DRG® PAP ELISA (EIA-3763)

Revised 14 Oct. 2010 rm (Vers. 1.5.1)

RUO in the USA

Introduction

Intended Use

The **DRG PAP micro ELISA** is an enzyme immunoassay for measurement of plasmin-α2-antiplasmin complex (PAP) in human plasma. It is intended for the detection of hypo- and hyperfibrinolytic states.

This kit is intended for Research Use Only. Not for use in diagnostic procedures.

PRINCIPLE OF THE TEST

The DRG PAP micro ELISA Kit is a solid phase enzyme-linked immunosorbent assay (ELISA) based on the sandwich principle.
During the first incubation step the PAP present in the sample binds to the monoclonal antibodies (PAP-6) coated on the surface of the microtitration plate. Unbound fragments are removed by washing and, in a second reaction, peroxidase-conjugated antibodies to plasminogen are bound to the free PAP determinants.
After incubation the unbound conjugate is washed off. The amount of bound peroxidase is proportional to the concentration of PAP in the sample.
Having added the substrate solution, the intensity of colour developed is proportional to the concentration of PAP in the donor sample.

Warnings and Precautions

1. For professional use only. This kit is intended for Research Use Only. Not for use in diagnostic procedures.
2. All reagents of this test kit which contain human serum or plasma have been tested and confirmed negative for HIV I/II, HBsAg and HCV by FDA approved procedures. All reagents, however, should be treated as potential biohazards in use and for disposal.
3. Before starting the assay, read the instructions completely and carefully. Use the valid version of the package insert provided with the kit. Be sure that everything is understood.
4. The microplate contains snap-off strips. Unused wells must be stored at 2 °C to 8 °C in the sealed foil pouch and used in the frame provided.
5. Pipetting of samples and reagents must be done as quickly as possible and in the same sequence for each step.
6. Use reservoirs only for single reagents. This especially applies to the substrate reservoirs. Using a reservoir for dispensing a substrate solution that had previously been used for the conjugate solution may turn solution colored. Do not pour reagents back into vials as reagent contamination may occur.
7. Mix the contents of the microplate wells thoroughly to ensure good test results. Do not reuse microwells.
8. Do not let wells dry during assay; add reagents immediately after completing the rinsing steps.
9. Allow the reagents to reach room temperature (21-26°C) before starting the test. Temperature will affect the absorbance readings of the assay. However, values for the donor samples will not be affected.
10. Never pipet by mouth and avoid contact of reagents and specimens with skin and mucous membranes.
11. Do not smoke, eat, drink or apply cosmetics in areas where specimens or kit reagents are handled.
12. Wear disposable latex gloves when handling specimens and reagents. Microbial contamination of reagents or specimens may give false results.
13. Handling should be done in accordance with the procedures defined by an appropriate national biohazard safety guideline or regulation.

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14. Do not use reagents beyond expiry date as shown on the kit labels.
15. All indicated volumes have to be performed according to the protocol. Optimal test results are only obtained when using calibrated pipettes and microtiterplate readers.
16. Do not mix or use components from kits with different lot numbers. It is advised not to exchange wells of different plates even of the same lot. The kits may have been shipped or stored under different conditions and the binding characteristics of the plates may result slightly different.
17. Avoid contact with *Stop Solution* containing 0.5 M H_2SO_4. It may cause skin irritation and burns.
18. Some reagents contain Proclin 300, BND and/or MIT as preservatives. In case of contact with eyes or skin, flush immediately with water.
19. TMB substrate has an irritant effect on skin and mucosa. In case of possible contact, wash eyes with an abundant volume of water and skin with soap and abundant water. Wash contaminated objects before reusing them. If inhaled, take the person to open air.
20. Chemicals and prepared or used reagents have to be treated as hazardous waste according to the national biohazard safety guideline or regulation.
21. For information on hazardous substances included in the kit please refer to Material Safety Data Sheets. Material Safety Data Sheets for this product are available upon request directly from DRG.

