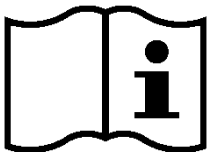

Useŕs Manual

Feline Immunodeficiency Virus Antibody ELISA

An ELISA test to detect antibodies against Feline Immunodeficiency Virus (FIV) antigen in serum and plasma of cats

REF F1002-AB01

Σ 96

December 2020

Gebruik alleen de juiste versie van het protocol dat meegestuurd wordt met de kit.
Please use only the valid version of the package insert provided with the kit.
Verwenden Sie nur die jeweils gültige, im Test kit enthaltene, Arbeitsanleitung.
Si prega di usare la versione valida dell'inserto del pacco a disposizione con il kit.
Por favor, se usa solo la version valida de la metodico técnico incluido aqui en el kit.

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1. Introduction

FIV p17/p24 are both core proteins of FIV. Infected cats produce antibodies against these FIV antigens, which can be detected in an ELISA using an anti-species conjugate.

2. Intended use of the test kit

The FIV p17/p24 ELISA is designed to detect antibodies against these proteins. To this end recombinant p17/p24 proteins are attached to the solid phase. After washing the plates are incubated with the samples to be tested. The plates are washed after incubation to remove unbound materials. An anti-species conjugate is added to detect bound cat antibodies to FIV p17/p24. After incubation and rinsing, the substrate is added and the optical density is measured at 450 nm.

3. Principle of the test kit

The test is based on the reaction of FIV proteins with cat antibodies. To this end, p17/p24 expression proteins have been coated to a 96 well microtiter strip plate.

- **Qualitative**
  The sample is added (diluted 1:100) to the wells of the coated plate.
- **Quantitative**
  The sample also can be titrated using a 3-step dilution, starting with a dilution 1:100 (→ 1:300 → 1:900 → 1:2700).

After washing, the bound cat antibodies are detected by an anti-species conjugate.
Bound anti-species conjugate is made visible by adding substrate/chromogen mix.
The intensity of the color reaction in the wells is directly correlated to the concentration of anti-FIV p17/p24 antibodies in the serum or plasma sample.

4. Contents

- 12 x 8 Microtiter strips
- 1 x Strip holder
- 1 x 18 ml ELISA buffer (green cap)
- 1 x 12 ml HRPO conjugated anti-species antibodies(red cap)
- 1 x 0,5 ml Positive control (freeze dried) (purple cap)
- 1 x 1,0 ml Negative control (freeze dried) (silver cap)
- 1 x 20 ml Wash solution (200x concentrated) (black cap), **dilute in de-ionized water before use!**
- 1 x 8 ml Substrate A (white cap)
- 1 x 8 ml Substrate B (blue cap)
- 1 x 8 ml Stop solution (yellow cap)
- 1 x Plastic cover seal
- 1 x User's manual

Supplies needed (not included)

- Round-bottomed microtiter plate
- Validated precision pipettes
- Pipette tips and clean containers/tubes (EVL)
- ELISA plate reader

5. Handling and storage of specimens

The kit should be stored at 4°C.
An open packet should be used within 10 days.
Samples may be used fresh or may be kept frozen below -20°C before use.
After first use ready-to-use controls and/or reconstituted controls should be aliquoted immediately and stored at -20°C.
Avoid repeated freezing and thawing as this increases non-specific reactivity.

6. Wash protocol

In ELISA's, un-complexed components must be removed efficiently between each incubation step. This is accomplished by appropriate washing. It should be stressed that each washing step must be carried out with care to guarantee reproducible inter- and intra-assay results. It is essential to follow the washing procedures outlined below. Washing may be done manually or with automatic equipment. Automatic washing equipment usually gives better result.

Manual washing

1. Empty each well by turning the microtiter plate upside down, followed by a firm vertical downward movement to remove the buffer.
2. Fill all the wells with 250 µl wash solution.
3. This washing cycle (step 1 and 2) should be carried out at least 5 times.
4. Turn the plate upside down and empty the wells with a firm vertical movement.
5. Place the inverted plate on absorbent paper towels and tap the plate firmly to remove any residual wash solution in the wells.
6. Take care that none of the wells dry out before the next reagent is added.

Washing with automatic equipment

When automatic plate washing equipment is used, check that all wells are aspirated completely and that the wash solution is correctly added, reaching the rim of each well during each rinsing cycle. The washer should be programmed to execute at least 5 washing cycles.

