K-971353

OCT - 9 1997

SUMMARY OF SAFETY AND EFFECTIVENESS
FIBRINOGEN DETERMINATION KIT (PROC NO. 886/887)

Fibrinogen is the plasma protein precursor of fibrin, which when cross-linked, becomes the principal component of the fibrin clot. Thrombin cleaves fibrinogen to form a fibrin monomer. Fibrin monomers aggregate to form the insoluble fibrin polymers. Fibrinogen can be deficient in such conditions as congenital afibrinogenemia, hypofibrinogenemia and in some cases of dysfibrinogenemia. It can also be depressed in a number of disease states such as disseminated intravascular coagulation, systemic fibrinolysis, pancreatitis and severe hepatic dysfunction. Fibrinogen is an acute phase reactant protein whose concentration increases in response to many different physiological stimuli. It can be increased as a response to inflammatory states, with infections, during pregnancy and after trauma. It is elevated among smokers.[1,2] High fibrinogen levels in plasma have been associated with prethrombotic states. Fibrinogen levels have also been positively correlated to development of atherosclerotic cardiovascular disease and with the occurrence of myocardial infarction and stroke.[3,4] Because of the increased importance of the assessing fibrinogen levels, a reliable, sensitive procedure is necessary.

The method of Clauss[5] measures the rate of fibrinogen to fibrin conversion in the presence of excess thrombin and has been shown to be rapid, sensitive and precise.[6,7] When diluted plasma is clotted with excess thrombin, the fibrinogen level is inversely proportional to the clotting time, yielding a curvilinear relationship when plotted on log-log paper. A calibration curve prepared from a fibrinogen reference is used to determine the fibrinogen concentration in the test sample.

The safety and effectiveness of Sigma Diagnostics Fibrinogen Determination Kit, Procedure No. 888/887 has been demonstrated by showing its substantial equivalence to Sigma Diagnostics Fibrinogen Determination Kit, Procedure No. 880/881. One hundred two samples having fibrinogen concentrations ranging from 95 to 764 mg/dL were assayed on the Fibrometer with the described reagent (y) and with an established reagent (x). Comparison of the results yielded a correlation coefficient of 0.96 and a regression equation of $y = 0.91x + 28.3$. Precision studies demonstrated a within-run CV of less than 5% and total precision of 6% or less. The Sigma Diagnostics Fibrinogen Kit, Procedure No. 886/887 has been determined to be linear to 1000 mg/dL.

REFERENCES

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3. Kannel WB, Wolf PA, Castelli WP, D'Agostino RB. Fibrinogen and risk of cardiovascular disease: The Framingham Study. JAMA 258:1183-1186, 1987.
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5. Clauss, A: Gerinungs physiologische schnell Methods zur bestimmung des Fibrinogens. Acta Haematol 17:237, 1957
6. Koepke JA, Gilmer PH, Filip DJ et al: Studies of fibrinogen measurement in the CAP survey program. Am J Clin Pathol 63:984, 1975
7. Bovill EG, McDonagh J, Triplett DA, Arkin CF, Brand JT, Hayes TE, Kaczmarek E, Long T, Rock WA: Performance Characteristics of Fibrinogen Assays; Results of the College of American Pathologists Proficiency Testing Program 1988-1991. Arch. Pathol. Lab. Med. 117:58-66, 1993.

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Food and Drug Administration
2098 Gaither Road
Rockville MD 20850

OCT - 9 1997

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

Re: K971858
Trade Name: Fibrinogen Kit
Regulatory Class: II
Product Code: KQJ
Dated: August 6, 1997
Received: August 8, 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 (Premarket 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 premarket 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.

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 at (301) 443-6597 or at its internet address "http://www.fda.gov/cdrh/dsmamain.html"

Sincerely yours,

Steven Gutman

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): K971858

Device Name: Sigma Diagnostics Fibrinogen Kit

Indications For Use:

The Sigma Diagnostics Fibrinogen Kit is a device used to determine the fibrinogen levels in disseminated intravascular coagulation (nonlocalized clotting within blood vessels) and primary fibrinolysis (the dissolution of fibrin in a blood clot).

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

Concurrence of CDRH, Office of Device Evaluation (ODE)

(Division Sign-Off)
Division of Clinical Laboratory Devices
510(k) Number K971858

Prescription Use ✓
(Per 21 CFR 801.109)

OR

Over-The-Counter Use ____