ADA

ADENOSINE DEAMINASE

Specifically for use with Diatron PICTUS® 700 and PICTUS® 500 Analyzers

2°C – 8°C

REF 1419-0900 **Packaging:** 4 x 11 mL (R1) + 4 x 5.5 mL (R2)

Σ 200

INTENDED USE
Reagents for In Vitro quantitative automated measurement of the activity of Adenosine Deaminase - ADA (EC 3.5. 4.4) in samples of human serum or pleuritic fluid from the general patient population. Measurements of ADA are to be used along with other in vitro and in vivo tests and physical examination by licensed physicians, as an aid for diagnosis of tuberculosis.

This reagent is formulated specifically for use with Diatron Pictus® P700 and P500 analyzers.
For in vitro diagnostic use only by trained laboratory professionals.

CLINICAL SIGNIFICANCE
ADA catalyzes the conversion of adenosine into inosine. The concentration of enzyme in serum is increased in several conditions, and measurement of enzyme levels can be used as a diagnostic tool in several cases.
ADA activity is increased in hepatitis, cirrhosis, hemolytic anemia, rheumatoid and typhoid fever, Mediterranean anemia, myelogenous leukemia, tuberculosis, and autoimmune diseases. Especially in children, enzyme activity is significantly increased in cases of tuberculosis, when compared to any other respiratory system disease. When combined with γ-GT, it can contribute greatly to the diagnosis of hepatic conditions. It should be noted that enzyme levels are significantly low in conditions of the biliary tract, while it is systematically increased in chronic liver conditions. ADA enzymatic activity is due to two isoenzymes, ADA1 and ADA2. The ADA1 isoenzyme is found both as a monomer and a dimer in all cell types, exhibiting the greatest activity in lymph cells and monocytes. The ADA2, on the contrary, only appears in monocytes. In tuberculous pleural effusions, ADA is mainly increased because of the ADA2 isoenzyme, suggesting increased production of the monocyte enzyme. In effusions caused by other reasons, increased ADA activity comes from lymphocytes, or neutrophils, and mainly because of the ADA1 isoenzyme.

METHOD PRINCIPLE
The enzymatic method is applied. The kinetic determination of ADA is based on the following reactions:

Adenosine $\xrightarrow{ADA}$ Inosine + Ammonia

Inosine + Phosphate $\xrightarrow{NP}$ Hypoxanthine + Ribose phosphate

Hypoxanthine + O_2 + H_2O $\xrightarrow{XO}$ Xanthine + H_2O_2

Hypoxanthine + O_2 + H_2O $\xrightarrow{XO}$ Uric acid + H_2O_2

H_2O_2 + TOOS + 4-aminoantipyrine $\xrightarrow{POD}$ Quinoneimine + 2 H_2O + HI

NP: nucleic phosphorylase **XO:** xanthine oxidase **POD:** Peroxidase
The increase in absorbance at 550 nm is proportional to ADA activity.

METHOD LIMITATIONS
Refer to the book "Effects of Preanalytical Variables on Clinical Laboratory Tests" for possible interference of other pharmaceutical agents in this particular test. Interference of other agents is described in the "Clinical Guide to Laboratory Tests». This reagent is formulated specifically for use with Diatron Pictus® P700 and P500 analyzers. For additional information please contact customer support at Diatron or Medicon.

REAGENT COMPOSITION

Reagent 1 (R1)		Reagent 2 (R2)	
Buffer (pH 8.0):	50 mmol/L	Buffer (pH 4.0):	50 mM
4-AA:	1 mM	Adenosine:	10 mM
PNP:	> 500 U/L	TOOS:	1.5 mM
XO:	> 1000 U/L	Non- reactive components and preservatives	
Peroxidase:	> 1000 U/L		
Non-reactive components and preservatives			

WARNINGS – PRECAUTIONS
- Samples should be considered as potentially infectious. Handle according to universal precautions and good laboratory practices.
- This reagent is designed for in vitro diagnostic use only. In vitro diagnostic reagents can be hazardous. They should be handled according to good laboratory practices and techniques. Avoid inhalation and contact with eyes and skin.
- The reagent contains sodium azide (NaN_3 < 0.1%). Avoid swallowing and contact of the reagent with skin and mucous membrane.
- Any serious incident that may occur in relation to this device must be reported by the user to the manufacturer and the competent authority of the country in which the user and/or the patient is established!
- Dispose all waste according to national laws.
- MSDS is available by Diatron or MEDICON upon request.

PREPARATION
Reagents R1 and R2 are liquid, ready to use, when placed in the corresponding positions on the analyzer. The vials bear barcodes for automatic recognition by Diatron Pictus® P700 / P500 analyzers.

