DRG® NSE ELISA (EIA-4610)

Revised 2 Feb. 2011 rm (Vers. 7.1) **RUO in the USA**

Please use only the valid version of the package insert provided with the kit.

This kit is intended for Research Use Only.

This kit is not intended for diagnostic purposes.

1 INTRODUCTION

1.1 Intended Use

The **DRG NSE ELISA** is an enzyme immunoassay for measurement of NSE in serum

2 PRINCIPLE OF THE TEST

The DRG NSE ELISA Kit is a solid phase enzyme-linked immunosorbent assay (ELISA) based on the sandwich principle.

The microtiter wells are coated with a monoclonal antibody directed towards a unique antigenic site on a NSE molecule. An aliquot of specimen sample containing endogenous NSE is incubated in the coated well with enzyme conjugate, which is a monoclonal anti- NSE antibody conjugated with horseradish peroxidase. After incubation the unbound conjugate is washed off.

The amount of bound peroxidase is proportional to the concentration of NSE in the sample.

Having added the substrate solution, the intensity of colour developed is proportional to the concentration of NSE in the sample.

3 WARNINGS AND PRECAUTIONS

1. This kit is for research use only. For professional use only.
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 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.
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 microtiter plate 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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4 REAGENTS

4.1 Reagents provided

1. ***Microtiter wells***, 12x8 (break apart) strips, 96 wells;
   Wells coated with anti-h-NSE antibody (monoclonal).
2. ***Standard (Standard 0-4)***, 5 x 2 vials (lyophilized), 0.75 mL;
   The standards contain h-NSE in a proteic stabilizing matrix solution.
   For concentration please refer to vial label or QC-Datasheet.
   The standard concentrations are lot-specific.
   See „Preparation of Reagents“;
3. ***Negative Control***, 2 vials (lyophilized), 0.75 mL,
   see „Reagent Preparation“
   For control values and ranges please refer to vial label or QC-Datasheet.
4. ***Positive Control***, 2 vials (lyophilized), 0.75 mL,
   see „Reagent Preparation“
   For control values and ranges please refer to vial label or QC-Datasheet.
5. ***Incubation Buffer***, 1 vial, 50 mL, ready to use,
   contains phosphate buffer 50 mM pH 7.4; BSA 1 g/L.
6. ***Enzyme Conjugate*** **concentrate**, 1 vial, 1.0 mL,
   monoclonal anti-h-NSE antibody conjugated to horseradish peroxidase;
   see „Preparation of Reagents“.
7. ***Substrate Solution***, 1 vial, 15 mL, ready to use,
   contains Tetramethylbenzidine (TMB) and H_2O_2.
8. ***Stop Solution***, 1 vial, 15 mL, ready to use,
   contains 0.15 M H_2SO_4,
   Avoid contact with the stop solution. It may cause skin irritations and burns.
9. ***Wash Solution***, 1 vial, 20 mL (50X concentrated),
   see „Preparation of Reagents“.

Note: Additional *Standard 0* for sample dilution is available upon request.

4.2 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

4.3 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 until expiration date if stored as described above.

4.4 Reagent Preparation

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

Standards / Controls

Reconstitute the lyophilized contents of the standard and control vial with 0.75 mL Aqua dest.

Note: *The reconstituted standard and control should be apportioned and stored at –20°C (up to 1 month).*

Wash Solution

Add deionized water to the 50X concentrated Wash Solution.
Dilute 20 mL of concentrated *Wash Solution* with 980 mL deionized water to a final volume of 1000 mL.

When stored at 2 °C to 8 °C the diluted Wash Solution is stable until expiration date

Enzyme Conjugate

Dilute *Enzyme Conjugate* concentrate in *Incubation Buffer*.

Stability of the prepared Enzyme-Conjugate: **Prepare immediately before use.**

If the whole plate is not used at once prepare the required quantity of Enzyme Conjugate by mixing 20 µL of *Enzyme Conjugate* concentrate with 1 mL of *Incubation Buffer* per strip (see table below).

Mix gently leaving in a rotating shaker for at least 5 minutes.

No. of strips	*Enzyme Conjugate conc.* (µL)	*Incubation Buffer* (mL)
1	20	1.0
2	40	2.0
3	60	3.0
4	80	4.0
5	100	5.0
6	120	6.0
7	140	7.0
8	160	8.0
9	180	9.0
10	200	10.0
11	220	11.0
12	240	12.0

4.5 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.

4.6 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.

5 SPECIMEN COLLECTION AND PREPARATION

Serum 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.

5.1 Specimen Collection

Serum:

Collect blood by venipuncture (e.g. Sarstedt Monovette # 02.1388.001), allow to clot, and separate (within 60 minutes) serum by centrifugation at room temperature. Do not centrifuge before complete clotting has occurred. Specimens containing anticoagulant may require increased clotting time.

5.2 Specimen Storage and Preparation

Specimens should be capped and may be stored for up to 1 day at 2 °C to 8 °C prior to assaying.

Specimens held for a longer time should be frozen only once at -20°C prior to assay. Thawed samples should be inverted several times prior to testing.

5.3 Specimen Dilution

If in an initial assay, a specimen is found to contain more than the highest standard, the specimens can be diluted with *Standard 0* 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 *Standard 0* (mix thoroughly)

b) dilution 1:100: 10 µL dilution a) 1:10 + 90 µL *Standard 0* (mix thoroughly).

6 ASSAY PROCEDURE

6.1 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.

6.2 Test Procedure

Each run must include a standard curve.

10. Secure the desired number of Microtiter wells in the frame holder.
11. Dispense **25 µL** of each ***Standard, Control*** and **samples** with new disposable tips into appropriate wells.
12. Dispense **100 µL** ***Enzyme Conjugate*** into each well (See "Reagent Preparation".
    Thoroughly mix for 10 seconds. It is important to have a complete mixing in this step.
13. Incubate for **60 minutes** at room temperature (22 °C to 28 °C).
14. 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.
    Important note:
    The sensitivity and precision of this assay is markedly influenced by the correct performance of the washing procedure!
15. Add **100 µL** of ***Substrate Solution*** to each well.
16. Incubate for **15 minutes** at room temperature in the dark.
17. Stop the enzymatic reaction by adding **100 µL** of ***Stop Solution*** to each well.
18. 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 10 minutes** after adding the *Stop Solution*.

6.3 Calculation of Results

1. Calculate the average absorbance values for each set of standards, controls and 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: 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 such. For the calculation of the concentrations this dilution factor has to be taken into account.

7 REFERENCES

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