METHOD FOR ABNORMAL VALUE DETECTION

Identification of anomalous data in longitudinal biological assessment including intra-individual detections thresholds

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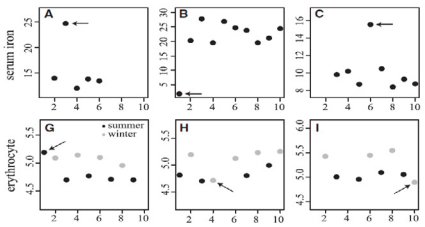
PRESENTATION

This non-Bayesian statistical algorithm is used for detecting anomalous values (or series) in longitudinal biological follow-ups. This method is practical, easy to implement and efficient as soon as 3 independent measures are gathered. It integrates periodicity and seasonality and allows to detect abnormal values (or series) in multiple correlated biomarkers.

The main interest of the method, is that it is only computes the appropriate indicators in a series of observations from one individual. Moreover, a single procedure is performed for the whole series, thus avoiding cumulated errors commonly involved in multitests. These intra-individual comparisons allow defining very tight / personalized abnormality thresholds without the need to use a priori samples for determining said thresholds (risk of poor representativeness).

The method shall be used for the longitudinal assessment of physiological or biological markers during clinical trials or medical follow-up of patients or athletes in the context of medical control for humans or animals. A first study has been initiated on a cohort of more than 2200 professional football players for a 3 years campaign involving the assessment of 5 biological parameters.



Examples of different detection methods (© MAP5 – INSEP)

Statistical algorithm - Longitudinal assessment - Biomarkers - Anomalous value detection - Anti-doping - Intra-individual thresholds

COMPETITIVE ADVANTAGES

- Avoids multitests uncertainties in residues calculation
- Very fine detection thresholds with intra-individuals autofit
- Detection of abnormal values in longitudinal series of one or several biomarkers
- Handles cyclicity and seasonality

APPLICATIONS

- Longitudinal assessment of biological markers
- Anti-doping struggle for human or animals
- Remediation and after-effect tracking in medical treatment
- Preventive maintenance in industrial applications : CAPEX v. OPEX optimization
- Quality control and early drift detection in batch processes

PUBLICATIONS

Z-scores-based methods and their application to biological monitoring: an example in professional soccer players – G. Saulière, J. Dedecker, L-A. Marquet, P. Rochcongar, J-F. Toussaint, G. Berthelot - Biostatistics, kxx044

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INTELLECTUAL PROPERTY

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