K963292

Roche Diagnostic Systems
A Member of the Roche Group

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Direct Dial
Fax

510(k) Summary

Roche COBAS® INTEGRA Reagent Cassettes

In accordance with the Safe Medical Devices Act of 1990, a 510(k) summary is provided as outlined in 21 CFR 807.92.

I. Identification of 510(k) Sponsor:

Roche Diagnostic Systems, Inc.
a subsidiary of Hoffmann-La Roche, Inc.
Branchburg Township
1080 U.S. Highway 202
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510(k) Submission dated August 20, 1996

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II. Device Name:

The device name, including both the trade/proprietary name and the classification name are provided in the table below.

Table 1

Product Name	Classification Name	Regulatory Class	CFR Classification Number	Predicate Product Name	Date Predicate Cleared	Predicate 510(k) Number
Chemistry Panel						
COBAS INTEGRA Calcium (modification)	Calcium test system	Class II	862.1145	COBAS INTEGRA Calcium Boehringer Mannheim Calcium Reagent	9/5/95 1/23/85	K951595 K850281
Immunology Panel						
COBAS INTEGRA Antithrombin III	Antithrombin III assay	Class II	866.7060	Berichrom Antithrombin III Reagent	4/19/94	K933125

COBAS INTEGRA Ferritin	Ferritin immunological test system	Class II	866.5340	Behring N Latex Ferritin Reagent	3/27/95	K950707
COBAS INTEGRA Myoglobin	Myoglobin immunological test system	Class II	866.5680	Behring N Latex Myoglobin Reagent	6/01/96	K902154
COBAS INTEGRA Rheumatoid Factors	Rheumatoid factor immunological test system	Class II	866.5775	Behring N Latex RF Reagent	10/20/94	K942328
Plasmachrom Calibrator	Calibrator	Class II	862.1150	Behring N Protein Standard Plasma	4/7/88	K883662
Plasmachrom Controls	Quality control material (assayed and unassayed)	Class I	862.1660	N/T Protein Control Py	4/17/96	K951012
Roche FERR T Standard	Calibrator	Class II	862.1150	Behring N Ferritin Standard	3/27/95	K950707
Roche FERR/MYO T Control	Quality control material (assayed and unassayed)	Class I	862.1660	Behring N Ferritin Controls Behring N Myoglobin Controls	3/27/95 6/01/96	K950707 K902154
Roche MYO T Standard	Calibrator	Class II	862.1150	Behring N Myoglobin Standard	6/01/96	K902154
Roche RF T Standard	Calibrator	Class II	862.1150	Behring N RF Standard	10/20/94	K942328

III. Identification of the legally marketed device to which the 510(k) sponsor claims equivalence:

Table 1, presented above, identifies the legally marketed devices to which Roche Diagnostic Systems, Inc. claims equivalence.

IV. Description of the Device/Statement of Intended Use:

The COBAS INTEGRA Analyzer and COBAS INTEGRA Reagent Cassettes together provide an integrated system for *in vitro* diagnostic testing. The COBAS INTEGRA Reagent Cassettes are comprised of chemistry, drugs of abuse, immunology, therapeutic drug monitoring, and hematology assay systems. The COBAS INTEGRA Analyzer provides quantitative measurement of these analytes via three measuring principles, i.e., absorbance, fluorescence polarization and ion-selective electrodes. The COBAS INTEGRA Reagent Cassettes are compact and preparation-free with the added convenience of long term on-board stability. Sixty-eight COBAS INTEGRA Reagent Cassettes can be stored on board, 24 hours a day at 2-8°C. Each cassette is barcoded. This barcode label provides the analyzer with specific reagent information such as the lot number, the expiration date and the number of tests.

