

DEC 27 2004

**510(k) SUMMARY  
K040972**

**1.0 Submitted By:**

C.C. Allain, Ph.D.  
Chief Scientific Officer  
GenChem, Inc.  
471 W. Lambert Road, Ste 107  
Brea, CA 92821  
Telephone: (714) 529-7125  
FAX: (714) 529-3339

**2.0 Date of Preparation: June 1, 2004**

**3.0 Regulatory Information:**

- 3.1 Regulation section:  
21 CFR § 862.1145 GenChem Calcium Reagent for the Beckman Synchron CX3 System.
- 3.2 Classification : Class II
- 3.3 Product Code: CJY
- 3.4 Panel: Clinical Chemistry (75)

**4.0 Device Description:**

GenChem's Calcium reagent is a liquid composed of Arsenazo III and buffer for the quantitative determination of Calcium in serum, plasma and urine on the Beckman Synchron CX3® System.

**5.0 Substantial Equivalence Information:**

- a. Predicate Device Name: HICHEM Calcium Reagent for the CX3
- b. Predicate K Number: K941764
- c. Comparison with Predicate: The two products have the same intended use, chemical principle, composition, analytical range and stability.

**6.0 Performance Characteristics:** All studies were performed on the Beckman CX3 Synchron Analyzer

- 6.1 Precision/Reproducibility:

Control sera and diluted urine pools were each assayed 3 times per day over 10 days on a SYNCHRON CX3® System. Estimates of within run and total imprecision were calculated as described in NCCLS publication EP3-T.<sup>8</sup>

Precision of Total Calcium Recoveries (mg/dL)

Sample	n	Within Run		Total Imprecision		
		mean	SD	%CV	SD	%CV
Serum 1	60	7.2	0.06	0.7	0.10	1.4
Serum 2	60	10.6	0.05	0.5	0.09	0.9
Serum 3	60	14.0	0.05	0.3	0.09	0.6
Urine 1	60	4.0	0.03	0.7	0.16	4.1
Urine 2	60	12.7	0.06	0.5	0.13	1.0

6.2 **Linearity/assay reportable range:**

Linearity was performed according to NCCLS Guideline EP6-A. Commercially available linearity standards ranging from 0 to 15 mg/dL were analyzed in triplicate on the Beckman CX3® and the results analyzed by the Least Squares method. The results gave a slope of 0.911 with an intercept of 0.34, a standard error of estimate of 0.35 and  $r^2 = 1.000$ . Samples exceeding these limits should be diluted with normal saline and reanalyzed. Multiply the result by the appropriate dilution factor.

Specimens	Range	Usable Range	
		Conventional Units	SI Units
All	Normal	0.1 to 15 mg/dL	0.5 – 3.75 mmol/L

6.3 **SENSITIVITY**

The sensitivity of this method is 0.1 mg/dL and was documented through the repetitive assay of a diluted serum control. The observed sensitivity limit, calculated as three standard deviations of a 21 replicate within run precision study, is 0.05 mg/dL and is below the claimed limit of 0.1 mg/dL.

6.4 **Analytical Specificity**

Determined according to NCCLS EP7-A. Hemoglobin levels up to 500 mg/dL, Bilirubin levels up to 20 mg/dL, and Lipemia levels up to 1800 mg/dL were tested and did not show any adverse effect on a stock sample with a calcium level of 9.4 mg/dL. Stock solutions of the substance to be tested were prepared at 20x concentrations and 0.5 ml of this stock was placed in a 10 ml volumetric flask and made up to volume with the base pool. The control stock was prepared similarly but with water as the diluent.

Heparin, Lithium Heparin Ammonium Heparin, and EDTA are acceptable anticoagulants.

### 7.0 Patient Comparison

Serum, plasma, and urine specimens, collected from adult patients, ranging from 0 to 15.2 mg/dL were assayed for total calcium on a SYNCHRON CX3® System using GenChem and Beckman® calcium reagents. Results were compared by least squares linear regression and the following statistics were obtained.

VALUE	SERUM	PLASMA	URINE
Intercept	-0.1	-0.1	0.1
Slope	0.994	0.973	0.999
R <sup>2</sup> Value	0.971	0.980	0.999
N	82	84	76
Range (mg/dL)	7.0 – 10.6	7.4 – 10.5	0.4 – 15.2

### 8.0 Expected Values/ Reference Range:

The expected values for total calcium are listed below. Use these ranges only as guides. Each laboratory should establish its own normal ranges.

Specimens	Normal Ranges	
	Conventional Units	SI Units
Serum/Plasma	8.4 - 10.2 mg/dL	2.10 - 2.55 mmol/L
Urine	100 - 300 mg/day	2.5 - 7.5 mmol/day



DEPARTMENT OF HEALTH & HUMAN SERVICES

Food and Drug Administration  
2098 Gaither Road  
Rockville MD 20850

DEC 27 2004

C.C. Allain, Ph.D.  
Chief Scientific Officer  
GenChem, Inc.  
471 W. Lambert Road, Suite 107  
Brea, CA 92821

Re: k040972  
Trade/Device Name: GenChem Calcium, Azo Dye Reagent  
Regulation Number: 21 CFR 862.1145  
Regulation Name: Calcium test system  
Regulatory Class: Class II  
Product Code: CJY  
Dated: October 15, 2004  
Received: October 15, 2004

Dear Dr. Allain:

We have reviewed your Section 510(k) premarket notification of intent to market the device referenced above and 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) that do not require approval of a premarket approval application (PMA). 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 (PMA), it may be subject to such additional controls. Existing major regulations affecting your device can be found in Title 21, Code of Federal Regulations (CFR), Parts 800 to 895. In addition, FDA may publish further announcements concerning your device in the Federal Register.

Please be advised that FDA's issuance of a substantial equivalence determination does not mean that FDA has made a determination that your device complies with other requirements of the Act or any Federal statutes and regulations administered by other Federal agencies. You must comply with all the Act's requirements, including, but not limited to: registration and listing (21 CFR Part 807); labeling (21 CFR Parts 801 and 809); and good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820).

Page 2 –

This letter will allow you to begin marketing your device as described in your Section 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 information about the application of labeling requirements to your device, or questions on the promotion and advertising of your device, please contact the Office of In Vitro Diagnostic Device Evaluation and Safety at (301) 594-3084. Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21CFR Part 807.97). You may obtain other general information on your responsibilities under the Act from the Division of Small Manufacturers, International and Consumer 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,

A handwritten signature in cursive script that reads "Cornelia B. Rooks".

Cornelia B. Rooks, MA  
Acting Director  
Division of Chemistry and Toxicology  
Office of In Vitro Diagnostic Device  
Evaluation and Safety  
Center for Devices and  
Radiological Health

Enclosure

**INDICATIONS FOR USE**

510(k) Number: K040972

Device Name: GenChem Calcium, Azo Dye Reagent

Indications For Use:

GenChem Calcium Reagent is intended for the quantitative determination of total calcium in serum, plasma and urine on the Beckman SYNCHRON CX3® System to aid in the diagnosis of diseases associated with hypercalcemia and hypocalcemia.

Prescription Use  X

AND/OR

Over-The-Counter Use \_\_\_\_\_

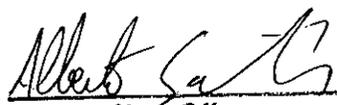
(Part 21 CFR 801 Subpart D)

(21 CFR 807 Subpart C)

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

---

Concurrence of CDRH, Office of In Vitro Diagnostic Devices (OIVD)

  
Division Sign-Off

Office of In Vitro Diagnostic  
Device Evaluation and Safety

510(k)  K040972