

## COLLECTION OF BLOOD SAMPLES AND SERUM PROCESSING

To ensure high-quality analyses, proper sample collection and handling are crucial. This guide outlines PatoGen's guidelines for collecting and handling blood samples, followed by the processing of serum for biochemical analyses.

*In accordance with the stipulations set forth by the Norwegian Food Safety Authority, blood tests are to be conducted exclusively by personnel authorized in fish health, namely fish health biologists or veterinarians. It is imperative to note that blood sampling from live fish in Norway is strictly prohibited; therefore, the fish must be euthanized prior to the collection of samples.*

### Equipment:

- Sarstedt Monovettes (CAT/serum, 1.2 or 2.7 ml)
- Needles
- Pipetting tubes with screw caps
- Tweezers
- Centrifuge (Hettich EBA 200)
- Disposable gloves
- Ice pack



### Blood sampling:

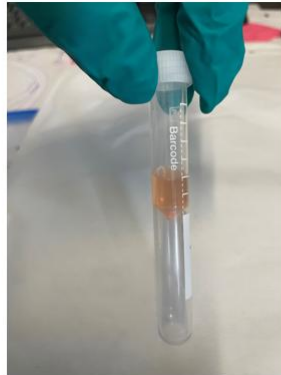
- Assemble the equipment.
- Insert the needle at an oblique angle (about 45 degrees) behind the anal fin, targeting the Vena caudalis and Aorta caudalis. Advance the needle gently until it contacts the bone along the spinal column.
- Pull the Monovette handle back to create a vacuum (see the picture above).
- **Adjusting for Blood flow, if necessary:**
  - If the blood does not flow immediately, slightly adjust the needle back and forth.
  - Once you see blood in the Monovette, hold the needle steady and wait until the tube is full.
  - If the blood flow stops, try to adjust the needle slightly to restore the flow.
- Carefully remove the needle from the fish, put the protective cap on the needle and gently invert the Monovette three times to ensure proper mixing with the additives in the tube.
- After blood collection, it is important to place the Monovette in an **upright position** (with the tip facing upward) for at least **20 minutes**.
- Note that if the water temperature is below 10 °C this period needs to be extended to at least 40 minutes.

- Proceed to centrifuge the sample and transfer the serum into a pipetting tube for further processing.



### Serum Processing:

- Label all tubes with sample ID and pen number
- Place Monovette in the centrifuge and spin them for 10 minutes at 6000 rpm, it is important that the rotor is properly balanced (use empty tubes if there are odd numbers of samples).
- Carefully extract the serum from the monovette with a pipette. Alternatively, carefully tilt the Monovette on its side and pour the serum into the empty plastic tube.



### Shipping:

Submission of serum or plasma samples must be pre-approved prior to shipment. All samples must be properly labeled, and the order form is available at our website. To preserve the samples in the best way, the shipment must include a cooling element or an ice pack. A minimum volume of 200  $\mu$ l of serum is recommended. The samples should be sent via express overnight service to the address provided below. Please ensure that the tracking number is sent to [sample@patogen.no](mailto:sample@patogen.no).

**Note that there is also a filmed version of this protocol:** [Sampling Videos - PatoGen](#)

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