

ARE TRIPLICATE URINE SAMPLES NECESSARY TO ASSESS ALBUMINURIA?

Jean Pierre. Fauvel, Salima Le Penven, Michel Ducher, Lyon, France
David Tartry, Philippe Zaoui, Grenoble, France



Hôpitaux de Lyon



CHU
GRENOBLE

Aim of the study

Urinary albumin excretion is subject to an intra individual variability

For research purposes, it is recommended to assay microalbuminuria on three urine samples

The objective of our analysis was to check the usefulness to triplicate samples

Patients and methods

Patients

- 95 Type 2 diabetic patients
- Data collected for 3 international studies
 - ROADMAP
 - AVOID
 - ALTITUDE
- 2 Centers (Lyon, Grenoble)

Methods

- 3 morning samples: n=246 (selection and follow up)
- Immunoturbidimetry
- Not frozen samples
- Same centralized laboratory (Medinet)

Classification of albuminuria status

- Normoalbuminuria
- Microalbuminuria:
 - $2.5 < ACR < 25$ mg/mmol creat in man
 - $3.5 < ACR < 35$ mg/mmol creat in woman
- Macroalbuminuria

Statistics

- Results come from a not-planned retrospective analysis
- Concordance was obtained if the second and/or the third sample confirmed the albuminuric status obtained from the first sample

Characteristics of the patients

95 Diabetic type 2 patients

9 % normoalbuminuric,

35 % microalbuminuric,

58 % macroalbuminuric patients.