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Reagents

Reagents provided

1. ***Microtiterwells***, 12x8 (break apart) strips, 2 x 96 wells;
   Wells coated with anti-PAP antibody (monoclonal).
2. ***Standard (Standard 1-4)***, 4 vials (lyophilized), 1 mL;
   Concentrations: 50 – 200 – 2000 – 5000 µg/L
   See „Preparation of Reagents“;
   contain 5-Chloro-2-methyl-4-isothiazole-3-one (37.5 mg/L) and 2-methyl-4-isothiazole-3-one (max. 12.5 mg/L) as preservative.
3. ***Control***, 1 vial (lyophilized), 1 mL,
   see „Reagent Preparation“.
   For control values and ranges please refer to vial label or QC-Datasheet.
   Contains 5-Chloro-2-methyl-4-isothiazole-3-one (37.5 mg/L) and 2-methyl-4-isothiazole-3-one (max. 12.5 mg/L) as preservative.
4. ***Enzyme Conjugate*** **concentrate**, 1 vial, 0.5 mL,
   Rabbit anti-human Plasminogen antibody conjugated to horseradish peroxidase;
   see „Preparation of Reagents“.
   contains Phenol (< 1 g/L) as preservative.
5. ***Conjugate Diluent***, 2 vials, 11 mL, (coag.)
   contains Phenol (< 0.3 g/L) as preservative.
6. ***Assay Buffer***, 1 vial, 21 mL, ready to use,
   Tris buffer solution (100 mmol/L), Tween (10 ml/l), EDTA (37 g/L)
7. ***Substrate Solution***, 1 vial, 25 mL, ready to use,
   Tetramethylbenzidine (TMB).
8. ***Stop Solution***, 1 vial, 25 mL, ready to use,
   contains 0.5M H_2SO_4,
   Avoid contact with the stop solution. It may cause skin irritations and burns.
9. ***Wash Solution***, 1 vial, 30 mL (40X concentrated),
   see „Preparation of Reagents“.

Note: Additional *Assay Buffer* for sample dilution is available upon request.

Materials required but not provided

- A microtiter plate calibrated reader (450 ± 10 nm) (e.g. the DRG Instruments Microtiter Plate Reader).
- Calibrated variable precision micropipettes.
- Absorbent paper.
- Distilled or deionized water
- Timer
- Semi logarithmic graph paper or software for data reduction

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Storage Conditions

When stored at 2 °C to 8 °C unopened reagents will retain reactivity until expiration date. Do not use reagents beyond this date.
Opened reagents must be stored at 2 °C to 8 °C. Microtiter wells must be stored at 2 °C to 8 °C. Once the foil bag has been opened, care should be taken to close it tightly again.
Opened kits retain activity for four weeks if stored as described above.
Enzyme Conjugate, Conjugate Diluent and Assay Buffer are stable for up to 3 months at -20 °C

Reagent Preparation

Bring all reagents and required number of strips to room temperature prior to use.

Standards

Reconstitute the lyophilized contents of the standard vial with 1 mL Aqua dest.
Note: *The reconstituted standards are stable for 8 hours at 15 °C to 25 °C. For longer storage up to 3 months freeze at -20°C.*

Control

Reconstitute the lyophilized content with 1 mL Aqua dest. and let stand for 10 minutes in minimum. Mix the control several times before use.
Note: *The reconstituted control is stable for 8 hours at 15 °C to 25 °C. For longer storage up to 3 months freeze at -20°C.*

Wash Solution

Add deionized water to the 40X concentrated Wash Solution.
Dilute 30 mL of concentrated *Wash Solution* with 1170 mL deionized water to a final volume of 1200 mL (sufficient for 2 test plates). If less than 2 test plates are required, dilute an appropriate portion of the Washing Solution (Concentrate) with distilled water.
The diluted Wash Solution is stable for 1 weeks at room temperature.

Enzyme Conjugate

Dilute *Enzyme Conjugate* concentrate in *Conjugate Diluent*.
Stability of the prepared Enzyme-Conjugate: 4 weeks at 2–8°C in a sealed container.

Example:
If one whole plate is used, dilute 200 µL *Enzyme Conjugate* with 1 vial (11 mL) *Conjugate Diluent*.

Disposal of the Kit

The disposal of the kit must be made according to the national regulations. Special information for this product is given in the Material Safety Data Sheet.

Damaged Test Kits

In case of any severe damage to the test kit or components, DRG has to be informed in writing, at the latest, one week after receiving the kit. Severely damaged single components should not be used for a test run. They have to be stored until a final solution has been found. After this, they should be disposed according to the official regulations.

SPECIMEN Collection and Preparation

Plasma (citrate- or EDTA-plasma) can be used in this assay.

