

## September 09/07: Comparison of Anti-CP Assays

Antibodies to citrullinated proteins / peptides (anti-CP) are among the most important discoveries of recent years in the field of immunologic diagnostics. Anti-CP are markers for rheumatoid arthritis, especially for early diagnosis of the disease. Their presence at disease onset has a high positive predictive value for the development of erosive joint lesions. With its high clinical specificity, the test is particularly useful in differential diagnosis between RA and other arthritides. Numerous assays against citrullinated peptides or proteins are now on the market, but only a few comparative studies have been conducted on them. In the following study, the diagnostic accuracy of the 11 most commonly used commercial EIA methods for the detection of anti-CP was evaluated:

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### **Analytical and Diagnostic Characteristics of 11 2<sup>nd</sup>- and 3<sup>rd</sup>-Generation Immunoenzymatic Methods for the Detection of Antibodies to Citrullinated Proteins**

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The sera used in this study were from 100 consecutive patients with rheumatoid arthritis, 74 healthy individuals, and 128 patients with other diseases. The 11 assays were Aeskulisa RA CP-Detect (Aesku Diagnostika), VCP IgG (Astra srl), Diastat anti-CCP (Axis-Shield), Immunoscan RA Mark2 (Eurodiagnostica), CCP IgG (Euroimmun), CPA (Genesis Diagnostics), Quanta Lite CCP IgG, Quanta Lite CCP 3.0 IgG, and Quanta Lite CCP 3.1 IgG-IgA (Inova Diagnostics), Anti-MCV (Orgentec Diagnostika) and EliA CCP (Phadia). The authors evaluated within-run and between-run CVs, sensitivity and specificity when using the cutoff recommended by the manufacturer, as well as the sensitivity at a defined specificity. Because the most clinically significant characteristic of the test is its very high specificity, the authors took a specificity value of 98.5% as reference, and compared the sensitivity value of each method with that preset specificity value. The data thus compared demonstrated that the best performances were obtained with the 4 methods that use the original mixture of synthetic peptides: the assays from Eurodiagnostica, Axis-Shield, Phadia and Euroimmun. At a predefined specificity of 98.5%, these four assays still achieved sensitivities of 70% (Axis-Shield) up to 74% (Phadia).

Of the 3 methods produced by Inova, the CCP-3 formulation gave only slightly different results from the method that uses the CCP-2 antigen (67% vs 64% sensitivity). In view of the results of this study, the combination of IgA with IgG antibodies (CCP-3.1 vs. CCP-3.0) does not improve the performance of the test and therefore does not seem to be useful.

The authors conclude that not all commercially available methods for the detection of anti-CP antibodies have the same degree of diagnostic accuracy, and that careful selection is needed to obtain reliable results.

