Comparative study of both versions of an immunoassay commercialized for therapeutic drug monitoring of adalimumab.

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Introduction: Adalimumab (ADA) is one of the biological drugs more commonly used in the treatment of rheumatic diseases. In spite of its efficiency, some patients do not respond or present a loss of response in the time. Till now, the decision in these cases was based only on the clinical evolution of the patient. For two years it is commercialized in our country an enzyme linked immunosorbent assay (ELISA) for the quantification of the free serum concentration of ADA, as well as of antibodies anti-adalimumab (Ac anti-ADA). Recently the manufacturer (Promonitor, Proteomika S.L., distributed by Menarini Diagnóstics S.A) has thrown a new version of this ELISA with significant changes for analytical workability of the test.

Objective: To describe the results obtained of the comparative study between both versions of the ELISA commercialized for therapeutic drug monitoring of ADA.

Methods: They have been selected samples of patients with rheumatoid arthritis treated with ADA, with different concentrations of drug and Ac anti-drug so that there is covered the whole analytical range of the assay. The samples were extracted just before the administration of ADA and remained frozen to -80°C up to his later analysis for duplicate with both available versions of the ELISA. Different lots from reagent were in use in every shift of analysis. The test was realized t of Student of samples paired to compare ADA's average concentrations between both analyses realized with the same version of the test. By means of the statistician kappa the conformity was evaluated between the results obtained with the same version. There has been calculated the Coefficient of Correlation of Conformity (CCC) and his interval of confidence to know if the measurements with both versions (V1 or previous and V2 or updated) of the test show conformity.

Results: Statistically significant differences are not observed in the comparison of averages for ADA's concentrations between both measurements of 24 samples by the V1 (7,62±6,15 y 7,13±4,08 mg/L, p=0,59), not between both measurements of 20 samples with the V2 (6,94±4,37 y 7,20±4,57 mg/L, p=0,08) of the ELISA. On having categorized the measurements for ranges (from 0 to 3, from 3 to 7, from 7 to 12 and major of 12 mg/L), is observed a conformity moderated between ADA's concentrations obtained with V1 (Kappa 0,55; 0,18-0,79) and a very good conformity between ADA's concentrations obtained with V2 (Kappa 0,91; 0,65-1,00), with a major discrepancy for the highest concentrations, whereas below 7 mg/L the degree of association is major, for having a number of cases classified under different practically void range in the different analized samples.

In the ELISA for the detection of Ac anti-ADA there was obtained a conformity of 100%, 4 patients Ac anti-ADA met positives in both versions evaluated (n = 40).
Conclusions: 1. In general, the V2 of the test provides higher results of ADA's concentration than the V1. Nevertheless, a major precision is observed in the range of near concentrations at the level of clinical decision.
2. The new version of the ELISA allows the complete automation, which simplifies very much the analysis, and reduces significantly the variability in the repetitions of the samples.