Through this submission, it is the intention of Roche to gain clearance of an additional 4 COBAS Reagent Cassettes and 6 ancillary reagents. These are the COBAS INTEGRA Cassette for Antithrombin III, COBAS INTEGRA Cassette for Ferritin, COBAS INTEGRA Cassette for Myoglobin, COBAS INTEGRA Cassette for Rheumatoid Factors, Roche Plasmachrom Calibrator, Roche Plasmachrom N & P Controls, Roche FERR T Standard, Roche FERR/MYO T Control, Roche MYO T Standard, and Roche RF Standard II. The COBAS INTEGRA Cassette for Antithrombin III (AT III) contains an in vitro diagnostic reagent system intended for use on COBAS INTEGRA for the quantitative determination of human antithrombin III activity in plasma. The COBAS INTEGRA Cassette for Ferritin contains an in vitro diagnostic reagent system intended for the quantitative immunological determination of human ferritin in serum. The COBAS INTEGRA Cassette for Myoglobin contains an in vitro diagnostic reagent system intended for use on COBAS INTEGRA for the quantitative immunological determination of human myoglobin in serum and plasma. The COBAS INTEGRA Cassette for Rheumatoid Factors contains an in vitro diagnostic reagent system intended for use on COBAS INTEGRA for the quantitative immunological determination of human rheumatoid factors in serum. Plasmachrom Calibrator is intended for use as a calibrator in quantitative kinetic antithrombin III activity assays. Plasmachrom Control N is an assayed control intended for use to monitor the accuracy and precision at normal concentration levels in quantitative kinetic colorimetric tests for antithrombin III activity assays. Plasmachrom Control P is an assayed control intended for use to monitor the accuracy and precision at pathological concentration levels in quantitative kinetic colorimetric tests for antithrombin III activity assays. MYO T Standard is intended for use as a calibrator in quantitative determinations of human myoglobin. FERR T Standard is intended for use as a calibrator in quantitative determinations of human ferritin. FERR/MYO T Control is intended for use as a quality control material to monitor accuracy and precision in quantitative determinations of human ferritin and myoglobin. RF T Standard is intended for use as a calibrator in quantitative determinations of human rheumatoid factor.

This submission also contains a modification to the previously cleared COBAS INTEGRA Reagent Cassette for Calcium. The performance of the COBAS INTEGRA Reagent Cassette for Calcium has been improved due to the use of new instrument parameters.

V. Summary of the technological characteristics of the new device in comparison to those of the predicate.

Tables 2-6 attached to this summary outline the technological characteristics (methodologies) of the COBAS INTEGRA Reagents in comparison to those of legally marketed predicate products.

VI. Brief discussion of the clinical and nonclinical tests relied on for a determination of substantial equivalence:

Tables 2-6 attached to this summary demonstrate the results of clinical and nonclincal studies performed using the COBAS INTEGRA Reagent Cassettes. The significant performance characteristics relied upon for a determination of substantial equivalence are summarized in this chart. This information concludes that the performance of this device is essentially equivalent to other legally marketed devices of a similar kind.

Table 2

COBAS INTEGRA Cassette for AT III

	COBAS INTEGRA Cassette for Antithrombin III	Berichrom AT III (A)
Methodology	Kinetic colorimetric test	Kinetic colorimetric test
Sample type	Plasma (citrate)	Plasma
Reported measuring units	%	%
Calibrator	Plasmachrom Calibrator (lyophilized human plasma) Calibrator value: 102%	Behring N Protein Standard Plasma (lyophilized human plasma) Calibrator Value: 87%
Controls	Plasmachrom N & P Controls (lyophilized human plasma) Control N: 99.4% Control P: 61.1%	N/T Protein Control Py (lyophilized human plasma) Control N: 92% Control P: 34%
Reagent (active ingredients)	TRIS NaCl Citrate BSA Heparin Thrombin D-phenylalanyl-prolyl-arginyl-4-acetylanilide	Thrombin tos-gly-pro-arg-ANBA-IPA TRIS
Performance Characteristics:		
Assay range	0-150%	0-140%
Precision (Day-to-day)	4.1% at 51.9% 2.8% at 105.7%	Normal plasma -1.0-2.5% Pathological plasma-1.5-3.0%
Accuracy	N = 200 R = 0.973 vs. Berichrom Reagent	R = > 0.95
Sensitivity (Analytical)	1.6 X 10-3 ΔA/min per % change in AT III activity	Not specified in labeling

