

# PTS PANELS CHOL+HDL Test Panel Test Strips

for use with CardioChek P•A™ Analyzer

## INTENDED USE

PTS PANELS CHOL+HDL Test Panel test strips measure total cholesterol, and HDL cholesterol in whole blood. Cholesterol and HDL cholesterol measurements are used in the diagnosis and treatment of lipoprotein metabolism and lipid disorders (such as diabetes mellitus), atherosclerosis, and various renal and liver diseases.

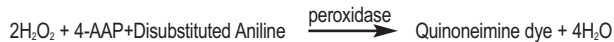
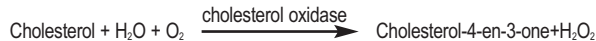
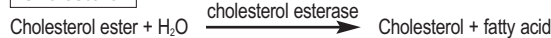
## SUMMARY

CHOL+HDL Test Panel test strips measure total cholesterol, and HDL cholesterol in whole blood with the CardioChek P•A analyzer. A MEMo Chip™ is provided with each package of test strips and must be properly inserted into the analyzer before any test can be run. The MEMo Chip contains test name, calibration curve, lot number and test strip expiration date. After the test strip is inserted into the analyzer and blood applied to the strip, test results are displayed in about two minutes.

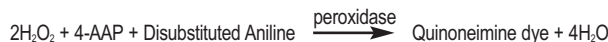
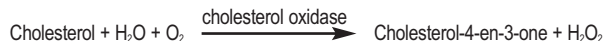
## PRINCIPLES OF THE TEST

When blood is applied to a test strip, the blood reacts to produce color that is read by the analyzer using reflectance photometry. The amount of color produced is proportional to the concentration. The enzymatic reactions that occur are listed below.

### Cholesterol



### HDL Cholesterol



## MATERIALS PROVIDED

- Vial of test strips and desiccant
- MEMo Chip (contains lot-specific test strip information)
- Instructions

## MATERIALS NEEDED BUT NOT PROVIDED

- CardioChek P•A analyzer
- Quality Control Materials
- Lancets for fingerstick (or venous blood collection supplies)
- Alcohol wipes and/or gauze
- Capillary Blood Collector or other precision pipet for blood collection and application

## CHEMICAL COMPOSITION

Each CHOL+HDL Test Panel test strip contains the following active ingredients:

Cholesterol Esterase (Microorganism)	≥ 1.75 I.U.
Cholesterol Oxidase (Microorganism)	≥ 1 I.U.
Peroxidase (Horse radish)	≥ 10 I.U.
4-aminoantipyrine	≥ 64 µg
Substituted aniline derivatives	≥ 60 µg
Phosphotungstic acid	≥ 0.3 mg
N, N-disubstituted aniline	≥ 50 µg
Glycerol-3-Phosphate Oxidase (Microorganism)	≥ 1.5 I.U.
Glycerol Kinase (Microorganism)	≥ 2.0 I.U.
ATP (Microorganism)	≥ 50 µg
Lipoprotein lipase (Microorganism)	≥ 4.5 I.U.

Each vial contains not more than 5g silica gel desiccant.

## STORAGE AND HANDLING

- Store test strip package in a cool, dry place at room temperature of 68-86°F (20-30°C). Strips may be stored in a refrigerator at 35-46°F (2-8°C), but must be brought to room temperature before using. Do not freeze.
- Keep away from heat and direct sunlight.
- Do not remove or discard the desiccant packet in the vial.
- Always replace vial cap immediately after removing a test strip.
- Use test strip as soon as you have removed it from the vial.
- Keep the MEMo Chip either in the analyzer or stored with the original lot of strips.
- Store the test strips in the original vial. Do not combine with other strips and do not store the MEMo Chip in the test strip vial.
- After opening, the test strips are stable until expiration date if vial is properly stored and always capped.

## PRECAUTIONS

- For *in vitro* diagnostic use.
- CHOL+HDL Test Panel test strips can only be used in the CardioChek P•A analyzer.
- Make sure the MEMo Chip and test strip lot numbers match. Never use a MEMo Chip from a different lot than the test strip.
- Out-of-date or expired strips cannot be used in your test system. Check vial for expiration date.
- Add all of the blood to the test strip at one time. If you do not get all of the blood on the strip, do not add blood to the same strip. Test again with a new unused test strip and fresh blood sample.
- Discard test strip after using. Strips are to be read once. Never insert or read a used test strip.
- **Do not ingest.**

## SPECIMEN COLLECTION AND PREPARATION

PTS PANELS Test Strips are designed for use with fresh capillary (fingerstick) whole blood. Fresh venous whole blood collected in EDTA or heparin tubes is also an acceptable sample. To obtain a drop of blood from a fingerstick, follow the steps listed below:

- Use of lotions and handcreams should be avoided before testing.
- Hands should be washed in warm water with antibacterial soap and rinsed and dried thoroughly.
- If you wipe the fingertip with alcohol, be sure that the alcohol dries completely before sticking the finger.
- Use a sterile, disposable lancet to puncture the side of the fingertip.
- Wipe away the first drop of blood with a clean piece of gauze.
- Gently, without force, apply pressure to the fingertip to accumulate a drop of blood.
- Excessive squeezing of the finger may alter test results.
- See the "TESTING" section for information on how to apply the blood to the test strip.
- Discard used materials properly.