Hypertension: 85%

Mean age: 64 ± 9 years,

SBP: 143 ± 17 mmHg

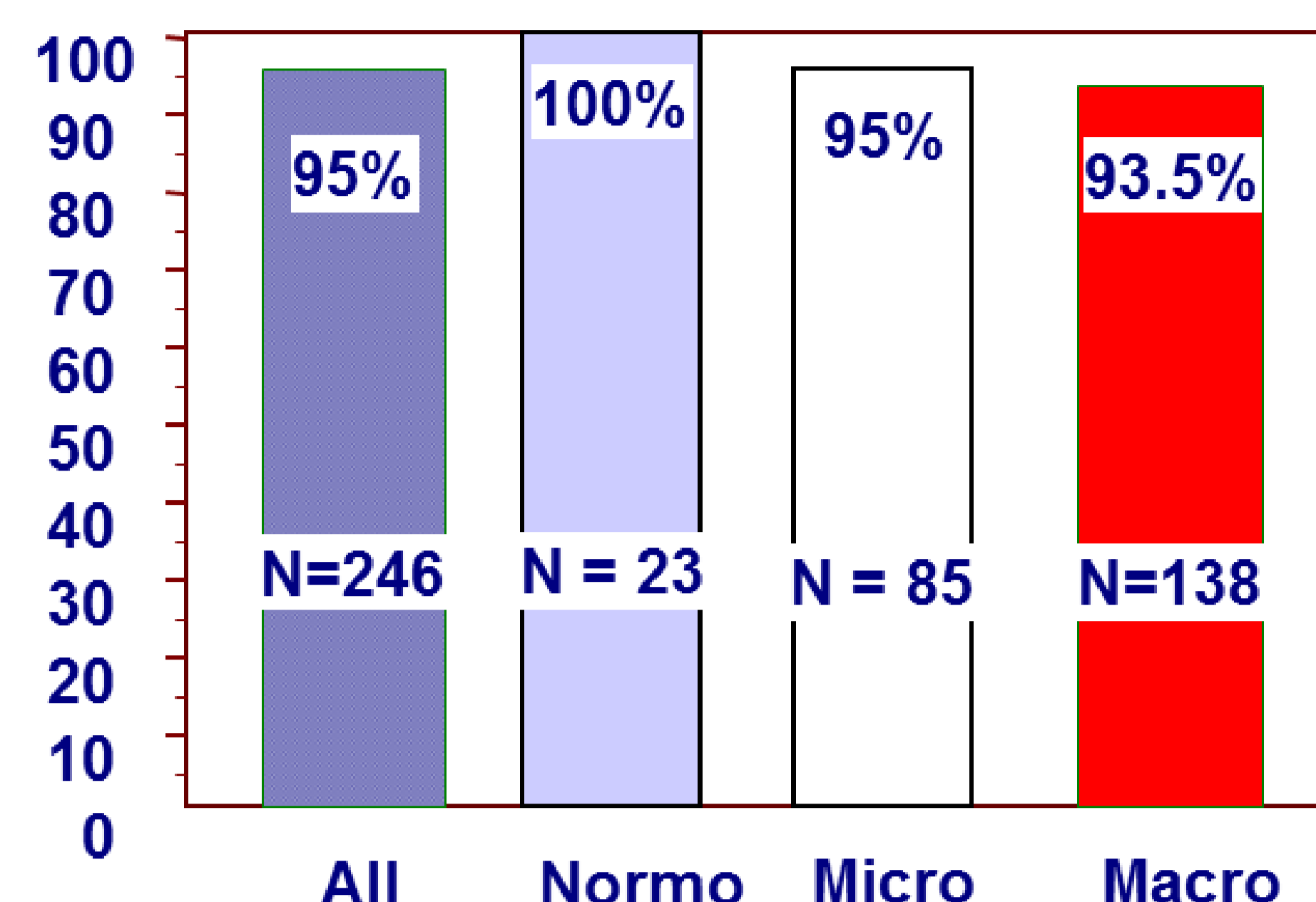
DBP: 77 ± 9 mmHg,

BMI: 30.7 ± 5.2 kg/m²

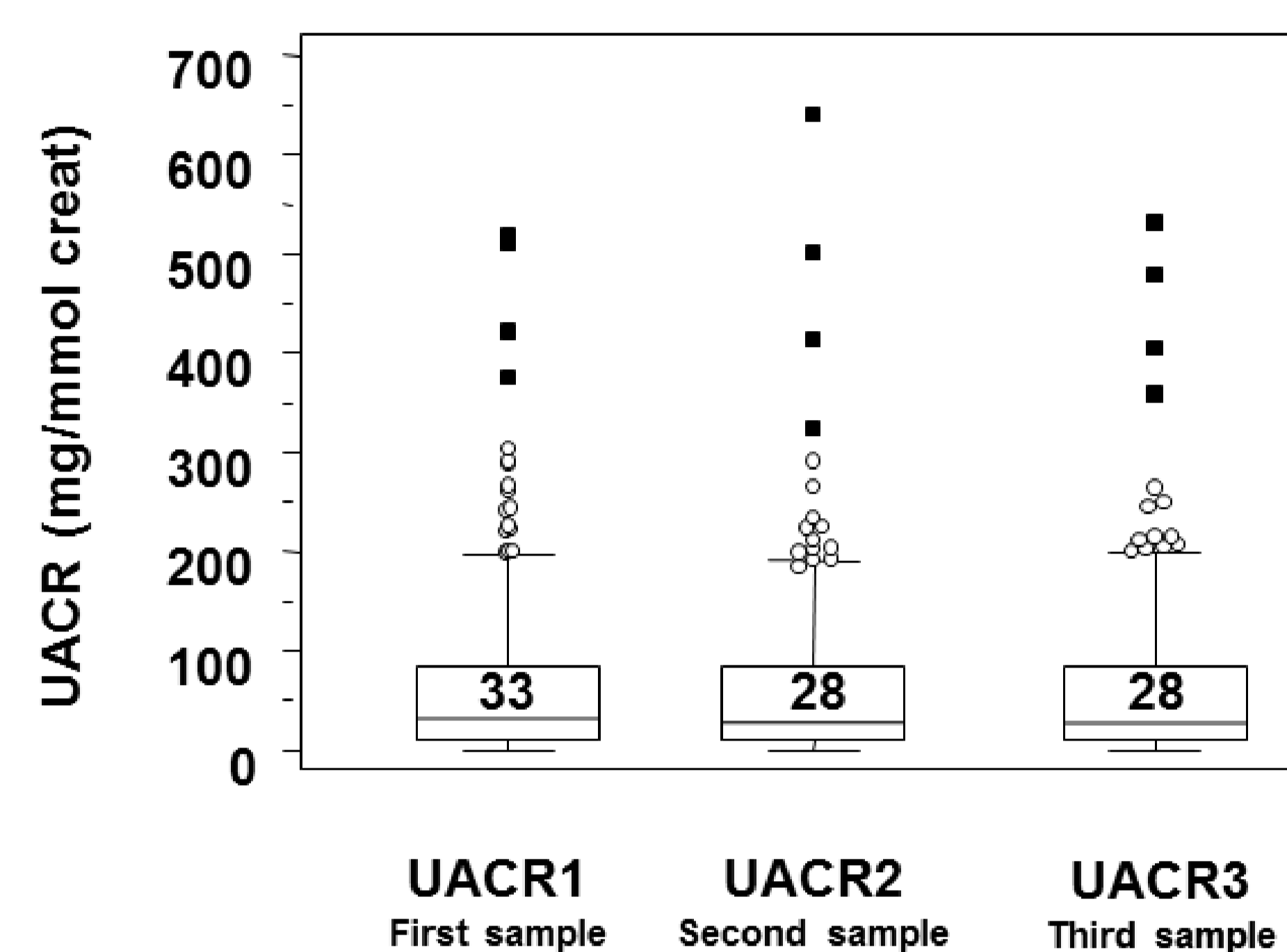
HbA1c: 7.6 ± 1.3 %,

Creatininemia: 127 ± 55 μmol/l.

