510(k) SUBSTANTIAL EQUIVALENCE DETERMINATION
DECISION SUMMARY
ASSAY ONLY TEMPLATE

A. 510(k) Number:

k042485

B. Purpose for Submission:

Change Indications for use to include cardiovascular use

C. Measurand:

C-reactive protein (CRP)

D. Type of Test:
Quantitative Immunoturbidimetirc

E. Applicant:

ROCHE DIAGNOSTICS CORP.

F. Proprietary and Established Names:

TINA-QUANT CRP (LATEX) HS TEST SYSTEM (C-REACTIVE PROTEIN (LATEX) HIGH SENSITIVE)

G. Regulatory Information:

1. Regulation section:

   21CFR Sec.- 866.5270-C-reactive protein immunological test system.

2. Classification:

   2

3. Product code:

   NQD - CARDIAC C-REACTIVE PROTEIN, ANTIGEN, ANTISERUM, AND CONTROL

4. Panel:

   Chemistry (75)

H. Intended Use:

1. Intended use(s):

   The Tina-quant® CRP (Latex) High Sensitive Immmunoturbidimetric assay is for the in vitro quantitative determination of C-reactive protein (CRP) in human serum and plasma on Roche automated clinical chemistry analyzers.

2. Indication(s) for use:

   The Tina-quant® CRP (Latex) High Sensitive Immmunoturbidimetric assay is for the in vitro quantitative determination of C-reactive protein (CRP) in human serum and plasma on Roche automated clinical chemistry analyzers. Measurement of CRP is of use for the detection and evaluation of inflammatory disorders and associated diseases, infection and tissue injury. Highly sensitive measurement of CRP may also be used as an aid in the assessment of the risk of future coronary heart disease. When used as an adjunct to other laboratory evaluation methods of acute coronary syndromes, it may also be an additional independent indicator of recurrent event prognosis in patients with stable coronary disease or acute coronary syndrome.

3. Special conditions for use statement(s):

   For prescription use

4. Special instrument requirements:

   Roche/Hitachi 904, 911, 912, 917, MOD P

I. Device Description:

C-reactive protein is the classic Acute Phase Protein to inflammatory reactions. It is synthesized by the liver and consists of five identical polypeptide chains that form a five membered ring having a molecular weight of 120000 daltons. CRP is the most sensitive of the acute Phase reactants, and its concentration increases rapidly during inflammatory processes. Complexed CRP activates the complement system beginning with Clq. CRP then initiates opsonization and phagocytosis of invading cells, but its main function is to bind and detoxify endogenous toxic substances produced as a result of tissue damage. CRP assays are used to detect systemic inflammatory processes (apart from certain types of inflammation such as SLE and Colitis ulcerosa); to assess treatment of bacterial infections with antibiotics; to detect intrauterine infections with concomitant premature amniorrhexis; to differentiate between active and inactive forms of disease with

concurrent infection, e.g. in patients suffering from SLE or Colitis ulcerosa; to therapeutically monitor rheumatic disease and assess anti-inflammatory therapy; to determine the presence of post-operative complications at an early stage, such as infected wounds, thrombosis and pneumonia, and to distinguish between infection and bone marrow transplant rejection.

Sensitive CRP measurements have been used and discussed for early detection of infection in pediatrics and risk assessment of coronary heart disease. Several studies came to the conclusion, that the highly sensitive measurement of CRP could be used as a marker to predict the risk of coronary heart disease in apparently healthy persons and as an indicator of recurrent event prognosis. Increases in CRP values are non-specific and should not be interpreted without a complete clinical history.

The American Heart Association and the Centers for Disease Control and Prevention have made several recommendations concerning the use of high sensitivity C-reactive protein (hsCRP) in cardiovascular risk assessment. Testing for any risk assessment should not be performed while there is indication of infection, systemic inflammation, or trauma. Patients with persistently unexplained hsCRP levels above 10 mg/L should be evaluated for non-cardiovascular etiologies. When using hsCRP to assess the risk of coronary heart disease, measurements should be made on metabolically stable patients and compared to previous values. Optimally, the average of hsCRP results repeated two weeks apart should be used for risk assessment. Screening the entire adult population for hsCRP is not recommended, and hsCRP is not a substitute for traditional cardiovascular risk factors. Acute coronary syndrome management should not depend solely on hsCRP measurements. Similarly, application of secondary prevention measures should be based on global risk assessment and not solely on hsCRP measurements. Serial measurements of hsCRP should not be used to monitor treatment.

