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Avoiding haemolysis

Haemolysis in blood samples can limit the accurate interpretation of results and make certain test results invalid. Although sample haemolysis can indicate a pathologic process in some cases of haemolytic anaemia, it most often occurs secondary to *in vitro* damage to erythrocytes from iatrogenic factors.

Ensuring sample haemolysis is kept to a minimum will improve the quality of your results and reduce the need for recollection of blood samples.

What impact does it have on results?

Haemolysis interferes with haematology testing due to lysed RBC and light scattering, which can cause falsely low calculated haematocrit (HCT), packed cell volume (PCV), and RBC count**.** Platelet counts can also be falsely increased in some cases.

Several factors cause interference with biochemistry tests, which include increased measured absorbance, reaction inhibition, or measurement of intracellular constituents. The significance of interference depends on the degree of haemolysis and reaction type. Routine analytes that can be overestimated include potassium, creatine kinase, AST, GLDH, phosphate, total protein, and bilirubin. GGT, and ALP can be underestimated.

Other common assays affected by sample haemolysis include serum folate, B12, bile acids, insulin, fructosamine, TLI and SDMA.

Grossly haemolysed samples should be recollected.

How can I prevent haemolysis in blood samples?

- Use appropriately sized needles and avoid excessive negative pressure during collection.
- Remove the needle from the syringe when transferring blood into sample tubes.
- Use **gentle** inversions when mixing blood tubes after collection (which includes red top clot activator tubes and gold top SST tubes).
- Allow the serum sample to clot at room temperature (i.e. 30-60 minutes), in a stable environment.
- Only refrigerate the serum tube after a **strong clot** has formed (note: production animals and horses need at least 60 minutes for the clot to form).
- Keep samples cool in the fridge, or near (not on) ice packs and transport promptly to the laboratory.
- After the clot has formed, the sample may also be centrifuged and serum removed from the clot - the separated serum can then be transported in a plain, labelled tube.
- **Separation of serum before submitting is strongly recommended** especially when resampling cases that have been rejected due to haemolysis.
- Avoid prolonged storage, or exposure to excessive heat or cold. Prolonged or difficult blood draws may increase the risk of sample haemolysis.
- Fasting the patient prior to sampling (if appropriate) helps **avoid sample lipemia** - this is a common cause of haemolysis, especially in companion animals.

Note: occasionally haemolysis can occur in vivo, and performing a CBC with blood film review would help further evaluate this differential.

Please refer to our current price book for sample types, test turn-around times and pricing. If you have any questions or would like any further information, please contact your local Awanui Veterinary laboratory or Business Development Manager.

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