

Digestion of biological specimen

Sample Preparation

Weigh (accurately to +/-0.1 mg), measure, or count (whichever reference you would like us to use to report the elemental content with) the material prior to digestion. If necessary and possible, clean the material to remove all external impurities. Measure your material directly into 15ml centrifuge tubes (metal free, VWR, catalog number 89049-170) or 8 ml Sarstedt polypropylene culture tubes (55.516 series).

Digestion

Digest your sample with approximately 10 x the volume (in μl) of the sample weight (in mg). For example, 50 mg of tissue are digested with 500 μl of concentrated HNO_3 (trace metal grade, Fisher). We like to err on the low side, i.e. I would digest 150 mg of tissue sample with 1 ml of HNO_3 . Because ICPMS is a very sensitive method that doesn't require a lot of material, it would be ideal to keep the sample weight below 200 mg and the amount of concentrated HNO_3 below 2 ml. 100 mg material plus 1 ml concentrated HNO_3 is ideal. On the low side, a minimum of 10 mg if weighed out accurately will be fine. We can work with small amounts but it has to be weighed accurately!

Loosely cap the tubes and heat the samples for 1-2 hrs at 90°C in a heating block. After cooling to room temperature, add 1% HNO_3 (prepared from trace metal grade HNO_3 , Fisher) for a total of 4 x times the amount of the original concentrated acid (for example, if 1 ml of concentrated HNO_3 was used, 1% HNO_3 is added to a total volume of 4 ml) to each sample. All additional dilutions will be performed in the Elemental Analysis Core if necessary.

Controls

The following digestion/background controls should be prepared (each in triplicate):

- *Solid standards. Either NIST bovine liver standard (SRM 1577c) or any other appropriate certified reference material that contains the desired elements.* The following example is for SRM 1577c and should be modified so that the concentration of the desired element matches the expected concentration of the samples:
~20 mg (weighed on a precision balance (+/- 0.1 mg)) of SRM 1577c is added to 1000 μl of concentrated HNO_3 (trace metal grade HNO_3 , Fisher) and heated at 90°C as described above. Initial dilution after digestion is performed as described above for the sample digestion.
- *Solution standard.* 2- 4 μl of an appropriate calibration standard is added to 100 μl of concentrated HNO_3 and heated at 90°C as described above. Initial dilution after digestion is performed as described above for the sample digestion.
- *Blank.* 100 μl of concentrated HNO_3 (trace metal grade HNO_3 , Fisher) is added to an empty tube and heated at 90°C as described above. Initial dilution after digestion is performed as described above for the sample digestion.

Please note: If you don't have any of the controls, please send additional tubes (10 extra tubes) and we will prepare the controls in the Core.

Shipment

Please ship all samples on DRY ICE not room temperature!

Ship to:

Martina Ralle

Department of Molecular and Medical Genetics

Oregon Health and Science University

School of Medicine

3181 SW Sam Jackson Park Rd

Portland, OR 97239