**Inter-method variability in bone alkaline phosphatase measurement: clinical impact on the management of dialysis patients**

**Etienne Cavalier\* 1, Jean-Claude Souberbielle2, Romy Gadisseur1, Bernard Dubois3, Jean-Marie Krzesinski3 and Pierre Delanaye3.**

Departments of (1) Clinical Chemistry and (3) Nephrology, Dialysis and Hypertension, University of Liège, CHU Sart-Tilman, Liège, Belgium.

(2) Laboratoire d’Explorations fonctionnelles, Hôpital Necker-Enfants maladies, Inserm U845, Paris, France.

\* Corresponding Author:

Prof. Etienne Cavalier

Department of Clinical Chemistry

University of Liège, CHU Sart-Tilman

B-4000 Liège, Belgium

Tel: +32 4 3668822

Fax: +32 4 3668823

[Etienne.cavalier@chu.ulg.ac.be](mailto:Etienne.cavalier@chu.ulg.ac.be)

Running title : variation of BAP measurement

**Abstract**

**Background**: Bone-specific alkaline phosphatase (BAP) is now recommended to assess bone turnover in hemodialysis (HD) patients. However, little is known about potential variability between methods available to measure BAP.

**Methods**: We measured BAP in 76 HD patients with six different assays (Beckman-Coulter Ostase IRMA, IDS iSYS Ostase, IDS Ostase enzyme immunoassay, DiaSorin Liaison Ostase and Quidel MicroVue BAP).

**Results**: We observed a high correlation between all the assays ranging from 0.9948 (IDS iSYS vs. IDS EIA) to 0.9215 (DiaSorin Liaison vs. Quidel Microvue). However, using the regression equations, the equivalent concentration of a Beckman-Coulter Access value of 10 µg/L can range to 7.7 – 14.4 µg/L and of 20 µg/L can range to 16.9 – 27.9 µg/L with other assays. According to Beckman-Coulter Access, 13%, 50% and 37% of the patients presented BAP values ≤10, between 10 and 20 and ≥20 µg/L, respectively. Discrepancies are observed when other assays are used (concordance from 10 to 100%).

**Conclusions**: Analytical problems leading to inter-method variation should be overcome to improve the usefulness of this marker in clinical practice. According to correlation results, recalibration of BAP assays is necessary but should not be a major issue.