Vetpath is a specialist veterinary laboratory dedicated to providing our clients with the finest laboratory diagnostic service. A team of veterinary pathologists and medical scientists with extensive experience in veterinary diagnostic pathology forms the core of the Vetpath team.

VNews

VETPATH LABORATORY SERVICES

OCTOBER 2016

What is this "new" bacteria!?

Microbiology technology has changed dramatically in the past decade and the accuracy of bacterial isolate identification has subsequently increased.

Bacterial isolation by inoculation of the sample on culture media plates remains a fundamental laboratory technique. Traditionally, microorganisms have been identified from culture plates by a series of criteria based on physical and metabolic characteristics. This method of identification is still the primary technique used and is essential for production of pure cultures for other identification methods.

Two new techniques for microorganism identification include the VITEK® system and MALDI-TOF technology. Vetpath has a VITEK® in house and has access to a MALDI-TOF instrument in our associate laboratory in Perth. The VITEK® is an automated testing system for bacteria and some yeast. The microorganism is loaded onto a reagent card with wells containing substrates for various metabolic tests. The results from these tests are then compared to a large data base to identify the microorganism cultured. A probability level is given for each species identified, allowing the microbiologist to critically assess the accuracy of the results before reporting. The VITEK® also determines minimum inhibitory concentrations (MICs) to assist in effective and safe antibiotic selection for the patient.

Figure: VITEK® 2

MALDI-TOF is an acronym describing a microorganism identification technique using mass spectrometry. The sample is ionized to release a cloud of proteins which are then accelerated with an electric charge. The "time of flight" (or-TOF) of these components is determined and the spectrum of proteins detected is compared to a data base to identify the microorganism.

Utilization of these new technologies has resulted in bacterial species being reported that were previously only identified to the genus level. While this more detailed organism identification may cause some confusion, we hope that the additional information will assist in developing a greater understanding of normal microflora and potential pathogens.

Please contact the laboratory to speak with a pathologist if you have any questions about bacterial or fungal identification, or if you require assistance in interpreting microbiology results.

Vetpath Laboratory Services welcomes feedback on all aspects of our service from couriers to lab results. Please feel free to contact us at 9259 3666 or email enquiries@vetpath.com.au

Using urea and creatinine to assess renal function

Urea and creatinine are biochemical markers of nitrogenous waste retention of the kidneys. However, these markers are produced and influenced by different mechanisms which can affect their interpretation.

Urea is produced by the liver from ammonium generated by protein catabolism. The plasma concentration of urea is directly proportional to the rate of protein catabolism in the body, and can be affected by a variety of factors. These include:

1. High protein diet.
2. Gastrointestinal haemorrhage.
3. Weight loss.
4. Diabetes mellitus.
5. Prolonged exercise.
6. Pyrexia.
7. Seizures.
8. Hyperadrenocorticism or steroid administration.
9. Infections.

Creatinine is a product of decomposition of phosphocreatine found in muscle. Meat based diets can have a mild influence; however the serum creatinine concentration is directly proportional to muscle mass. Animals with larger muscle mass (such as Greyhounds) tend to have higher creatinine concentrations normally and emaciated animals with lower muscle masses can have creatinine concentrations below the normal reference interval.

Urea is a less reliable estimate of renal function than is creatinine, since urea concentration is more easily affected by diet, GIT haemorrhage (increases urea) or liver disease (decreases urea). This is particularly important in ruminants and hind gut fermenters such as horses, where the enteric flora of these animals can produce significant amounts of urea.

Urea and creatinine generally parallel each other with azotaemia, but not always. Urea can be elevated without creatinine when increased protein catabolism is present (e.g. with diabetes mellitus or weight loss). Another consideration is whether the patient has normal muscle mass. Decreased muscle mass with emaciation can cause the creatinine concentration to be within normal limits despite elevated urea and decreased renal function.

Remember that creatinine is generally a more reliable estimate of renal tubular function, and interpretation of the urea and creatinine concentrations must occur in conjunction with urine the SG and the body condition of the patient.

DGGR lipase in cats

The DGGR lipase test has recently been incorporated into the routine canine biochemistry panel at Vetpath. Recent studies have shown that this assay is also a useful and cost-efficient method for the investigation of pancreatic disease in cats.

Vetpath will be including DGGR lipase in the FP2 panel from September 2016. We will use the results to compare the assay to the SNAP FPLi® test and to establish appropriate reference intervals for DGGR lipase in cats.

Reference: J Vet Internal Med 2013; 27:1077-1082.

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