

Urine samples for CE-MS analysis

In order to facilitate the generation of meaningful data and to clarify the requirements for the analysis, we have prepared this sheet, indicating the most important steps.

Materials:

Use the following material for sample collection:

- urine-monovette, boric acid (Sarstedt, Germany, order number: 10.253, <https://www.sarstedt.com/en/products/diagnostic/urine/urine-monovette/product/10.253/>)
- urine-container (Sarstedt, Germany, order number: 75.563, <https://www.sarstedt.com/en/products/diagnostic/urine/containers/product/75.563/>)

If these are not available, contact Mosaiques to discuss available alternatives!

Please note that the usage of different materials for urinary sampling may affect the comparability of samples/data due to varying adsorption of peptides, the 'leakage' of different compounds from the used containers, etc.

Sampling:

- Urine: Minimum 10 ml urine should be collected in a sterile container. If more urine is collected, do not discard, please store it or ship it to us, as these samples may be valuable for additional analyses. Best if second morning urine is collected, but everything between 7 and 11 am collection generally is fine. Mid-stream urine should be collected. 24h urine can be used as well, as long as it is collected in the presence of preservative to prevent microbial contamination. In general, samples should not be turbid and should be frozen without any further manipulation. Additives (e.g. protease inhibitors, chelating agents, etc.) must not be added.



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If turbid samples cannot be avoided: spin if hemorrhagic or cellular contents are obvious (10 min, >3000 rpm, 4°C). However, such samples may result in data of lower quality, therefore please indicate that the sample has been spun. Never spin sample after it has been stored for > 30 min in the cold, and certainly not after freezing!

First morning urine is not well suited, as it shows very high variability (probably due to differences in urinary output during the night). Urine obtained in afternoon and evening also shows a higher degree of variability and generally lower concentration of peptides/proteins, which may result in the sample being of too low quality to be properly evaluated.

- Urine is stable in the borate monovette for a minimum of 72 h at room temperature (20°C). If the sample is not expected to be delivered to Mosaïques within 72 h, freeze at < -20°C. Samples can be stored frozen at -20°C for >10 years. Avoid freeze thaw cycles! Frost-free freezers (that undergo freeze thaw cycles) must not be used. Automatic freeze/thaw cycles in freezers will compromise sample quality, must definitely be avoided.

For all samples:

- Patient ID and DATE of sampling needs to be on the vials (use appropriate marker or stickers that do not come off)
- Please send/email/introduce the appropriate clinical and demographic data together with the samples.

Samples can be shipped overnight without dry ice, stabilization via the boric acid contained in the tubes is sufficient.

For shipment: place samples frozen in appropriate containers on the day of shipping and ensure next day delivery. Inform Mosaïques about shipment and ship only Monday – Wednesday (to ensure delivery prior to weekend).

Reference List

1. Mischak H, Vlahou A, Ioannidis JP. Technical aspects and inter-laboratory variability in native peptide profiling: The CE-MS experience. *Clin Biochem* 2013; 46: 432-443
2. Mavrogeorgis E, Mischak H, Latosinska A, Siwy J, Jankowski V, Jankowski J. Reproducibility Evaluation of Urinary Peptide Detection Using CE-MS. *Molecules* 2021; 26:
3. Latosinska A, Siwy J, Mischak H, Frantzi M. Peptidomics and proteomics based on CE-MS as a robust tool in clinical application: The past, the present, and the future. *Electrophoresis* 2019; 40: 2294-2308