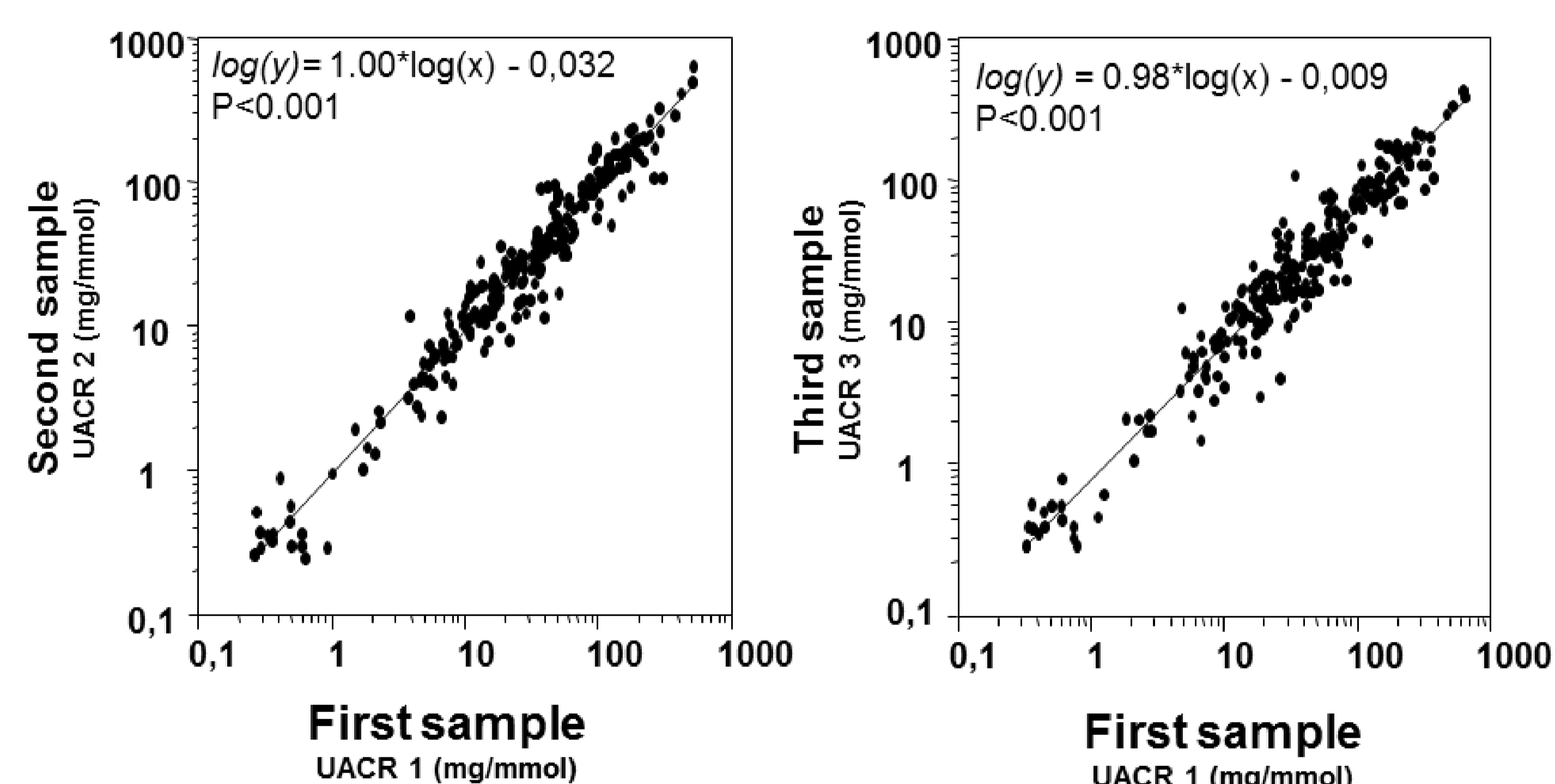
Concordance rate



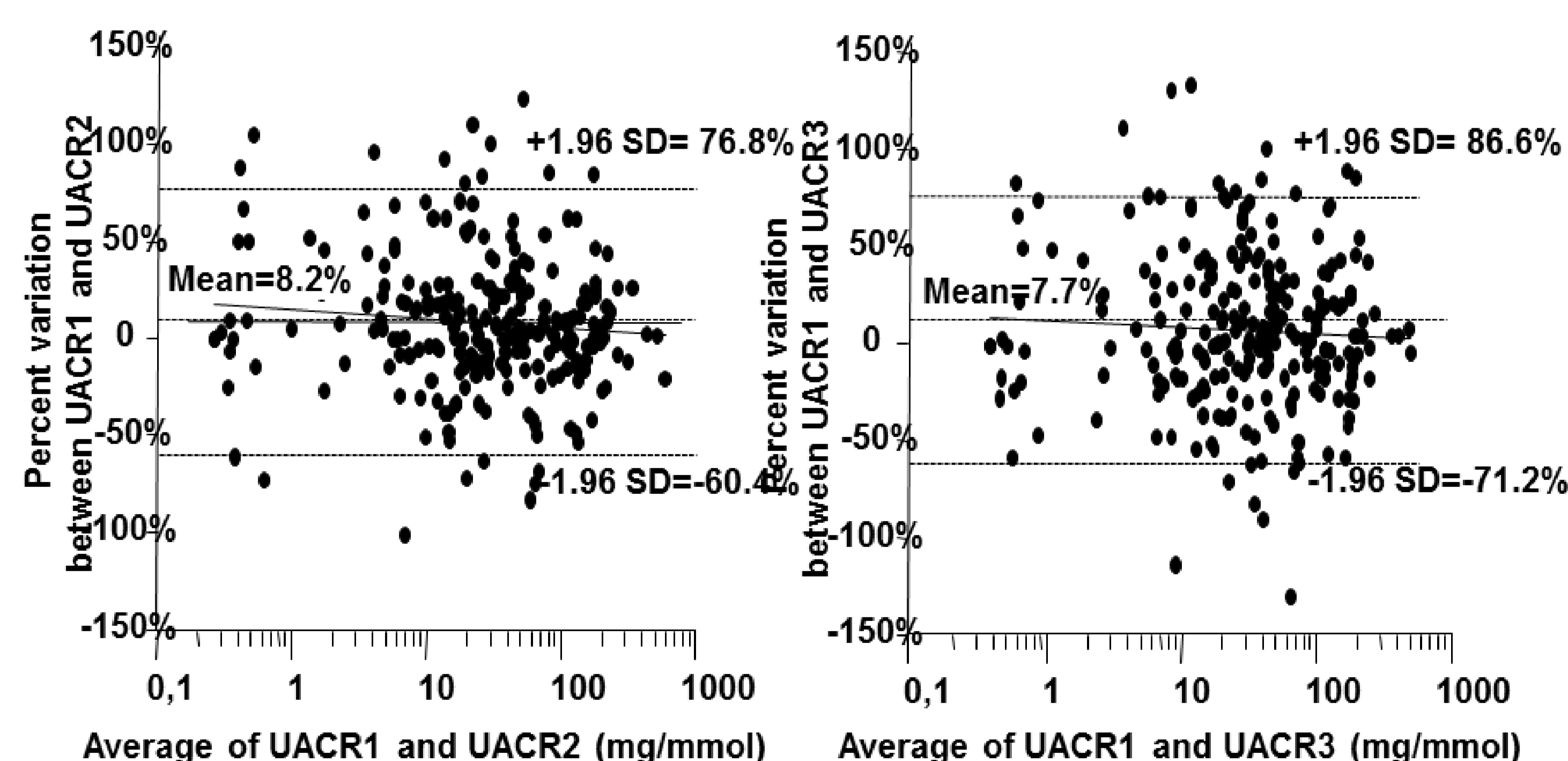
Box plot of albumin to creatinin ratio obtained during 3 consecutive days: n=246



Reproducibility: Correlation plots



Reproducibility: Bland & Altman plots



Conclusions

- There is no benefit in repeating morning UACR determination in diabetic patients to accurately categorize a subject as having normo-, micro- or macro-albuminuria.
- However, in order to accurately quantify albuminuria, repeated determinations are required.

