KAISER PERMANENTE®
COLORADO LABORATORY

ALCOHOL - VITROS 350

PRINCIPLE:
The VITROS ALC Slide is a multilayered, analytical element coated on a polyester support. A drop of patient sample is deposited on the slide and is evenly distributed by the spreading layer to the underlying layers. Ethanol in the sample is oxidized by alcohol dehydrogenase (ADH) to acetaldehyde. The coenzyme nicotinamide adenine dinucleotide (NAD^+) is transformed into its reduced form (NADH). Tris(hydroxymethyl)aminomethane (TRIS) buffer in the reaction layers traps the acetaldehyde to drive the reaction to completion. The reflection density of the NADH is measured and is proportional to the concentration of ethanol in the sample. For further details, see individual method sheet in the VITROS "Instructions for Use Manual".

SCOPE:
Medical Technologists and Medical Laboratory Technicians

SPECIMEN REQUIREMENTS:
1 Serum or Heparinized plasma (note: lithium heparin sample required if running as a panel with electrolytes)
2 Specimens are retained in stoppered containers for one (1) week in the specimen refrigerator. Specimens are stable for 2 weeks at 2-8 degrees C; room temperature 18-28 degrees C for 2 days; frozen at -18 degrees C for up to one month.

Do not cleanse the sample draw site with alcohol, use only aqueous disinfectants.

EQUIPMENT AND MATERIALS:
• VITROS ALC Slides
• VITROS Calibrator Kit 8
• Quality Control Materials, 3 Levels (see Quality Control Material Procedure)
• VITROS Chemistry Products 7% BSA
• VITROS Chemistry Products FS Diluent Pack 2 (BSA/Saline) (for on-analyzer dilution)
• Sample cups

REAGENTS:
1. **Slide Ingredients:** Alcohol dehydrogenase (yeast, E.C.1.1.1.1) 1.1 U; nicotinamide adenine dinucleotide 0.8 mg and tris(hydroxymethyl)aminomethane 1.0 mg.

2. ***Inactive ingredients:*** Polymer beads, binders, buffer, and surfactants.

Cartridge Handling, Storage and Stability:

1. **Warm at room temperature 60 minutes in the foil wrapper before putting on the instrument.**
2. **Store frozen at -18 degrees C or below.**
3. **Stable on instrument for one (1) week.**
4. ALC Slides are stable until the expiration date on the carton when they are stored and handled as specified.
5. **Note: Do not use slide cartridges with damaged or incompletely sealed packaging.** Inspect the packaging for damage and use caution when opening to avoid damaging package.
6. Unwrap and load the cartridge into the Vitros slide supply.

CALIBRATION:

1 VITROS Chemistry Calibration Kit 8.
2 Store unopened – frozen at -18degrees C or below.
3 Store reconstituted at 2-8 degrees C. Stable for 24 hr.

See Calibration section of VITROS Operations Manual.

QUALITY CONTROL:

For Quality Control Procedure and Materials used, Reporting Ranges and other operational details, see that section of the Vitros procedure manual.

PROCEDURE:

Instrument Operating Instructions:

Refer to the operating instructions for the VITROS 350 Chemistry System.

****IMPORTANT:**

Bring all fluids and samples to room temperature, 18°.28°C, prior to analysis.

Sample Dilution

Serum and Plasma

If Alcohol concentration exceeds the system's measurement range: *

Manual Sample Dilution

1. Dilute the sample with VITROS 7% BSA. An initial twofold dilution is recommended.
2. Reanalyze.

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3. Multiply the results by the dilution factor to obtain an estimate of the original sample's ethanol concentration.

On-Analyzer dilution

Not recommended

REPORTING RESULTS:

Results are transmitted to the LIS and if necessary, may be reported directly from the Vitros printout.

REFERENCE RANGE:

Negative <10 mg/dL
Toxic 50-100 mg/dL

LIMITATIONS OF THE PROCEDURE:

Interfering substances:

Interferent *	Interferent Concentration		ETOH CONC.Conv. (mg/dL)	Average Bias Conv. (mg/dL)
Metronidazole	12.5 mg/dL	(0.73 mmol/L)	95	8
	25 mg/dL	(1.46 mmol/L)	95	19
Methotexate	45.4 mg/dL	(1.0 mmol/L)	98	11.0

DISTRIBUTION:

1 KP Laboratory Website - Policies and Procedure - MOL Chemistry Section
2 Regional Reference Laboratory - QA Manager Document Control

REFERENCES:

1.Tietz NW (ed). *Fundamentals of Clinical Chemistry*. ed. 3. Philadelphia: WB Saunders; 328.329; 1987.
2. Tietz NW. *Textbook of Clinical Chemistry*. Philadelphia: WB Saunders; 589; 1986.
3. Young DS. *Effects of Drugs on Clinical Laboratory Tests*. ed. 4. Washington D.C.: AACC
4. VITROS ALC Slides Test Methodology sheet.

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