**NEFA FS**

Diagnostic reagent for quantitative in vitro determination of non-esterified fatty acids (NEFA) in serum or plasma on DiaSys respond®910

**Order Information**
Cat. No. 1 5781 99 10 921
4 twin containers for 120 tests each

**Method**
Enzymatic endpoint method

**Components and Concentrations**

**Reagents**

- **Non-esterified fatty acids and coenzyme A react in the presence of acyl coenzyme A synthetase (ACS) to acylated coenzyme A. Acylated coenzyme A is oxidized by acyl coenzyme A oxidase under development of H₂O₂. H₂O₂ is converted to a coloured product by the use of Trinder substances in the presence of peroxidase (POD).**

  
  
  Non-esterified fatty acids + Coenzym A + ATP → Acyl-Co A + AMP + PP₃

  
  2 H₂O₂ + Trinder → Dye + 4 H₂O

  
  At 546 nm the intensity of the red dye is directly proportional to the concentration of free fatty acids in the sample.

**Reagents**

**Components and Concentrations**

**Reagent Preparation**

- Please refer to local legal requirements.

**Waste Management**

- Please refer to local legal requirements.

**Reagent Preparation**

The reagents are ready to use. The bottles are placed directly into the reagent trays.

**Specimen** [1,7]

- Serum, heparin plasma or EDTA plasma (fasting > 12h)

- Samples from patients under heparin therapy are unsuitable for analysis. Effect the measurement immediately after blood collection because concentration of non-esterified fatty acids in serum increases due to lipolysis. Store samples at −20°C, if direct measurement is not possible. Discard contaminated specimens. Freeze only once.

**Calibrators and Controls**

- For calibration, the DiaSys TruCal Lipid or DiaSys NEFA Standard FS is recommended. The assigned values of the calibrator or standard are traceable to a primary standard material. For internal quality control DiaSys TruLab L control should be assayed. Each laboratory should establish corrective action in case of deviations in control recovery.

**Performance Characteristics**

- Measuring range up to 3 mmol/L (84.7 mg/dL) NEFA (in case of higher concentrations re-measure samples after manual dilution with NaCl solution (9 g/L) or use rerun function).

**Limit of detection**

- 0.02 mmol/L (0.565 mg/dL) NEFA

**On-board stability**

- 21 days

**Calibration stability**

- 7 days

**Interfering substance**

- Interferences: Acidic, Basic, Salts, Surfactants, Lipemia, Triglyceride, Hemolysis

- NEFA: up to 30 mg/dL (0.540 mmol/L)

**Ascorbate**

- up to 30 mg/dL (0.540 mmol/L)

**Hemoglobin**

- up to 120 mg/dL (2.040 mmol/L)

**Bilirubin, conjugated**

- up to 60 mg/dL (1.000 mmol/L)

**Bilirubin, unconjugated**

- up to 70 mg/dL (1.200 mmol/L)

**Lipemia (triglycerides)**

- up to 250 mg/dL (1.450 mmol/L)

- up to 2000 mg/dL (3.600 mmol/L)

**For further information on interfering substances refer to Young D S [2].**

**Precision**

- Within run (n=20)

  - Sample 1: 0.31
  - Sample 2: 0.62
  - Sample 3: 0.94

- Coefficient of variation [%]: 1.68

- 0.01 mmol/L

- Coefficient of variation [%]: 1.72

- Between run (n=20)

  - Sample 1: 0.27
  - Sample 2: 0.40
  - Sample 3: 1.45

- Coefficient of variation [%]: 2.81

**Method comparison (n=150)**

- Test x: DiaSys NEFA FS (Hitachi 917)

- Test y: DiaSys NEFA FS (respond®910)

- Slope: 1.00

- Coefficient of correlation: 0.999

**Conversion factor**

Non-esterified fatty acids [mg/dL] x 0.0354 = Non-esterified fatty acids [mmol/L]

**Reference Range** [3]

- Women: 0.1 – 0.45 mmol/L (2.8 – 12.7 mg/dL)

- Men: 0.1 – 0.60 mmol/L (2.8 – 16.9 mg/dL)

- Plasma concentrations of non-esterified fatty acids are subject to individual fluctuations and in particular increased after food intake.

- Each laboratory should check if the reference ranges are transferable to its own patient population and determine own reference ranges if necessary.

- For diagnostic purposes NEFA values should always be assessed in conjunction with the anamnesis, the clinical examination and other findings.
Literature

NEFA FS

Application for serum and plasma samples

This application was set up and evaluated by DiaSys. It is based on the standard equipment at that time and does not apply to any equipment modifications undertaken by unqualified personnel.

Identification
This method is usable for analysis: Yes
Twin reaction: No
Name: NEFA
Shortcut: NEFA
Reagent barcode reference: 048
Host reference:

Technic
Type: End point
First reagent:[µL] 180
Blanc correction Yes
Second reagent:[µL] 45
Blanc correction Yes
Main wavelength:[nm] 546
Secondary wavelength:[nm] 600
Polychromatic factor: 1.000
1 st reading time [min:sec] (04:24)
Last reading time [min:sec] 10:00
Reaction way: Increasing

Linear Kinetics
Substrate depletion: Absorbance limit
Linearity: Maximum deviation [%]

Fixed Time Kinetics
Substrate depletion: Absorbance limit
Endpoint
Stability: Largest remaining slope
Prozone Limit [%]

Sample
Diluent DIL A (NaCl)
Hemolysis:
Agent [µL] 0 (no hemolysis)
Sample [µL] 0
Concentration technical limits-Lower 0.02
Concentration technical limits-Upper 3.00
SERUM
Normal volume [µL] 3
Normal dilution (factor) 1
Below normal volume [µL] 6
Below normal dilution (factor) 1
Above normal volume [µL] 3
Above normal dilution (factor) 6
URIN
Normal volume [µL] 3
Normal dilution (factor) 1
Below normal volume [µL] 6
Below normal dilution (factor) 1
Above normal volume [µL] 3
Above normal dilution (factor) 6
PLASMA
Normal volume [µL] 3
Normal dilution (factor) 1
Below normal volume [µL] 6
Below normal dilution (factor) 1
Above normal volume [µL] 3
Above normal dilution (factor) 6
CSF
Normal volume [µL] 3
Normal dilution (factor) 1
Below normal volume [µL] 6
Below normal dilution (factor) 1
Above normal volume [µL] 3
Above normal dilution (factor) 6

Results
Decimals 2
Units mmol/L
Correlation factor-Offset 0.000
Correlation factor-Slope 1.000

Range
Gender Male
Age
SERUM >>0.1 <=0.60
URINE >>0.1 <=0.60
CSF
Gender Female
Age
SERUM >>0.1 <=0.45
URINE >>0.1 <=0.45
CSF

Contaminants
Contaminant 1 Please refer to r910
Contaminant 2
Contaminant 3
Contaminant 4

Calibrators details
Calibrator list Concentration
Cal. 1/Blank 0
Cal. 2
Cal. 3
Cal. 4
Cal. 5
Cal. 6

Max delta abs.
Cal. 1 0.002
Cal. 2 0.005
Cal. 3
Cal. 4
Cal. 5
Cal. 6
Drift limit [%] 0.8

Calculations
Model X
Degree 1

* Enter calibrator value