This article was originally published in *Electrophoresis* 2010, *31*, 1918–1924, DOI 10.1002/elps.200900645

IEF pattern classification-derived criteria for the identification of epoetin-δ in urine

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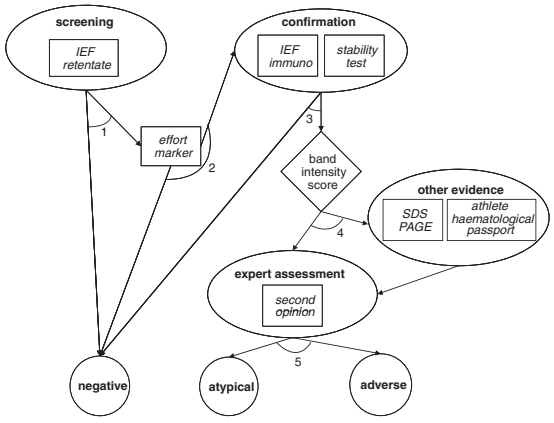
Keywords:
Discriminant analysis / Doping / Erythropoietin / IEF



Decision tree for the identification of EPO doping.

Epoetin-δ (Dynepo^{TM} Shire Pharmaceuticals, Basing stoke, UK) is a synthetic form of erythropoietin (EPO) whose resemblance with endogenous EPO makes it hard to identify using the classical identification criteria. Urine samples collected from six healthy volunteers treated with epoetin-δ injections and from a control population were immunopurified and analyzed with the usual IEF method. On the basis of the EPO profiles integration, a linear multivariate model was computed for discriminant analysis. For each sample, a pattern classification algorithm returned a bands distribution and intensity score (bands intensity score) saying how representative this sample is of one of the two classes, positive or negative. Effort profiles were also integrated in the model. The method yielded a good sensitivity *versus* specificity relation and was used to determine the detection window of the molecule following multiple injections. The bands intensity score, which can be generalized to epoetin-α and epoetin-β, is proposed as an alternative criterion and a supplementary evidence for the identification of EPO abuse.