REAGENT DETERIORATION
The reagent should not be used:
- When it does not exhibit the specified linearity or recovery of control values lies outside the acceptable range after recalibration.
- When it appears cloudy.
- After prolonged exposure to sunlight or high temperature.

SHELF LIFE
Unopened, the reagents are stable up to the stated expiry date when stored at 2 – 8°C. Once opened, they remain stable for 1 month, if stored in the cooled reagent tray of the Diatron Pictus® P700 or P500 analyzers.

SAMPLE Serum or pleural fluid may be used as specimen. Use established Good Laboratory Practices for sampling, transport and separation from blood cells. Collect specimen prior to use of antimicrobial agents. Wherever possible, indicate clearly that patient is on antitubercular drugs. No special preparation of the patient is required prior to sample collection. It is highly recommended to use fresh sample specimens for testing. Do not use hemolyzed, contaminated or turbid sample specimens. Anti-coagulants other than Li-heparin have not been tested and should not be used. For pleural fluid specimens disinfect the site and collect with aseptic precautions in EDTA. It has been reported that at ambient temperatures, the levels of ADA decline significantly with time, so transport of samples must be done at 2 – 8°C. ADA is stable in serum samples for 3 days when stored at 2 – 8°C, and in pleural fluid for 2 days when stored at 2 – 8°C. Pleural fluid samples collected in EDTA and stored at 4°C to -20 °C within 1 h after collection show no evidence of significant increases or decrease in enzyme activity for at least 28 days. Release of ammonia in samples, even without contamination may interfere with results after this period.

CALIBRATION Diatron offers MEDICON ADA Calibrator (1478-0900) traceable to Medicon Master Lot for ADA calibration. Calibrate the assay every 2 weeks on the Diatron Pictus® P700 or P500 analyzers. Calibration should also be repeated after major maintenance is performed on the analyzer, after a critical part is replaced, or when a significant shift in control values occurs.

QUALITY CONTROL Diatron offers MEDICON ADA control (code: 1478-0905) for quality control.
Control recovery should lie within the acceptable range. Results outside the acceptable range even after recalibration could be due to reagent deterioration, unsuitable storage conditions or control deterioration, instrument malfunction, or error during test procedure.

MATERIALS REQUIRED BUT NOT PROVIDED WITH THE KIT
- ADA calibrator
- Quality control material
- Diatron Pictus® analyzer
- Common laboratory equipment

REFERENCE INTERVALS
Intervals for Total ADA are mentioned, indicatively:
Serum/Plasma: 4 – 20 U/L **Pleuritic fluid:** 0 – 24 U/L **CSF:** 0 - 10U/L
Each laboratory should determine its own expected values as dictated by good laboratory practice.

WASTE DISPOSAL
This product contains sodium azide (NaN_3), which forms sensitive explosive compounds with copper or lead. Flush waste pipes with water after the disposal of undiluted reagent in order to avoid azide build up in the drain pipes.

SPECIFIC PERFORMANCE CHARACTERISTICS
The following values are representative of the reagent performance on Diatron Pictus® P700 or P500 analyzers. The reagent performance has been evaluated on other types of analyzers, covering all requirements of the 98/79 IVD Directive. A list of analyzers with the corresponding performance characteristics is available in the special leaflet accompanying the insert. The results taken in your laboratory may differ from these values.
Linearity 140 U/L
Lowest detection limit 2.0 U/L
The lowest detection limit (LDL) is defined as the lowest concentration of analyte that is distinguishable from zero. A sample free of analyte is assayed 20 times within the assay and the LDL is calculated as the absolute mean plus three standard deviations.
Precision: Precision is estimated on two concentration levels of analyte according to CLSI protocol EP5-T (20 consecutive days, 2 runs per day, 2 repeats per run).

Pictus® P700 and P500	
Level (U/L)	**%CV**
23.3	1.99
44.4	1.16
Level (U/L)	**TOTAL %CV**
23.3	2.36
44.4	2.04

INTERFERENCES - Criterion: recovery within ±10% from target value

	(Insignificant up to)
Triglycerides	3000 mg/dL
Hemoglobin	400 mg/dL
Bilirubin	50 mg/dL
Ascorbate	3 mg/dL

Correlation: A comparison was performed between this reagent on a Diatron Pictus® P700 and P500 analyzer and another commercially available product. The results were as follows:
Y = 1.015X + 0.655 R=0.9803 N=85 Sample range = 5.2 – 50 U/L

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SYMBOLS

Manufacturer	IVD *In vitro* diagnostic medical device
Temperature Limit	REF Catalogue Number
Caution	Σ Contains sufficient for <n> tests

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