Table 3

COBAS INTEGRA Cassette for Ferritin

	COBAS INTEGRA Cassette for Ferritin	**Behring N Latex Ferritin Reagent on Behring Nephelometer**
Methodology	Immunoturbidimetric test for Ferritin	Immunoturbidimetric test for Ferritin
Sample type	Serum	Serum
Reported measuring units	ug/L	ug/L
Calibrator	Roche FERR T Standard (human sourced) 0, 12.5, 50, 100, 200, & 300 ug/L	Behring N Ferritin Standard (human sourced) 344 ug/L
Controls	Roche FERR/MYO T Control (lyophilized human serum w/added BSA) Ferritin: 126 ± 13 ug/L Myoglobin: 115 ± 12 ug/L	Behring N Ferritin Controls (human sourced) Control 1: 20.2 ug/L Control 2: 153 ug/L
Reagent (active ingredients)	R1. Glycine buffer R2. Latex particles coated with anti-human ferritin (rabbit) in glycine buffer	R1. Freeze dried polystyrene particles coated with rabbit anti-human ferritin R2. Buffered solution of rabbit serum R3. buffered solution of detergents
Performance Characteristics:		
Assay range	0-300 ug/L 0-3000 ug/L w/postdilution	5-320 ug/L
Precision (Within-run)	9.9 % at 19 ug/L 1.2% at 260 ug/L	3.8% at 5 ug/L 1.5% at 15 ug/L 1.3% at 30 ug/L 1.5% at 50 ug/L 0.9% at 200 ug/L
Accuracy	N = 188 y = 0.80x + 2.9 ug/L vs. Behring N Latex Ferritin Reagent	N = 44 y = 1.01x - 0.37 ug/L vs. enzyme immunoassay
Sensitivity (Analytical)	< 10 ug/L	5 ug/L

Table 4

COBAS INTEGRA Cassette for Myoglobin

	COBAS INTEGRA Cassette for Myoglobin	Behring N Latex Myoglobin Reagent
Methodology	Immunoturbidimetric test for Myoglobin	Immunoturbidimetric test for Myoglobin
Sample type	Serum and plasma (heparin, EDTA, & fluoride)	Serum and plasma
Reported measuring units	ug/L	ug/L
Calibrator	Roche MYO T Standard (sourced from human skeletal muscle in liquid form) 0, 62.5, 125, 250, & 500 ug/L	Behring N Myoglobin Standard (lyophilized human serum) 785 ng/mL
Controls	Roche FERR/MYO T Control (lyophilized human serum w/added BSA) Ferritin: 126 ± 13 ug/L Myoglobin: 115 ± 12 ug/L	Behring N Myoglobin Control (lyophilized human serum) 106 ng/mL
Reagent (active ingredients)	R1. Glycine buffer w/ BSA and immunoglobulins (rabbit) R2. Latex particles in glycine buffer coated w/ anti-myoglobin (rabbit)	R1. lyophilisate of polystyrene particles coated with rabbit anti-human myoglobin R2. buffered rabbit serum soln. R3. detergent soln.
Performance Characteristics:		
Assay range	0-500 ug/L 0-5000 IU/mL w/postdilution	25-400 ug/L
Precision (Day-to-day)	1.4% at 46 ug/L 0.6% at 312 ug/L	4.8% at 85 ug/L 4.2% at 160 ug/L 5.0% at 310 ug/L
Accuracy	N = 230 y = 0.91x + 15 ug/L vs. Behring N Latex Myoglobin Reagent	N = 117 y = 0.95X - 4.33 vs. radioimmunoassay
Sensitivity (Analytical)	3 ug/L	25 ug/L