Various assay methods are available for CRP determination, such as nephelometry and turbidimetry. The Roche CRP assay is based on the principle of particle-enhanced immunological agglutination.

J. Substantial Equivalence Information:

1. Predicate device name(s):

   TINA-QUANT CRP (LATEX) HS TEST SYSTEM (C-REACTIVE PROTEIN (LATEX) HIGH SENSITIVE), and DADE BEHRING, N HIGH SENSITIVITY CRP

2. Predicate 510(k) number(s):

   k003400 and k033908

3. Comparison with predicate:

Similarities		
Item	**Device**	**Predicate**
Reagent and all performance	Unchanged	Unchanged
Differences		
Item	**Device**	**Predicate**
Indications for use	The Tina-quant® CRP (Latex) High Sensitive Immmunoturbidimetric assay is for the in vitro quantitative determination of C-reactive protein (CRP) in human serum and plasma on Roche automated clinical chemistry analyzers. Highly sensitive measurement of CRP is of use for the detection and evaluation of inflammatory disorders and associated diseases, infection and tissue injury. Measurement of CRP may also be used as an aid in the assessment of the risk of future coronary heart disease. When used as an adjunct to other laboratory evaluation methods of acute coronary syndromes, it may also be an additional independent indicator of recurrent event prognosis in patients with stable coronary disease or acute coronary syndrome.	Immunoturbidimetric assay for the in vitro quantitative determination of CRP in human serum and plasma on automated clinical chemistry analyzers.

K. Standard/Guidance Document Referenced (if applicable):

Not Applicable subject of k003400

L. Test Principle:

Particle-enhanced immunoturbidimetric assay
- Sample and addition of R1 (buffer)
- Addition of R2 (anti-CRP antibody-latex) and start of reaction:

Anti-CRP antibodies coupled to latex microparticles react with antigen in the sample to form an antigen/antibody complex. Following agglutination, this is measured turbidimetrically.

M. Performance Characteristics (if/when applicable):

1. Analytical performance:

   a. Precision/Reproducibility:

   Not Applicable subject of k003400

   b. Linearity/assay reportable range:

   Not Applicable subject of k003400

   c. Traceability, Stability, Expected values (controls, calibrators, or methods):

   Not Applicable subject of k003400

   d. Detection limit:

   Not Applicable subject of k003400

   e. Analytical specificity:

   Not Applicable subject of k003400

   f. Assay cut-off:

   Not Applicable subject of k003400

2. Comparison studies:

   a. Method comparison with predicate device:

   Not Applicable subject of k003400

   b. Matrix comparison:

   Not Applicable subject of k003400

3. Clinical studies:

   a. Clinical Sensitivity:

Not Applicable subject of k003400

b. Clinical specificity:

Not Applicable subject of k003400

c. Other clinical supportive data (when a. and b. are not applicable):

Subject device is updating its indications for use to include cardiovascular risk assessment. Previously, Tina-Quant CRP (Latex) hs Test System (k003400) received clearance compared to the Dade Behring, N High Sensitivity CRP (k991385).

The Dade Behring, N High Sensitivity CRP provided sufficient cardiovascular clinical studies to update their indications for use to include cardiovascular risk assessment with no change in the device or its performance in k033908.

The updated indications for use claim in this submission is based on equivalent analytical performance of the Tina-Quant CRP (Latex) hs Test System to Dade Behring, N High Sensitivity CRP (k991385) in k003400, thus allowing an analytical bridge to clinical studies in support of cardiovascular risk assessment established by Dade Behring, N High Sensitivity CRP in k033908. In addition, the applicant provided literature supporting the indications for use.

4. Clinical cut-off**:**

The cutoff was established previously in the literature not with this device.

5. Expected values/Reference range:

The expected range was established in the literature not with this device.

N. Proposed Labeling:

The labeling is sufficient and it satisfies the requirements of 21 CFR Part 809.10.

O. Conclusion:

The submitted information in this premarket notification is complete and supports a substantial equivalence decision.