

Routine measurement of urine specific gravity and osmolality in the dog

Olivier Dossin, Jean-Pierre Braun, Claude Germain

► **To cite this version:**

Olivier Dossin, Jean-Pierre Braun, Claude Germain. Routine measurement of urine specific gravity and osmolality in the dog. Proceedings 10. congress of the international society of animal clinical biochemistry for animal clinical biochemistry, Jun 2002, Gainesville, United States. hal-02762853

HAL Id: hal-02762853

<https://hal.inrae.fr/hal-02762853>

Submitted on 4 Jun 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

ROUTINE MEASUREMENT OF URINE SPECIFIC GRAVITY AND OSMOLALITY IN THE DOG

O Dossin¹, H Lavalette¹, C Germain², JP Braun². ¹Dept of Small Animal Clinical Sciences & ²Dept of Biological Sciences – UMR 181, Veterinary School, 23 Chemin des Capelles, 31076 Toulouse Cedex 3, France.

Objective : Compare the different techniques of urine specific gravity (SG) measurement in the dog and urine osmometry.

Methods : In randomly chosen samples from 239 dogs, urine specific gravity was measured with urine reagent strip and reader (Multistix SG, Clinitek 50, Bayer), refractometer (Atago), weighing (Sauter AR014; mean of five measurements and comparison to the weight of the same volume of distilled water). Osmolality was measured with a freezing point system (Roebing). Comparisons were made by correlation analysis, difference plots.

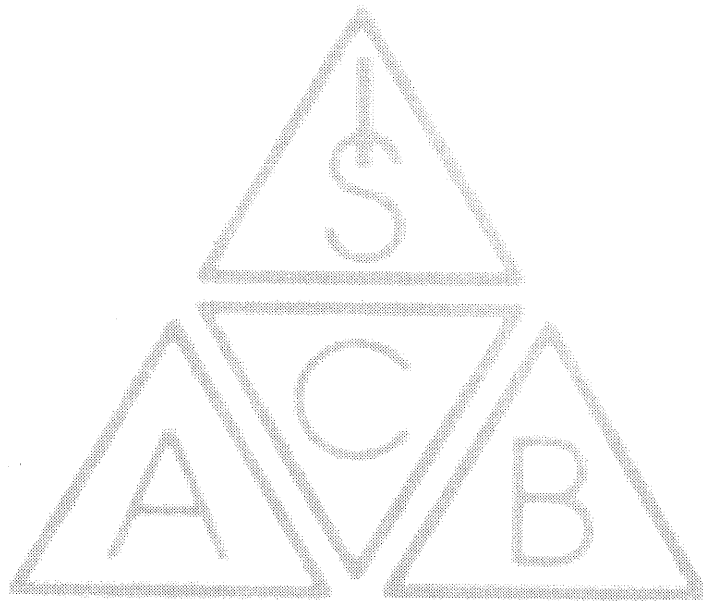
Results : There was a very good overall agreement between weighing and refractometry ($r = 0.95$); mean difference (weighing-refractometry) was -0.0003 , with 206/239 measurements within ± 0.010 . The bias was not proportional. Test strips undervaluated urine specific gravity by a mean of 0.011 and the bias was not proportional. At the 1.020 threshold, there were 48 % (77/160) false negative readings with the test strips, i.e. readings below 1.020 when the mean of SG measurements by weighing and refractometry was ≥ 1.020 .

There was a very good agreement between density and osmolality ($r = 0.91$); a fair estimate of osmolality (95 % confidence interval in square brackets) can be calculated according to :

osmolality (mOsm/L) = $36.6 [34.2/38.4] \cdot SG$ (decimal digits) + $50 [-12/112]$.

Conclusion : Clinical refractometers allow one to accurately measure urine specific gravity in dogs and a good evaluation of urine osmolality can be calculated from specific gravity measurements when an osmometer is not available.

Proceedings
**10th Congress of the International Society of Animal Clinical
Biochemistry for Animal Clinical Biochemistry**



**University of Florida
Gainesville, Florida, USA
June 18-22, 2002**

**Edited by: JW Harvey
A MacNeill
S Ramaiah
H Wamsley**