7. Preparations

- Before using the reagents needed, take them out of the kit and place them on the table for ± 15 min. at room temperature (± 21°C) without exposing them to direct sunlight or (other) heat sources.
- Buffer, controls, standards and conjugates need to be shaken gently before use, in order to dissolve/ mix any components that may have precipitated. Gently tap the vials onto the table, so any fluid still retained in the cap falls back into the solution.
- If fluids need to be mixed into the test well, gently shake by tapping the wells with the fingers or re-suspend with the last pipette tip used for that particular well. Avoid contamination through spattering and prevent any fluid to enter inside the pipette itself.
- Place the reagents back at 4-8°C immediately after use.

8. Test protocol qualitative

Before starting this test read "preparations"

1. Open the packet of strips and take out the strips to be used. Cover the remaining strips with a part of the provided seal and store them at +4°C. and use them within 10 days.

   Wash microtiter strip(s) 5x with washing solution, according to washing protocol.

   The washing solutions provided must be diluted 200x in aquabidest (5 mega Ohm) water!

   Use validated precision pipettes and use a clean pipette tip **before** pipetting the buffer, control, samples, conjugate and substrate.

2. Reconstitute directly before use the **positive control** (purple cap) **in 0,5 ml aquabidest** (5 mega Ohm water), divide into aliquots, and store after complete dissolving immediately at -20 °C until use, avoid freeze and thaw cycles.
3. Reconstitute directly before use the **negative control** (silver cap) **in 1,0ml aquabidest** (5 mega Ohm water), divide into aliquots, and store after complete dissolving immediately at -20 °C until use, avoid freeze and thaw cycles.

4. Dilute the **positive control** (purple cap) **starting 1:100 → 1:300 → 1:900 → 1:2700 in ELISA buffer** (green cap) in a round-bottomed plate (not supplied).
   Example: - A **pre-dilution** is needed:
   - Add 90µl ELISA buffer to **row 1A**, add 10µl of the positive control to the **well 1A** and mix well.
   - Add 180µl ELISA buffer to **row 2A**,
   - And 120µl to **2B, 2C, 2D**
   - Add 20µl of pre-dilution **well 1A** in the well **2A** and mix well
   - Mix well and transfer 60µl to the well **2B**
   - Mix well and transfer 60µl to the well **2C**
   - Mix well and transfer 60µl to the well **2D**
   - Mix well and discard 60µl
5. Dilute the **negative control** (silver cap) **1:100 in ELISA buffer** (green cap) in a round-bottomed plate (not supplied).
   Example: - A pre-dilution is needed:
   - Add 90µl ELISA buffer to **row 1E**, add 10µl of the negative control to the **well 1E** and mix well.
   - Add 135µl ELISA buffer to **row 2E**, add 15µl of pre-dilution **well 1E** in the well **2E** and mix well.
6. Dilute **the sample 1:100 in ELISA buffer** (green cap) in a round-bottomed plate (not supplied).
   Example: - A pre-dilution is needed:
   - Add 90µl ELISA buffer to **row 1F**, add 10µl of the sample to the **well 1F** and mix well.
   - Add 135µl ELISA buffer to **row 2F**, add 15µl of pre-dilution **well 1F** in the well **2F** and mix well.
7. Take 2 wells as **substrate controls** add only **120µl ELISA buffer** (green cap) to these wells.
8. Transfer 100µl of all dilutions of **row 2** to the coated microtiter strips, including the substrate controls.
9. Seal and incubate for 60 min at 37°C.

10. Wash the strips 5 times according to the wash protocol [see sub 6].

11. Add **100µl HRPO conjugated anti-species antibodies** to all wells.
12. Seal and incubate for 60 min at 37°C.

13. Wash the strips according to the wash protocol [see sub 6].

14. Mix equal parts of substrate A (white cap) and substrate B (blue cap) with gentle shaking. **Prepare immediately before use! Only prepare amount needed. Substrate can only be used for 1-2 hours after being mixed.**

15. Add **100µl substrate solution** to each well.
16. Incubate 10-15 min.in the dark (e.g. cover the wells with a sheet of paper) at room temperature (21°C.). Make sure the negative does not become too dark.

17. Add **50µl stop solution** to each well; mix well.
18. Read the absorbency values immediately (within 10 min!) at 450 nm using 620nm as reference on the ELISA reader. **Use the substrate controls as blank.**

NB: if you pipet directly into the coated ELISA plate with only a small number of samples (<6), make sure the first dilution is done in round bottom microtiter plate second step can be done directly in the coated Elisa plate.

