regulators must all be equipped to perform elemental analysis in a fast and efficient manner.

ColdBlock Technologies Inc. offers a highly effective and efficient sample digestion technology that delivers accurate results in a fraction of the time required for traditional alternatives.

The ColdBlock R&D laboratory recently conducted digestions on three food products - meat, dairy and infant formula - to demonstrate the efficiency and precision of the ColdBlock approach.

Results were published in application notes that demonstrate the precision of results using ColdBlock digestion.

CRM	Contents
NIST 1546a	Meat Homogenate (mixture of pork and chicken products)
NIST 1549a	Whole Milk Powder
NIST 1849b	Infant Nutritional Formula (milk based)

For full details, and a list of all app notes published by ColdBlock, visit ColdBlock.ca/resources

Findings include:

Accuracy - Elemental recoveries for all sample types accurately match industry CRMs.

Speed - Digestions using ColdBlock are completed in **20 minutes**.

Efficiency - Fewer steps are required in comparison to traditional methods.

Safety - Risk of injury associated with traditional digestion technology is eliminated.

Savings - All of these benefits translate into meaningful cost savings for labs/companies.



Visit ColdBlock.ca for full App Notes and more information about how ColdBlock can revolutionize your lab.

```

//save the current dir, delete all select options
//add the new list, re-select the saved dir.
if($refreshDir)
{
    $dirs = $manager->getDirs();

    var selection = topDoc.getElementById("dirPath");
    var currentDir = selection.options[selection.selectedIndex].text;

    while(selection.length > 0)
    {
        selection.remove(0);
    }

    selection.options[selection.length] = new Option("<? echo rawurlencode('$') >");
    <? foreach($dirs as $relative=>$fullpath) { >

```

Digest Food Samples Faster with ColdBlock

Hot Block	Microwave	ColdBlock
<ul style="list-style-type: none"> ▪ Weigh samples ▪ Place in test tubes ▪ Add acid ▪ Load the hot block unit ▪ Digest (90-180 minutes) ▪ Unload machine ▪ Bulk to volume ▪ Filter/centrifuge (if required) ▪ Allow digested solution to cool ▪ Ready for analysis 	<ul style="list-style-type: none"> ▪ Weigh samples ▪ Place in vessel ▪ Add acid ▪ Put on vessel lids ▪ Torque vessel lids ▪ Load the microwave unit ▪ Pressurize (15-45 minutes ramp up) ▪ Digest (~15 minutes) ▪ Depressurize (15-45 minutes cooldown) ▪ Unload machine ▪ Un-torque vessel lids ▪ Transfer to test tubes ▪ Bulk to volume ▪ Filter/centrifuge ▪ Ready for analysis 	<ul style="list-style-type: none"> ▪ Weigh samples ▪ Place in test tubes ▪ Add acid ▪ Load the ColdBlock unit (up to 20 at a time) ▪ Run digestion (20 minutes) ▪ Unload machine ▪ Bulk to volume ▪ Filter/centrifuge (if required) ▪ Ready for analysis
<p>Total time required for digestion: OVER 3 HOURS</p>	<p>Total time required for digestion: UP TO 2 HOURS</p>	<p>Total time required for digestion: UNDER 30 MINUTES</p>

APPLICATION NOTE
NIST 1546a – Meat Homogenate

APPLICATION NOTE
NIST 1549a – Whole Milk Powder

APPLICATION NOTE
NIST 1849b – Infant Nutritional Formula

SUMMARY
The application note summarizes the digestion of NIST 1849b, an infant nutritional formula standard reference material using ColdBlock® Digestion Pro Series Technology.

Instrument: ColdBlock CBM (with quartz test tubes), chiller, ICP-MS
Published: May 2024
Digestion Time: 20 Minutes
Acid Used: HNO₃ & H₂O₂

Average ColdBlock Recovery vs. CRM:

- 101% Iron
- 101% Molybdenum
- 97% Selenium

METHODOLOGY

1. Chiller temperature was set to -20°C
2. 0.5g of each sample was weighed into a ColdBlock® Digestion vessel
3. 10 mL of HNO₃ was added and the sample was digested at 65% pressure
4. Sample was digested at 65% pressure
5. 2mL of ≥ 30% H₂O₂ was added
6. Samples were cooled and bulked

ColdBlock is being used in labs across several industries, saving time and money by increasing sample throughput capacity and significantly reducing turnaround times, while providing accurate and reliable results.

For more information, reach out by e-mail at info@coldblock.ca or visit www.coldblock.ca.