Table 5

COBAS INTEGRA Cassette for Rheumatoid Factors

	COBAS INTEGRA Cassette for Rheumatoid Factors	Behring N Latex RF Reagent on Behring Nephelometer
Methodology	Immunoturbidimetric test for RF	Immunoturbidimetric test for RF
Sample type	Serum	Serum
Reported measuring units	IU/mL	IU/mL
Calibrator	Roche RF T Standard II (liquid human serum) 10, 20, 40, 80, &160 IU/mL	Behring N RF Standard (lyophilized human serum) 73 IU/mL
Controls	Roche RF/ASO T Control II (K954992)	Behring N Rheumatology SL Controls
Reagent (active ingredients)	R1. Accelerator polyethylene glycol in glycine buffer with bovine serum albumin R2. Latex particles coated with human IgG in glycine buffer	R1. lyophilisate of polystyrene particles coated with antigen-antibody complex of human gamma-globulin/ anti-human gamma-globulin from sheep R2. aqueous solution of polyethylene glycol
Performance Characteristics:		
Assay range	10-120 IU/mL 10-600 IU/mL w/postdilution	10-600 IU/mL
Precision (Day-to-day)	8.0% at 32 IU/mL 5.0% at 125 IU/mL	9.3% at 92 IU/mL 6.2% at 155 IU/mL 6.6% at 306 IU/mL
Accuracy	N = 244 y = 0.70x + 12 IU/mL vs. Behring N Latex RF Reagent	N = 72 y = 0.99 x - 20 IU/mL vs. enzyme immunoassay
Sensitivity (Analytical)	10 IU/mL	10 IU/mL

Table 6

COBAS INTEGRA Cassette for Calcium

	COBAS INTEGRA Cassette for Calcium (Modified)	COBAS INTEGRA Cassette for Calcium (Cleared)	Boehringer Mannheim Calcium on Hitachi 911
Methodology	Colorimetric o-Cresolphthalein complexone	Colorimetric o-cresolphthalein complexone	Colorimetric o-cresolphthalein complexone
Sample type	Serum, heparinized plasma and urine	Serum, heparinized plasma and urine	Serum, heparinized plasma and urine
Calibrator	Roche Calibrator (K942706)	Roche Calibrator (K942706)	Boehringer Mannheim Precical Calibrato r Serum
Reagent (active ingredients)	1. o-Cresolphthalein complexone 2. 8-Hydroxyquinoline 3. CAPS 4. NaOH	1. o-Cresolphthalein complexone 2. 8-Hydroxyquinoline 3. CAPS 4. NaOH	1. 4-Aminobutyric acid 2. o-Cresolphthalein complexone 3. 8-Hydroxyquinoline 4. HCl
Performance Characteristics:			
Assay range	Serum, plasma: 0-20 mg/dL Urine: 0-28 mg/dL 0-140 mg/dL w/postdilution	Serum, plasma: 0-20 mg/dL Urine: 0-100 mg/dL	Serum, plasma: 0-15 mg/dL 0-24.9 w/postdilution Urine: 0-15 mg/dL 0-60 mg/dL w/postdilution
Precision (Total)	Serum, plasma: 3.5% at 9.2 mg/dL 3.1% at 13.6 mg/dL Urine: 0.91% at 5.6 mg/dL 1.1% at 23.7 mg/dL	Serum, plasma: 2.1 % at 7.9 mg/dL 1.8 % at 10.2 mg/dL Urine: 2.8% at 3.9 mg/dL 0.77% at 18 mg/dL	Serum, plasma: 1.6 % at 8.9 mg/dL 1.2 % at 9.7 mg/dL 1.3% at 12.5 mg/dL Urine: 2.2% at 2.9 mg/dL 1.7% at 7.8 mg/dL 1.4% at 36.7 mg/dL
Accuracy	N = 196 R = 0.987 vs. BM Hitachi 911	N = 240 R = 0.960 vs. BM Hitachi 911	N = 53 R = 0.997 vs. BM Hitachi 717
Sensitivity (Analytical)	4.0×10^{-2} ΔA per mg/dL of calcium	3.2×10^{-2} ΔA per mg/dL of calcium	Not specified in labeling