9. Test protocol quantitative

Before starting this test read "preparations"

1. Open the packet of strips and take out the strips to be used. Cover the remaining strips with a part of the provided seal and store them at +4°C. and use them within 10 days.

2. Wash microtiter strip(s) 5x with washing solution, according to washing protocol.

   The washing solutions provided must be diluted 200x in aquabidest (5 mega Ohm) water!
   Use validated precision pipettes and use a clean pipette tip **before** pipetting the buffer, control, samples, conjugate and substrate.

3. Reconstitute directly before use the **positive control** (purple cap) **in 0,5 ml aquabidest** (5 mega Ohm water), divide into aliquots, and store after complete dissolving immediately at -20 °C until use, avoid freeze and thaw cycles.
4. Reconstitute directly before use the **negative control** (silver cap) **in 1,0ml aquabidest** (5 mega Ohm water), divide into aliquots, and store after complete dissolving immediately at -20 °C until use, avoid freeze and thaw cycles.

5. Make a pre-dilution of the **positive control** (purple cap) **in ELISA buffer** (green cap) in a round-bottomed plate (not supplied).
   Example: - Add 90µl ELISA buffer to **well 1A** and add 10µl of the positive control to **well 1A** and mix well.
6. Make a pre-dilution of the **negative control** (silver cap) **in ELISA buffer** (green cap) in a round-bottomed plate (not supplied).
   Example: - Add 90µl ELISA buffer to **well 1B** and add 10µl of the negative control to **well 1B** and mix well.
7. Make a pre-dilution of the **each sample in ELISA buffer** (green cap) in a round-bottomed plate (not supplied).
   Example: - Add 90µl ELISA buffer to **well 1C** and add 10µl of the sample to **well 1C** and mix well.
8. Take 2 wells as **substrate controls**, add only **120µl ELISA buffer** (green cap) to the wells.

9. Add for dilution of the **positive control 135µl buffer** to **well 1A**. And 100µl buffer to the **wells 1B, 1C, 1D** of the coated microtiter strip.
10. Add for dilution of the **negative control 135µl buffer** to **well 1E**. And 100µl buffer to the **wells 1F, 1G, 1H** of the coated microtiter strip.
11. Add for dilution of **the samples 135µl ELISA buffer** to **well 2A and 2E** (depending on the number of samples). And 100µl ELISA buffer to the **wells 2B, 2C, 2D** and **wells 2F, 2G, 2H** of the coated microtiter strip.

12. Make 3-step dilution of the **positive control** in the coated microtiter strip **starting 1:100 → 1:300→ 1:900 →1:2700**.
    Example: - Add 15µl positive control from step 5 to **well 1A** of the microtiter strip.
    - Mix well and transfer 50 µl to the well **1B**
    - Mix well and transfer 50µl to the well **1C**
    - Mix well and transfer 50µl to the well **1D**
    - Mix well and discard 50µl.

13. Make 3-step dilution of the **negative control** in the coated microtiter strip **starting 1:100 → 1:300→ 1:900 →1:2700**.
    Example: - Add 15µl negative control from step 6 to **well 1E** of the microtiter strip.
    - Mix well and transfer 50µl to the well **1F**
    - Mix well and transfer 50µl to the well **1G**
    - Mix well and transfer 50µl to the well **1H**
    - Mix well and discard 50µl.
14. Make 3-step dilution of **each sample** in the coated microtiter strip **starting 1:100 → 1:300→ 1:900 →1:2700**.
    Example: - Add 15µl of each sample from step 7 to the well **2A and/or 2E** of the microtiter strip.
    - Mix well and transfer 50 µl to the well **2B and/or 2F**
    - Mix well and transfer 50µl to the well **2C and/or 2G**
    - Mix well and transfer 50µl to the well **2D and/or 2H**
    - Mix well and discard 50µl.
15. Add **100µl** of the **substrate control** of step 8 to the last 2 wells of the microtiter strip.
16. Seal and incubate for 60 min at 37°C.

17. Wash the strips 5 times according to the wash protocol see sub 6.

18. Add **100µl HRPO conjugated anti-species antibodies** to all wells.
19. Seal and incubate for 60 min at 37°C.

20. Wash the strips according to the wash protocol see sub 6.
21. Mix equal parts of substrate A (white cap) and substrate B (blue cap) with gentle shaking. **Prepare immediately before use! Only prepare amount needed. Substrate can only be used for 1-2 hours after being mixed.**
22. Add **100µl substrate solution** to each well.
23. Incubate 10-13min.in the dark (e.g. cover the wells with a sheet of paper) at room temperature (21°C.). Make sure the negative does not become too dark.