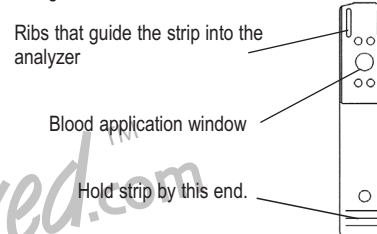
Caution: Handle and dispose of all materials coming in contact with blood according to universal precautions and guidelines.

## TESTING

**IMPORTANT: Read all instructions carefully before testing.**

1. Insert the MEMo Chip that matches the lot number on the test strip vial and press one of the buttons to turn the analyzer ON.

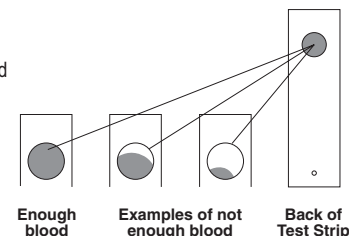
2. Hold the test strip by the end with the horizontal raised lines. Insert the opposite end of the strip into analyzer. Push the strip in as far as it will go.



3. When APPLY SAMPLE appears on the display, use a capillary blood collector or pipet to apply 35-40 µL of whole blood to the test strip blood application window.

4. In about two minutes, the cholesterol result will appear on the display. (To display HDL and TC/HDL, press the (NEXT) button.) Remove and discard strip. **DO NOT** add more blood to a test strip that has been used.

To verify that enough blood has been applied to the test strip, after testing is completed, remove strip and check back of strip. If areas are not completely and evenly colored, discard strip and test again. See diagram.



## TEST RESULTS

Results are displayed in either milligrams per deciliter (mg/dL) or in millimoles per liter (mmol/L). The mg/dL measurement is a US version, while mmol/L is used in many countries around the world. The CardioChek P•A is preset to US units by the manufacturer. No calculation of results is necessary. To change to INTL (mmol/L) units, please see CardioChek P•A User Guide.



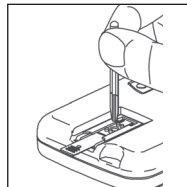
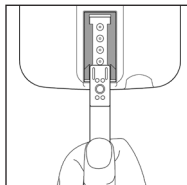
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## CALIBRATION AND QUALITY CONTROL

Quality Control tests are used to ensure that the total system (analyzer, strips, MEMo Chip) is working properly and that the test results are accurate and reliable within the limits of the system. Users should run controls when results are questionable or to comply with their own facility's quality control requirements. See the CardioChek P•A User Guide for instructions on how to run controls. The CardioChek P•A is factory calibrated before it is packaged. Use the Check Strip supplied to verify that the analyzer's electronics and optics are working properly. The Check Strip is NOT a Quality Control test. Please refer to the CardioChek P•A User Guide for the proper procedure to be used to perform a Quality Control test.

## EXPECTED VALUES

The expected or reference ranges recommended are from the US National Cholesterol Education Program (NCEP) 2001 Guidelines and are:<sup>9</sup>

### Cholesterol (Total) Expected Values

- Below 200 mg/dL (5.18 mmol/L) – desirable
- 200-239 mg/dL (5.18-6.20 mmol/L) – borderline to high
- 240 mg/dL (6.21 mmol/L) and above – high

### HDL Cholesterol Expected Values

- Below 40 mg/dL (1.04 mmol/L) – low HDL (High risk for CHD\*)
- 60 mg/dL (1.55 mmol/L) and above – high HDL (Low risk for CHD\*)

\*CHD - Coronary Heart Disease

## LIMITATIONS OF THE PROCEDURE

Studies were performed to test for substances that may interfere with these tests. The results are below.

1. PRESERVATIVES: EDTA and heparin in venous blood collection tubes had no effect on the results of the test strip.
2. DRUGS: Dopamine and methyl dopa decreased the results.
3. METABOLITES: Extremely high doses of ascorbic acid (Vitamin C) decreased the results of all the lipids.
4. HEMATOCRIT: No hematocrit effect was observed for samples between 30 and 45% HCT.

### Additional Considerations:

1. NEONATAL USE: There has been no data generated to validate the use of this system with neonatal blood specimens. Until such data become available, this test system should not be used on neonatal samples.
2. Cosmetics such as handcreams or lotions often contain glycerol. Use of these products may cause inaccurate results.
3. Displayed results are rounded.

