

# ADENOSINE DEAMINASE (ADA) FL

AD F080 CH

4 x 20 ml

## INTENDED USE

Reagent for quantitative in vitro determination of adenosine deaminase in biological fluids (serum) and intended as aid to diagnosis of tuberculous pleurisy and ADA severe immunodeficiency disease.

The IVD device can be used both in manual or on automatic analyzers. The product is intended for professional use in clinical laboratories.

## TEST PRINCIPLE

ADA enzyme converts adenosine to inosine, which starts a sequence of enzymatic reactions mediated by PNP (Purine Nucleoside Phosphorylase) and XOD (Xanthine Oxidase), leading to hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>). This compound reacts with TOOS (N-Ethyl-N-(2-hydroxy-3-sulfo-propyl)-3-methylaniline) in the presence of peroxidase, to form a quinone compound. Absorbance increase per unit time, measured at 546, is proportional to the concentration of ADA in the sample<sup>1-3</sup>.

## MATERIALS PROVIDED AND COMPOSITION

**ADA R1** F080: 4 x 16 ml (liquid) blue cap

Composition: Phosphate buffer, PNP > 1 KU/l, XOD > 1 KU/l, POD > 1 KU/l, 4-AAP (4-Aminoantipyrine) > 1 mM, stabilizer and preservative.

**ADA R2** F080: 1 x 16 ml (liquid) red cap

Composition: Phosphate buffer, adenosine > 5 mM, TOOS > 1 mM, stabilizers and preservative.

## NOT SUPPLIED REQUIRED MATERIALS

Appropriate laboratory instrumentation. Spectrophotometer UV/VIS fitted with thermostatic cuvette holder. Automatic micropipettes. Glass or high quality polystyrene cuvettes. Saline solution.

## REAGENT PREPARATION

Use ready-to-use reagents.

## STORAGE AND STABILITY


Store all kit components at 2-8°C, away from direct light sources.

Stability of reagents: up to expiration date claimed on label storing at 2-8°C;


Stability after first opening of reagent bottle: preferably within 60 days storing at 2-8°C.

## PRECAUTIONS

**ADA R1: Warning.** May cause an allergic skin reaction.

 (H317). Wear protective gloves (P280). Avoid breathing dust / fume / gas / mist / vapours / spray (P261). If skin irritation or rash occurs: Get medical advice / attention (P333+P313). Take off contaminated clothing and wash it before reuse. (P362+P364).

**ADA R2: Warning.** May cause an allergic skin reaction.

 (H317). Wear protective gloves (P280). Avoid breathing dust / fume / gas / mist / vapours / spray (P261). If skin irritation or rash occurs: Get medical advice / attention (P333+P313). Take off contaminated clothing and wash it before reuse. (P362+P364).

## SPECIMEN

Serum.

Samples are stable for one week when stored at 2-8°C<sup>4</sup>.

## PROCEDURE

Wavelength:	546 nm	
Lightpath:	1 cm	
Temperature:	37°C	
dispense:	standard	sample
reagent R1	1 ml	1 ml
standard	25 µl	-
sample	-	25 µl
Mix, incubate at 37°C for 5 minutes.		
dispense:	standard	sample
reagent R2	250 µl	250 µl
Mix, after 3 minutes read the absorbance against water, by incubating at 37°C. Perform other two readings at 60 seconds intervals. Calculate the ΔA/min.		

## RESULTS CALCULATION

Serum:

$$ADA \text{ U/l} = \frac{\Delta A/\text{min}_{(\text{sample})}}{\Delta A/\text{min}_{(\text{standard})}} \times \text{Standard value}$$

## REFERENCE INTERVALS

Adults<sup>5</sup>: ≤ 14.0 U/l

Each laboratory should establish appropriate reference intervals related to its population.

## QUALITY CONTROL AND CALIBRATION

Calibration is required with each change in reagent lot number. It is suggested to verify calibration with at least one level of an internal quality control. If control results fall outside acceptable ranges, recalibration may be necessary. For this purpose the following human based control sera are available:

**QUANTINORM CHEMA - MULTINORM CHEMA**

with normal or close to normal control values

**QUANTIPATH CHEMA - MULTIPATH CHEMA**

with pathological control values.

If required, a calibrator is available:

**ADA CALIBRATOR**

Please contact Customer Care for further information.

## TEST PERFORMANCE

**Sensitivity / Limit of Detection (LOD)<sup>6</sup>**

The method is able to detect up to 0.50 U/l.

**Analytical specificity:**

**Interferences<sup>7</sup>**

interference does not occur in the presence of:

hemoglobin	≤ 500 mg/dl
bilirubin	≤ 36 mg/dl
Intralipid	≤ 1600 mg/dl
ascorbic acid	≤ 5 mg/dl

**Veridicity<sup>8</sup>**

BIAS% < 10.54

**Accuracy:**

**Trueness<sup>9</sup>**

Total observed error% < 16.7 (allowable total error)

**Precision<sup>9</sup>**

**Repeatability**

intra-assay (n=10) mean (U/l)	SD (U/l)	CV%
sample 1	13.1	0.22
sample 2	34.9	0.32

**Reproducibility**

inter-assay (n=20) mean (U/l)	SD (U/l)	CV%
sample 1	13.2	0.41
sample 2	34.9	0.53

**Measurement range<sup>10</sup>**

2.01 - 200.0 mg/dl

**Linearity<sup>10</sup>**

the method is linear up to 200 U/l.

If the limit value is exceeded, it is suggested to dilute sample 1+9 with saline and to repeat the test, multiplying the result by 10.

**Methods comparison<sup>9</sup>**

a comparison between Chema and a commercially available product gave the following results:

Serum:

Adenosine Deaminase (ADA) FL Chema = x  
Adenosine Deaminase competitor = y  
n = 112

Linear regression

$$y = 1.006x - 1.045 \text{ U/l} \quad r = 0.9992$$

Passing-Bablok<sup>11-12</sup>

$$y = 0.947x - 0.284 \text{ U/l}$$

## WASTE DISPOSAL

P501: Dispose of product according to national/international regulations.

## NOTICE TO THE USER

Any serious accident involving the device must be reported to the manufacturer and the competent authority of the Member State in which the user and/or the patient is located.

## REFERENCES

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7. W. Ehret, F. da Fonseca-Wollheim et al. Use of anticoagulants in Diagnostic Laboratory investigations 2002; WHO/DIL/LAB/99.1 Rev. 2.
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11. H. Passing and W. Bablok. A New Biometrical Procedure for Testing the Equality of Measurements from Two Different Analytical Methods. *J. Clin. Chem. Biochem.* 1983; 21: 709-720.
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## SYMBOLS

Chema Diagnostica uses symbols listed in the ISO 15223-1 (see www.chema.com - Section "Products" for definition of symbols used).

Addition, deletions or changes are indicated with a vertical line on the side of the affected paragraph.

