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## Usefulness of open channel applications in laboratory integrated systems

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### BACKGROUND-AIM

Large diagnostic companies usually don't have reagents available for the determination of some minor parameters. These samples may be analysed either in analysers out of integrated analytical systems or using open channel applications with reagents manufactured by other companies.

The aim of our work is the verification and integration of minor techniques in our analytical system.

### METHODS

We evaluated the performance of cobas® 8000 c702 (Roche Diagnostics) compared to BA400 (BioSystems). We used the cobas® development channel (CDC) Tool in the navify® platform (Roche Diagnostics) for the configuration of the open channel applications.

The applications implemented were aldolase and angiotensin converting enzyme (ACE) in serum and oxalate in urine. The reagents verified and calibrators and controls used are listed in table 1.

Technique	Reagent	Calibrator	Control (2 levels)
Aldolase	Aldolase, LTA	Aldolase calibrator, LTA	Aldolase control set, LTA
ACE	ACE, BioSystems	Biochemistry calibrator human, BioSystems	Biochemistry control serum human, BioSystems
Oxalate	Oxalate, BioSystems	Oxalate standard, BioSystems	Oxalate control urine, BioSystems

Table 1. Reagents, calibrators and controls used for the verification.

We compared the results of 76 and 20 serum samples for aldolase and ACE, respectively, and 20 acidified 24h urine samples for oxalate. Both for intraserial and interserial imprecision we processed 15 replicates of each control level. Imprecision was calculated with coefficient of variation (CV), and the comparability was assessed with Passing Bablok regression (PBR). Results were analysed with Microsoft Excel 2016 and R 4.3.1.

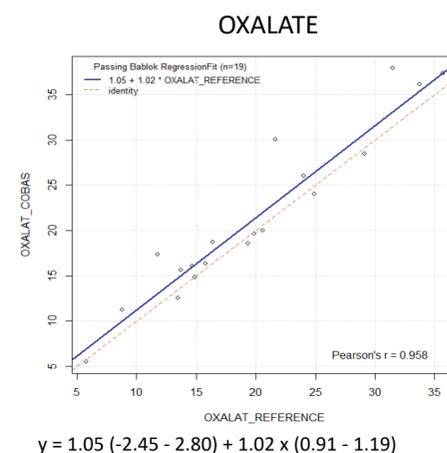
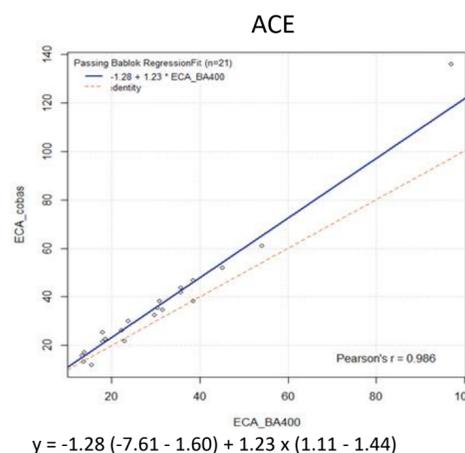
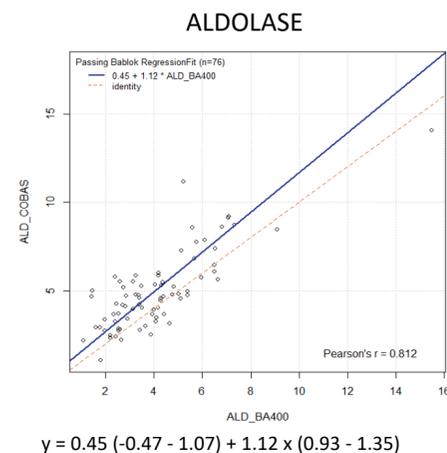
### RESULTS

The results of the imprecision study are shown in table 2. They all met the analytical performance specifications for our laboratory.

Technique	Intraserial CV (%)		Interserial CV (%)		Target CV (%)
Control level	1	2	1	2	-
Aldolase	3.3	2.7	5.1	6.1	13.6
ACE	10.6	11.4	12.8	10.1	15
Oxalate	0.8	1.6	3.9	6.1	15

Table 2. Imprecision results.

In the concordance study, we only found proportional error for angiotensin converting enzyme, but it was considered not clinically significant. Passing Bablok regression graphs and equations are shown below:



### CONCLUSIONS

- Open channel applications allow the introduction of minority techniques not available for integrated analytical systems.
- Many adjustments must be made to application parameters to adapt them to the analysers, representing a significant challenge.
- Using these applications improves the workflow by involving less manipulation of samples, improving patient safety.

