

## Quantitative Detection of Nt-proBNP in cat and dog serum and plasma

Cardiomyocytes in heart muscle produce and eliminate peptide hormones named Natriuretic peptides (NP). They are liberated during diseases with increased volume of liquids, incl. heart failure, renal failure and hepatic cirrhosis.

B-type natriuretic peptide (brain natriuretic peptide BNP) is a small peptide (32 amino acids) excreted by heart ventricle myocytes for blood pressure control and liquid balance. It is synthesized as the prohormone proBNP and excreted into the bloodstream where it is split into Nt-proBNP (N-terminal for B-type natriuretic peptide) and BNP (active BNP). BNP has a short life in plasma and is also less concentrated than Nt-proBNP and therefore the diagnostics is focused on Nt-proBNP detection. Overload of the left ventricle is the reason of Nt-proBNP secretion. Change of Nt-proBNP concentration is important for diagnostics of heart failure and control of treatment of the animal patients suffering from left ventricle hypertrophy.

### SAMPLING BY THE VETERINARIAN

#### PLASMA – CAT, DOG

- 2 ml into a clean test tube with EDTA
- let blood coagulate for ca 30 minutes – ideally at 4°C
- if clear separation by sedimentation did not take place, separate plasma by centrifuging at 1500 rpm (10 minutes)
- transfer plasma into another test tube – mark the test tube explicitly! (cat, dog ID)

The laboratory needs ca 100 µl of serum or plasma. Lipemic or haemolytic samples can give erroneous results.

Prior to sending the sample for testing, store it at + 2°C to + 8°C.

Fill in the order form completely and send it to the laboratory immediately (preferably cooled, by EMS).

**If the sample is stored for over 24 hours, freeze it and send it frozen** (on ice, EMS).

#### Possibilities of interpretation

<b>Nt-proBNP – dog</b>	<b>Plasma samples</b>	<b>Nt-proBNP – cat</b>	<b>Plasma samples</b>
Low probability of heart failure clinical symptoms. It is necessary to consider further differentiation of clinical symptom cause.	< 900 pmol/l	<b>Negative:</b> heart disease or heart failure was not identified	< 100 pmol/l
Does not enable to differentiate clinical symptoms causing heart failure and other reasons. Further diagnostics is recommended for differentiation.	900 – 1 800 pmol/l	<b>Heart disease:</b> probable heart disease (without clinical symptoms) <b>recommendation:</b> repeat examination in 3 months!	100 - 270 pmol/l
High probability of heart failure clinical symptoms. Further laboratory examination or consultation with the cardiologist is recommended.	> 1 800 pmol/l	<b>Heart failure:</b> heart failure indicated by a high level (with clinical symptoms)	> 270 pmol/l

## Quantitative Detection of proANP 31-67 in dog plasma

Atrial natriuretic peptides (ANP) are considered heart peptides / hormones and are produced directly by cardiomyocytes. The atrial natriuretic peptide is produced mainly by heart atrium cardiomyocytes in the healthy adult animals. proANP is split during secretion into ANP itself or into Nt-proANP. The proANP level is usually demonstrated as heart failure indicator in dogs.

### Plasma

- 2 ml into a clean test tube with EDTA
- let blood coagulate for ca 30 minutes – ideally at 4°C
- if clear separation by sedimentation did not take place, separate plasma by centrifuging at 1500 rpm (10 minutes)
- transfer plasma into another test tube – mark the test tube explicitly! (cat, dog ID)

The laboratory needs ca 100 µl of plasma. Lipemic or haemolytic samples can give erroneous results.

Prior to sending the sample for testing, store it at + 2°C to + 8°C.

Fill in the order form completely and send it to the laboratory immediately (preferably cooled, by EMS).

**If the sample is stored for over 24 hours, freeze it and send it frozen** (on ice, EMS).

### Possibilities of interpretation

#### proANP – dog

	Plasma samples
<b>Negative:</b> gives non-specific data about heart disease, but the data should be assessed in connection with clinical examination	< 1350 fmol/l
<b>Dubious:</b> can indicate cardiac problems – together with clinical examination and other analyses. <b>recommendation:</b> repeat examination in 4 – 8 weeks	1350 - 1700 fmol/l
<b>92% and higher probability of cardiac problems</b> these results and monitoring confirm it	> 1700 fmol/l