

JUL 22 1997

K972041

**SUMMARY OF SAFETY AND EFFECTIVENESS****EZ HDL™ CHOLESTEROL, PROCEDURE NO. 354**

Blood total cholesterol levels have long been known to be related to coronary heart disease (CHD). In recent years, in addition to total cholesterol, high density lipoprotein cholesterol (HDL-C) has become an important tool used to assess an individual risk of developing CHD since a strong negative relationship between HDL-C concentration and the incidence of CHD was reported.<sup>1</sup> Thus, there has been substantial interest in HDL-C measurements, and most clinical laboratories routinely perform HDL-C analysis. Selective chemical precipitation techniques are widely used for the determination of HDL-C such as heparin-manganese, dextran sulfate-magnesium, and phosphotungstate-magnesium.<sup>2</sup> However, these techniques require physical separation via centrifugation, which is not suited to large scale lab use.

Anti human  $\beta$ -lipoprotein antibody in Reagent 1 binds to lipoproteins (LDL, VLDL, and chylomicrons) other than HDL. The antigen-antibody complexes formed block enzyme reactions when Reagent 2 is added. Cholesterol esterase (CHE) and cholesterol oxidase (CO) in Reagent 2 react only with HDL-C. Hydrogen peroxide produced by the enzyme reactions with HDL-C yields a blue color complex upon oxidase condensation with FDAOS and 4-aminoantipyrine (4AA) in the presence of peroxidase (POD). By measuring the absorbance of the blue color complex produced, at approximately 600nm, the HDL-C concentration in the sample can be calculated when compared with the absorbance of the EZ HDL™ Calibrator.

The safety and effectiveness of the Sigma Diagnostics EZ HDL™ Cholesterol Reagent, Procedure 354 is demonstrated by its substantial equivalency to a Cholesterol Reference Method Laboratory Network standardized 50K molecular weight Dextran Sulphate precipitation method. Both HDL test systems are used to measure HDL-C concentrations in serum and plasma. In comparison studies against this Dextran Sulphate method, a correlation coefficient of 0.980 and regression equation  $y = 0.82x + 7.48$  were obtained with 97 serum samples. In additional comparison studies against the Sigma Diagnostics 352-7 Phosphotungstic Acid procedure, a correlation coefficient of 0.990 and regression equation  $y = 0.97x + 5.07$  were obtained. Within run precision and total precision on serum samples indicate acceptable values can be replicated on a day to day basis. Sigma Diagnostics EZ HDL™ Cholesterol Reagent has been determined to be linear to 180 mg/dL and can be used with samples with triglyceride concentrations up to 2100 mg/dL.

**REFERENCES**

1. Rifai N, Warnick GR, Ed. Laboratory Measurement of Lipids, Lipoproteins and Apolipoproteins. AACC Press, Washington, DC, USA, 1994
2. Burtis CA, Ashwood ER, Ed. Tietz Textbook of Clinical Chemistry, 2nd ed., Saunders, Philadelphia, 1994

Date of Preparation: July 1997

Contact: William R. Gilbert (314) 771-3122



DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

JUL 22 1997

Food and Drug Administration  
2098 Gaither Road  
Rockville MD 20850

William R. Gilbert, Ph.D.  
• Manager, Scientific Affairs  
Sigma Diagnostics  
545 South Ewing Avenue  
St. Louis, Missouri 63103

Re: K972041  
EZ HDL™ Cholesterol Reagent/Calibrator  
Regulatory Class: I & II  
Product Code: LBS, JIS  
Dated: May 30, 1997  
Received: June 2, 1997

Dear Dr. Gilbert:

We have reviewed your Section 510(k) notification of intent to market the device referenced above and we have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to devices marketed in interstate commerce prior to May 28, 1976, the enactment date of the Medical Device Amendments or to devices that have been reclassified in accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (Act). You may, therefore, market the device, subject to the general controls provisions of the Act. The general controls provisions of the Act include requirements for annual registration, listing of devices, good manufacturing practice, labeling, and prohibitions against misbranding and adulteration.

If your device is classified (see above) into either class II (Special Controls) or class III (Pre-market Approval), it may be subject to such additional controls. Existing major regulations affecting your device can be found in the Code of Federal Regulations, Title 21, Parts 800 to 895. A substantially equivalent determination assumes compliance with the current Good Manufacturing Practice requirement, as set forth in the Quality System Regulation (QS) for Medical Devices: General regulation (21 CFR Part 820) and that, through periodic (QS) inspections, the Food and Drug Administration (FDA) will verify such assumptions. Failure to comply with the GMP regulation may result in regulatory action. In addition, FDA may publish further announcements concerning your device in the Federal Register. Please note: this response to your pre-market notification submission does not affect any obligation you might have under sections 531 through 542 of the Act for devices under the Electronic Product Radiation Control provisions, or other Federal Laws or Regulations.

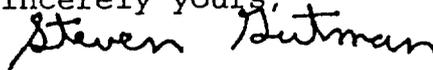
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Under the Clinical Laboratory Improvement Amendments of 1988 (CLIA-88), this device may require a CLIA complexity categorization. To determine if it does, you should contact the Centers for Disease Control and Prevention (CDC) at (770) 488-7655.

This letter will allow you to begin marketing your device as described in your 510(k) premarket notification. The FDA finding of substantial equivalence of your device to a legally marketed predicate device results in a classification for your device and thus, permits your device to proceed to the market.

If you desire specific advice for your device on our labeling regulation (21 CFR Part 801 and additionally 809.10 for in vitro diagnostic devices), please contact the Office of Compliance at (301) 594-4588. Additionally, for questions on the promotion and advertising of your device, please contact the Office of Compliance at (301) 594-4639. Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21 CFR 807.97). Other general information on your responsibilities under the Act may be obtained from the Division of Small Manufacturers Assistance at its toll-free number (800) 638-2041 or (301) 443-6597 or at its internet address "<http://www.fda.gov/cdrh/dsmamain.html>".

Sincerely yours,



Steven I. Gutman, M.D., M.B.A.  
Director  
Division of Clinical  
Laboratory Devices  
Office of Device Evaluation  
Center for Devices and  
Radiological Health

Enclosure

510(k) Number (if known): K-972041

Device Name: Sigma Diagnostics EZ HDL™ Reagent (Procedure 354)

**Indications For Use:**

Sigma Diagnostics EZ HDL™ Reagent (Procedure 354) is a device intended to measure HDL cholesterol in plasma and serum. Cholesterol measurements are used in the diagnosis and treatment of disorders involving excess cholesterol in the blood and lipid and lipoprotein metabolism disorders.

Sigma Diagnostics EZ HDL™ Calibrator (354-5) is a device intended for medical purposes for use in a HDL cholesterol test system to establish points of reference that are used in the determination of values in the measurement of HDL cholesterol in human specimens.

  
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(Division Sign-Off)  
Division of Clinical Laboratory Devices  
510(k) Number K-972041

(PLEASE DO NOT WRITE BELOW THIS LINE-CONTINUE ON ANOTHER PAGE IF NEEDED)

Concurrence of CDRH, Office of Device Evaluation (ODE)

Prescription Use   
(Per 21 CFR 801.109)

OR

Over-The-Counter Use