DEC 16 1999

K993571

Summary of Safety and Effectiveness

As required by 21 CFR 807.92, the following 510(k) Summary is provided:

1. **Submitters Information**

Contact person:	Thomas F. Flynn Manager of Regulatory Affairs
Address:	Bayer Diagnostics Corporation 63 North Street Medfield, MA 02052
Phone:	508 359-3877
Date Summary Prepared:	October 18, 1999

2. **Device Information**

Proprietary Name:	Bayer Diagnostics ACS:180 VB12 Bayer Diagnostics ADVIA Centaur VB12
Common Name:	Immunoassay for vitamin B12

3. **Predicate Device Information**

Name:	Current legally marketed device (ACS:180 and ADVIA Centaur VB12)
Manufacturer:	Bayer Diagnostics Corporation

4. **Device Description**

The ACS:180 VB12 and ADVIA Centaur assays are competitive assays.

Vitamin B12, or cyanocobalamin, is a complex corrinoid compound containing four pyrrole rings that surround a single cobalt atom. Humans obtain vitamin B12 exclusively from animal dietary sources, such as meat, eggs, and milk. Vitamin B12 requires intrinsic factor, a protein secreted by the parietal cells in the gastric mucosa, for absorption. Vitamin B12 and intrinsic factor form a complex that attaches to receptors in the ileal mucosa, where proteins known as trans-cobalamins transport the vitamin B12 from the mucosal cells to the blood and tissues. Most vitamin B12 is stored in the liver as well as in the bone marrow and other tissues.

5. **Statement of Intended Use**

ACS180 VB12:
In vitro diagnostic use in the quantitative determination of vitamin B12 in serum, heparinized plasma, or EDTA plasma using the ADVIA Centaur System using the ACS:180® Automated Chemiluminescence Systems.

ADVIA Centaur:
In vitro diagnostic use in the quantitative determination of vitamin B12 in serum, heparinized plasma, or EDTA plasma using the ADVIA® Centaur System.

6. **Summary of Technological Characteristics**

The ACS:180 VB12 and ADVIA Centaur VB12 assays are competitive assays in which vitamin B12 from the patient sample competes with vitamin B12 labeled with acridinium ester in the Lite Reagent, for a limited amount of purified intrinsic factor, which is covalently coupled to paramagnetic particles in the Solid Phase. The assay uses Releasing Agent (sodium hydroxide) and DTT to release the vitamin B12 from the endogenous binding proteins in the sample and cobinamide to prevent rebinding after the Solid Phase is added to the sample.

7. **Performance Characteristics**

Expected Results:

To determine the reference range for the ACS:180 and ADVIA Centaur VB12 assays, data was obtained on 298 serum samples, including 253 samples from apparently healthy individuals and 45 samples from physician-diagnosed vitamin B12 deficient patients. Ninety-five percent of the serumACS:180 VB12 values for the apparently healthy individuals fell in the range of 211 to 911 pg/mL (156 to 672 pmol/L).

Category	Median (pg/mL)	Range (pg/mL)	Median (pmol/L)	Range (pmol/L)
Normal	382	211–911	282	156-672
Deficient	160	32–246	118	24–181

Sensitivity and Assay Reportable Range:

The ACS:180 and ADVIA Centaur VB12 assays measures vitamin B12 concentrations up to 2000 pg/mL (1476 pmol/L) with a minimum detectable concentration of 30 pg/mL (22 pmol/L).

Serum Versus Plasma Method Comparison:

ACS 180:

A comparison of values for 213 pairs of serum and plasma specimens in the range of 160 to 1000 pg/mL (118 to 738 pmol/L) yielded the following regression equation: plasma VB12 = 1.04 (serum VB12) + 9 pg/mL, r = 0.96

ADVIA Centaur:

A comparison of values for 207 pairs of serum and plasma specimens in the range of 147 to 1033 pg/mL (108 to 762 pmol/L) yielded the following regression equation: plasma VB12 = 1.03 (serum VB12) + 12 pg/mL, r = 0.96

Precision:

ACS180:

Four samples were assayed 3 times in 7 assays, on each of 11 systems (n=231 for each sample), over a period of 5 days. The following results were obtained:

Mean (pg/mL)	Mean (pmol/L)	Within-run % CV	Total % CV
1147	846	2.68	3.44
661	488	2.70	3.24
204	151	3.73	4.79
169	125	5.33	6.28

ADVIA Centaur:

Four samples were assayed 6 times, in each of 12 runs, on 6 systems, (n = 72 for each sample), over a period of 3 days. The following results were obtained:

Mean (pg/mL)	Mean (pmol/L)	Within-run % CV	Run-to-run % CV	Total % CV
178.76	131.89	5.0	9.2	10.4
207.22	152.89	4.0	4.4	5.9
608.83	449.19	2.7	2.7	3.8
1343.87	991.51	2.4	3.0	3.9

DEPARTMENT OF HEALTH & HUMAN SERVICES

Food and Drug Administration
2098 Gaither Road
Rockville MD 20850

DEC 16 1999

Mr. Thomas F. Flynn
Manager of Regulatory Affairs
Bayer Corporation
Business Group Diagnostics
63 North Street
Medfield, Massachusetts 02052-1688

Re: K993571
Trade Name: Chiron Diagnostics ACS:180 VB12 Assay
Regulatory Class: II
Product Code: CDD
Dated: October 18, 1999
Received: October 21, 1999

Dear Mr. Flynn:

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 legally marketed predicate 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 requirements, 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 (301) 443-6597, or at its internet address "http://www.fda.gov/cdrh/dsma/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): ~~K910343~~ K993571

Device Name: Chiron Diagnostics ACS:180 VB12 Assay

Indications for Use:

In vitro diagnostic use in the quantitative determination of vitamin B12 in serum, heparinized plasma, or EDTA plasma using the ADVIA Centaur System.

Division Sign-Off)
ivision of Clinical Laboratory Devices
0(k) Number K993571

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

Concurrence of CDRH, Office of Device Evaluation (ODE)

Prescription Use ✓ OR Over-The-Counter Use _____
(Per 21 CFR 801.109) (Optional Format 1-2-96)
510(k) Number (if known): ~~K910343~~ K993571