24. Add **50µl stop solution** to each well; mix well.
25. Read the absorbency values immediately (within 10 min!) at 450 nm using 620nm as reference on the ELISA reader. **Use the substrate controls as blank.**

10. Precautions

- Handle all biological material as though capable of transmitting infectious diseases.
- Do not pipette by mouth.
- Do not eat, drink, smoke or prepare foods, or apply cosmetics within the designated working area.
- TMB substrate (buffer B) is toxic by inhalation, through contact with skin or when swallowed; observe care when handling substrate.
- Do not use components past the expiry date and do not mix components from different serial lots.
- Optimal, results will be obtained by strict adherence to this protocol. Careful pipetting and washing throughout this procedure are necessary to maintain precision and accuracy.
- Each well is ultimately used as an optical cuvette. Therefore, do not touch the under-surface of the microtiter plate and protect it from damage and dirt.

11. Validation of the test

Qualitative:

- The results are valid if the following criteria are met:
  - The mean value (MV) of the measured OD value for the Positive Control (PC), diluted 1:100, must be ≥0.850.
  - The MV of the measured OD value for the Negative Control (NC), diluted 1:100, must be ≤0.400.

  In case of invalid assays the test should be repeated after a thorough review of the instructions for use.

  Calculation
  Calculate the mean values (MV) of the measured OD for the Negative Control (NC) and the Positive Control (PC).

  The ratio (S/P) of sample OD to mean OD of the positive control is calculated according to the following equation:

  $$S/P = \frac{OD_{sample} - MV\ OD_{NC}}{MV\ OD_{PC} - MV\ OD_{NC}}$$

Quantitative:
In order to confirm appropriate test conditions the OD of the positive control, diluted 1:100, should be ≥ 0,850 OD units (450nm) and give an endpoint titer of ≥300.
The negative control, diluted 1:100, should be ≤0,400 OD units (450nm) and give an endpoint titer of ≤100.

12. Interpretation of the test results

This test can be used in 2 ways.

Qualitative: Positive – Negative

- A sample with the S/P ratio <0.23 is negative.
  - Specific antibodies to FIV could not be detected.
- A sample with the S/P ratio ≥0.23 is positive.
  - Specific antibodies to FIV were detected.

Quantitative: End point titre

- The ELISA titre can be calculated by constructing a curve and using cut-off line(dilution 1:100 → 1:300 → 1:900 → 1:2700→ 8100→ 24300etc total 8 dilutions of 3 steps) OD on Y-as and Titre on X-as
  ELISA titres can be calculated using as cut-off 2,5 times OD value of negative control at 1:100.

13. Symbols used with EVL ASSAYS

Symbol	English	Deutsch	Français	Español	Italiano
	Consult instructionsforuse	Gebrauchsanweisung beachten	Consulter les instructions d'utilisation	Consulte las instrucciones de uso	Consultare le istruzioni per l'uso
CE	European Conformity	CE-Konfirmitäts-kennzeichnung	Conformité aux normes européennes	Conformidad europea	Conformità europea
IVD	In vitro diagnostic device	In-vitro-Diagnostikum	Usage Diagnostic in vitro	Para uso Diagnóstico in vitro	Per uso Diagnostica in vitro
RUO	Forresearchuseonly	Nur für Forschungszwecke	Seulement dans le cadre de recherches	Sólo para uso en investigación	Solo a scopo di ricerca
REF	Catalogue number	Katalog-Nr.	Numéro de catalogue	Número de catálogo	Numero di Catalogo
LOT	Lot. No. / Batch code	Chargen-Nr.	Numéro de lot	Número de lote	Numero di lotto
Σ	Containssufficient for <n> tests/	Ausreichendfür "n" Ansätze	Contenu suffisant pour "n" tests	Contenido suficiente para <n> ensayos	Contenuto sufficiente per "n" saggi
	Storage Temperature	Lagerungstemperatur	Température de conservation	Temperatura de conservación	Temperatura di conservazione
	Expiration Date	Mindesthaltbarkeits-datum	Date limite d'utilisation	Fecha de caducidad	Data di scadenza
	Legal Manufacturer	Hersteller	Fabricant	Fabricante	Fabbricante
Distributed by	Distributor	Vertreiber	Distributeur	Distribuidor	Distributore
Content	Content	Inhalt	Conditionnement	Contenido	Contenuto
Volume/No.	Volume / No.	Volumen/Anzahl	Volume/Quantité	Volumen/Número	Volume/Quantità

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