## MEASURING RANGE

CHOL+HDL Test Panel Test Strips will display numeric results in the following ranges:

Cholesterol: 100-400 mg/dL (2.59 - 10.36 mmol/L)

HDL Cholesterol: 15-100 mg/dL (0.39 - 2.59 mmol/L)

Results below the range will read, "LOW" or "< \_\_\_" (less than the measuring range). Results above this range will read, "HIGH" or "> \_\_\_" (greater than the measuring range).

IMPORTANT: If you get a result of "LOW", "< \_\_\_" (less than), "HIGH", "> \_\_\_" (greater than) or an unexpected result for any test, test again with a new unused test strip.

## PERFORMANCE CHARACTERISTICS

1. ACCURACY: Results from clinical studies comparing the PTS PANELS Test Strips to the Cholesterol Reference Method Laboratory Network (CRMLN) serum methods are listed below:

PTS PANELS **Cholesterol** vs. Abell-Kendall traceable method

n = 125 samples

range of samples tested: 125 to >400 mg/dL

y = 1.01x - 1.83

r = 0.91

PTS PANELS **HDL Cholesterol** vs. Abell-Kendall method run by a CRMLN laboratory

n = 87 samples

range of samples tested: <25 to 80 mg/dL

y = 1.10x - 4.1

r = 0.89

The CHOL+HDL Test Panel test strips were run by professionals on a CardioChek P•A and the results were compared to results from PTS PANELS single Test Strips. The results are listed by test as follows:

### Cholesterol Comparison

n = 110 samples

range of samples tested: 134 to 315 mg/dL

y = 0.94x +14.5

r = 0.92

### HDL Cholesterol Comparison

n = 109 samples

range of samples tested: 30 to 83 mg/dL

y = 0.92x +15.4

r = 0.94

The CHOL+HDL Strips compare well to the PTS PANELS Cholesterol, and HDL Cholesterol.

2. PRECISION: Laboratory professionals tested two levels of whole blood for cholesterol and HDL cholesterol using CHOL+HDL Test Strips. The following results were obtained:

### Cholesterol

No. of Observations (n)	20	20
Mean Chol Conc. (mg/dL)	197.2	251.3
Std. Deviation (mg/dL)	8.4	10.0
Coefficient of Variation (%)	4.3	4.0

### HDL Cholesterol

No. of Observations (n)	20	20
Mean HDL Conc. (mg/dL)	39.2	61.5
Std. Deviation (mg/dL)	2.5	2.8
Coefficient of Variation (%)	6.4	4.6

3. INTERFERENCE: See Limitations Section.

## CLIA INFORMATION (US only)

Complexity Categorization: Waived

## AVAILABILITY

REF/CAT NO.

1708

1795

0739

0721

0722

DESCRIPTION

CardioChek P•A Analyzer

CHOL+HDL Test Panel Test Strips, 15 count

Capillary Blood Collector (Pipet) Kit-40 µL, 16 count

PTS PANELS Multi-Chemistry Controls – Level 1 & Level 2

PTS PANELS HDL Cholesterol Controls – Level 1 & Level 2

## REFERENCES

1. Data on file
2. Clinical Diagnosis and Management by Laboratory Methods, Eighteenth Edition, John Bernard Henry, Editor., W.B. Saunders Company, Philadelphia, 1991.
3. NCCLS Proposed Guideline EP6-P, Evaluation of the Linearity of Quantitative Analytical Methods. Villanova, PA: National Committee for Clinical Laboratory Standards, 1986.
4. NCCLS Tentative Guideline EP7-T, Interference Testing in Clinical Chemistry. Villanova, PA: National Committee for Clinical Laboratory Standards, 1986.
5. NCCLS Evaluation of Precision Performance of Clinical Chemistry Devices: Approved Guideline. 1999:19(2):1-48.EP5-A.
6. Tietz, NW: Textbook of Clinical Chemistry, W.B. Saunders Co., Philadelphia, PA 1986 pp. 1271-1279, 1821.
7. Young, DL, et. Al., Effects of Drugs on Clinical Laboratory Tests, AACC Press, Wash., D.C., 1990.
8. National Cholesterol Education Program 2001 Guidelines, National Institutes of Health, National Heart, Lung and Blood Institute, May, 2001.
9. ATP III NCEP Guidelines for CHD Risk. JAMA. 2001. 285:2486-2509.
10. Castelli, WP, et al. Circulation 1983. 67(4): 730-734.

The CardioChek P•A and PTS PANELS Test Strips are manufactured in the US by Polymer Technology Systems, Inc. Indianapolis, IN 46268.

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## Explanation of Symbols

	Use By/ Expiration date	<b>REF</b>	Catalog number
			Consult instructions for use
	Batch Code/ Lot number		Manufacturer
	For in vitro diagnostic use		Store at/Temperature limitation
<b>CE</b> 0197	This product fulfils the requirements of Directive 98/79/EC on in vitro diagnostic medical devices.		