Do not use haemolytic, icteric or lipaemic specimens.
Please note: Samples containing sodium azide should not be used in the assay.

Specimen Collection

Plasma:

Whole blood should be collected into centrifuge tubes containing anti coagulant and centrifuged immediately after collection.

(E.g. for Citrate plasma Sarstedt Monovette – green cap - # 02.167.001.)
for EDTA plasma Sarstedt Monovette – red cap - # 02.166.001;

Specimen Storage and Preparation

Specimens should be capped and may be stored for
up to 2 hours at 15 °C to 25 °C or
up to 4 hours at 2 °C to 8 °C prior to assaying.
Specimens held for a longer time (up to one months) should be frozen only once at -20°C prior to assay. Thawed samples should be inverted several times prior to testing.

Specimen Dilution

If in an initial assay, a specimen is found to contain more than the highest standard, the specimens can be diluted with *Assay Buffer* and reassayed as described in Assay Procedure.
For the calculation of the concentrations this dilution factor has to be taken into account.
Example:
a) dilution 1:10: 10 µL Serum + 90 µL *Assay Buffer* (mix thoroughly)
b) dilution 1:100: 10 µL dilution a) 1:10 + 90 µL *Assay Buffer* (mix thoroughly).

ASSAY PROCEDURE

General Remarks

- All reagents and specimens must be allowed to come to room temperature before use. All reagents must be mixed without foaming.
- Once the test has been started, all steps should be completed without interruption.
- Use new disposal plastic pipette tips for each standard, control or sample in order to avoid cross contamination.
- Absorbance is a function of the incubation time and temperature. Before starting the assay, it is recommended that all reagents are ready, caps removed, all needed wells secured in holder, etc. This will ensure equal elapsed time for each pipetting step without interruption.
- As a general rule the enzymatic reaction is linearly proportional to time and temperature.

Test Procedure

Each run must include a standard curve.
Pipetting step of the plasma samples is to be completed within a maximum of 10 minutes per complete plate.

1. Secure the desired number of Microtiter wells in the frame holder.
2. Dispense **50 µL** ***Assay Buffer*** into each well
3. Add **50 µL** of each ***Standard, Control*** and **samples** with new disposable tips into appropriate wells.
   Thoroughly mix for 10 seconds. It is important to have a complete mixing in this step.
4. Incubate for **15 minutes** at room temperature (20 °C – 25 °C).
5. Briskly shake out the contents of the wells.
   Rinse the wells **3 times** with diluted *Wash Solution* (3400 µL per well). Strike the wells sharply on absorbent paper to remove residual droplets.
   Important note:
   The sensitivity and precision of this assay is markedly influenced by the correct performance of the washing procedure!
6. Dispense **100 µL** ***Enzyme Conjugate*** into each well. (See "*Reagent Preparation*".)
7. Incubate for **15 minutes** at room temperature.
8. Briskly shake out the contents of the wells.
   Rinse the wells **3 times** with diluted *Wash Solution* (300 µL per well). Strike the wells sharply on absorbent paper to remove residual droplets.
9. Add **100 µL** of ***Substrate Solution*** to each well.
10. Incubate for **15 minutes** at room temperature.
11. Stop the enzymatic reaction by adding **100 µL** of ***Stop Solution*** to each well.
12. Determine the absorbance (OD) of each well at **450 ± 10 nm** with a microtiter plate reader.
    It is recommended that the wells be read **within 30 minutes** after adding the *Stop Solution*.

Calculation of Results

1. Calculate the average absorbance values for each set of standards, controls and donor samples.
2. Using semi-logarithmic graph paper, construct a standard curve by plotting the mean absorbance obtained from each standard against its concentration with absorbance value on the vertical (Y) axis and concentration on the horizontal (X) axis.
3. Using the mean absorbance value for each sample determine the corresponding concentration from the standard curve.
4. Automated method: The results in the IFU have been calculated automatically using a 4 PL (4 Parameter Logistics) curve fit. 4 Parameter Logistics is the preferred method. Other data reduction functions may give slightly different results.
5. The concentration of the samples can be read directly from this standard curve. Samples with concentrations higher than that of the highest standard have to be further diluted or reported as > 5000 µg/L. For the calculation of the concentrations this dilution factor has to be taken into account.