afssaps
Agence française de sécurité sanitaire des produits de santé

Afssaps market surveillance of total PSA, free PSA and complexed PSA in vitro diagnostic medical devices

Considering the clinical impact of measuring prostatic specific antigen (PSA) for tracking cancer of the prostate, Afssaps set up as part of its assignments, a market surveillance of devices giving quantitative results. The objective of the surveillance was to evaluate the analytical performances of the measurements, in particular to verify the accuracy (trueness) of the cases for total PSA, free PSA and complexed PSA, as well as studying the equimolarity of the reagents of total PSA in the analogous recognition of the various forms of serum PSA (free PSA/bound PSA).This was done by measuring samples with 2 ng/ml, 4 ng/ml and 10 ng/ml of total PSA containing 0%, 25%, 50%, 75% or 100% of free PSA, prepared starting from the standard solutions of the University of Stanford (Stamey). Moreover, the instructions for use (IFU) were checked in comparison with the essential requirements required by directive 98/79/CE.

The 37 devices present on the market (19 devices for total PSA, 1 device combining total PSA and free PSA, 15 measuring devices of free PSA and 2 measuring devices of the complexed PSA) were evaluated according to a protocol prepared and validated by a group of experts and notified beforehand to the manufacturers. After analysis of the results of the technical assessment, it appears that 7 measuring devices of total PSA have results considered to be acceptable by the experts in terms of accuracy. In the same way, 9 total PSA devices show equimolar characteristics. Concerning the measuring devices of free PSA or complexed PSA, 9 devices render satisfactory results in terms of accuracy. Various nonconformities in relation to directive 98/79/CE were observed in the IFU of the evaluated devices.

Letters to the manufacturers stating the results were sent at the end of June 2005. In respect to the results conveyed, the majority of the manufacturers decided to carry out controls. At the end of these controls, some decided to restandardize their device, others to clearly post in the notice the existence of a bias. To date, Afssaps is continuing the monitoring of certain manufacturers.

In order to harmonize the results of various tests (current and to come), Afssaps and the group of experts wish to disseminate certain recommendations.

Accuracy: the accuracy of dosing must be evaluated by using the international Stanford standards (100% free PSA, 100% complexed PSA and 90/10 PSA complexed/PSA free) diluted in a nonserum matrix (for example buffer PBS + 1% BSA)

Equimolarity: Clearly display in the IFU the molar ratios obtained with various concentrations of total PSA. The molar ratio is given by calculating the following ratio: value of total PSA with 100% of free PSA/Value of total PSA to 0% of free PSA. Acceptable values of the molar ratio according to the experts of the Afssaps working group lie between 85 and 115%

Ratio free/total: the IFU of free PSA devices should report diagnostic sensitivity and specificity data of PSA free/PSA total ratio, and mention the total PSA selected device.

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