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SAMPLING TISSUES FOR MINERAL ASSAYS; ASSAY INFORMATION SHEET

APPLICATION: Used as a guide to sampling and handling liver and kidney tissues for copper and other mineral analysis (GSHPx, B12, Zinc, Selenium, manganese, lead, arsenic, iron and cadmium).
At RLS we attempt to assay all samples on a wet weight basis rather than a dry weight basis. Drying samples increases the risk of contamination and adds significantly to the analysis time and cost, without contributing to the final interpretation.

SAMPLE COLLECTION AND PRESERVATION

Tissue type and collection

Liver is the preferred sample for most mineral analysis. Exceptions: for lead toxicity, kidney is preferred because of its higher concentration; and for copper toxicity, both liver and kidney should be assayed to confirm the post haemolytic phase of copper toxicity.
Fresh tissue is preferred. Formalin fixed tissues can also be used but the risk of contamination is higher.
Liver collection: The rate of mineral concentration depletion/repletion can vary in different lobes of the liver. For consistent analysis, we recommend taking samples from a standardized/repeatable collection site (eg. the left liver lobe)
Kidney collection: Samples should be taken transversely through the kidney to enable differentiation of the cortex and medulla in mammalian samples. Only the cortex tissue is used in the final analysis. In non-mammalian samples, this differentiation may not be possible and the entire section of kidney may be used.

Tissue handling

For biopsy samples, rinse blood/blood clots from the tissue with saline. Remove excess blood/blood clots/saline with lint free wipes. Place the tissue into a suitable container (see below). Do not wrap in gauze or any other material.
On receival at RLS, excess blood, blood clots and saline cannot be differentiated from the original tissue. With small samples, the entire contents of the container (condensate, fluid and tissue) are used and assumed to have originated from the original tissue.
Leaching from the tissue into any excess fluid and/or gauze will reduce the apparent mineral concentration of the tissue.
Container type: Plain, sterile, screw top polypropylene containers are preferred. Lith hep and EDTA tubes may be a source of contamination.

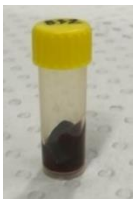
Container size

- Use the smallest container the tissue sample will fit in. Placing small samples in large containers can cause dehydration of the tissue and increase the apparent mineral concentration of the tissue. Recommended container size guide:
  - Liver biopsy samples: <30mg - place in 1.5ml container.
  - Small samples: <0.5grams (approx. size <1cm across) – place in 1.5ml container.
  - Medium samples: 0.5 – 2.0 grams – place in a 5ml container.
  - Large samples: 2.0 – 10.0 grams – place in a 50ml container.

Sample transport: Samples should be chilled and sent via an overnight carrier.

SUITABLE SAMPLES

Small Samples
<0.5grams



Medium Samples
0.5-2.0 grams

Large Samples
2.0-10.0 grams

UNSUITABLE SAMPLES

Tissue in excess fluid

Tissue with excess blood/blood clots

Tissue wrapped in gauze

Small tissue samples in large containers

Tissues submitted in lith hep, EDTA or gel tubes.

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