



# LISA-CHE

## Measurement of the activity of Acetyl- and Butyryl-Cholinesterase





# LISA-CHE

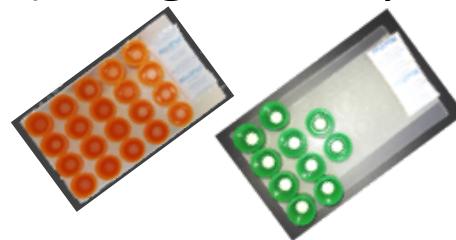
- Point-of-Care-measurement of:
  - Acetylcholinesterase activity (AChE)
  - Butyrylcholinesterase activity (BChE)
- Based upon Ellman's method (1956)





# LISA-CHE: Reagent Kits AChE / BChE

100  
reagent caps  
(5 bags of 20 pieces)



100  
sample tubes



100  
capillary tubes



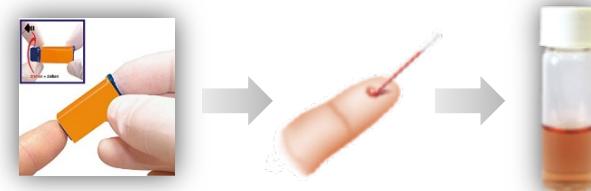
280  
precision wipes



# LISA-CHE: Process of measurement

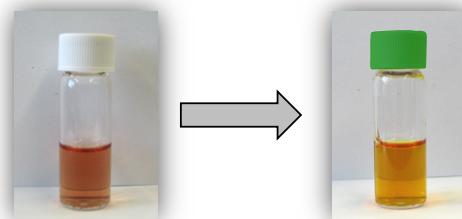
- Background measurement of the buffer solution

- Add 10 µl of blood (one drop)



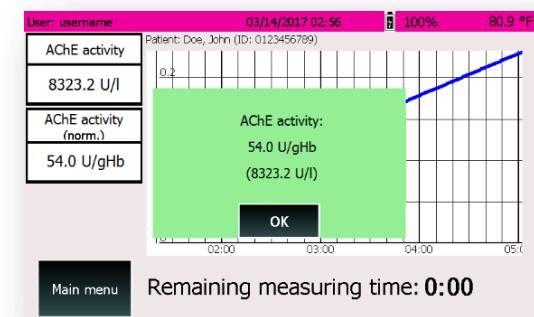
- Measurement of Hemoglobin concentration

- Addition of reagents



- Measurement of the color reaction

- Results within 4 minutes





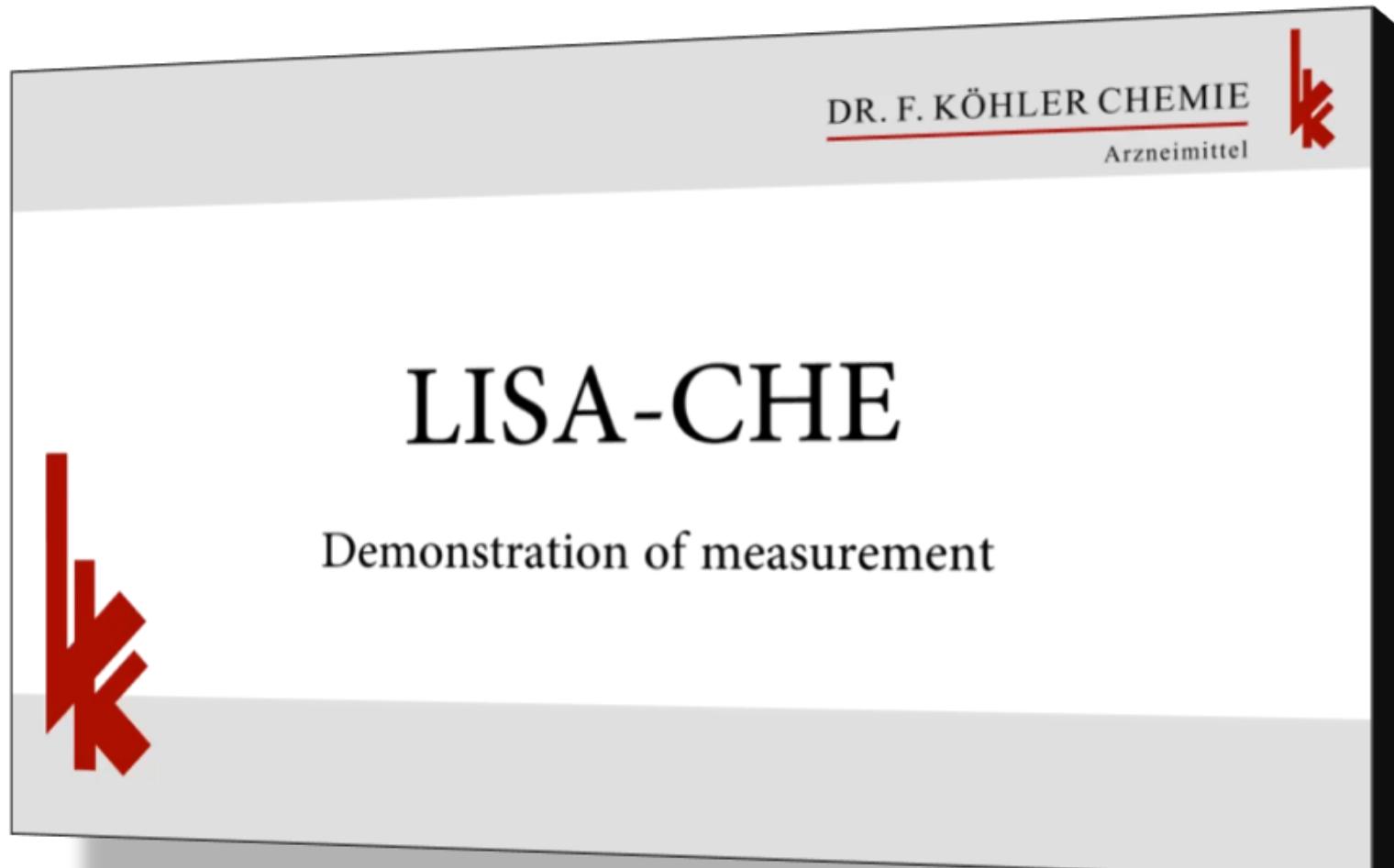
# LISA-CHE: Units of measurement

- AChE – activity
  - U / L
- AChE – activity normalized to hemoglobin concentration
  - U/ gHb
- BChE – activity
  - U / L

U:	Unit
L:	Litre
Hb:	Hemoglobin
g:	Gram



# LISA-CHE: Process of measurement





# LISA-CHE: Features

- Results available after only 5 minutes
- Comfortable handling via touchscreen
- Mobile use: battery mode
- Barcode-reader for patient ID codes
- Internal memory for 100,000+ measurements
- multiple user mode (retraceability of data)
- save data & update via USB



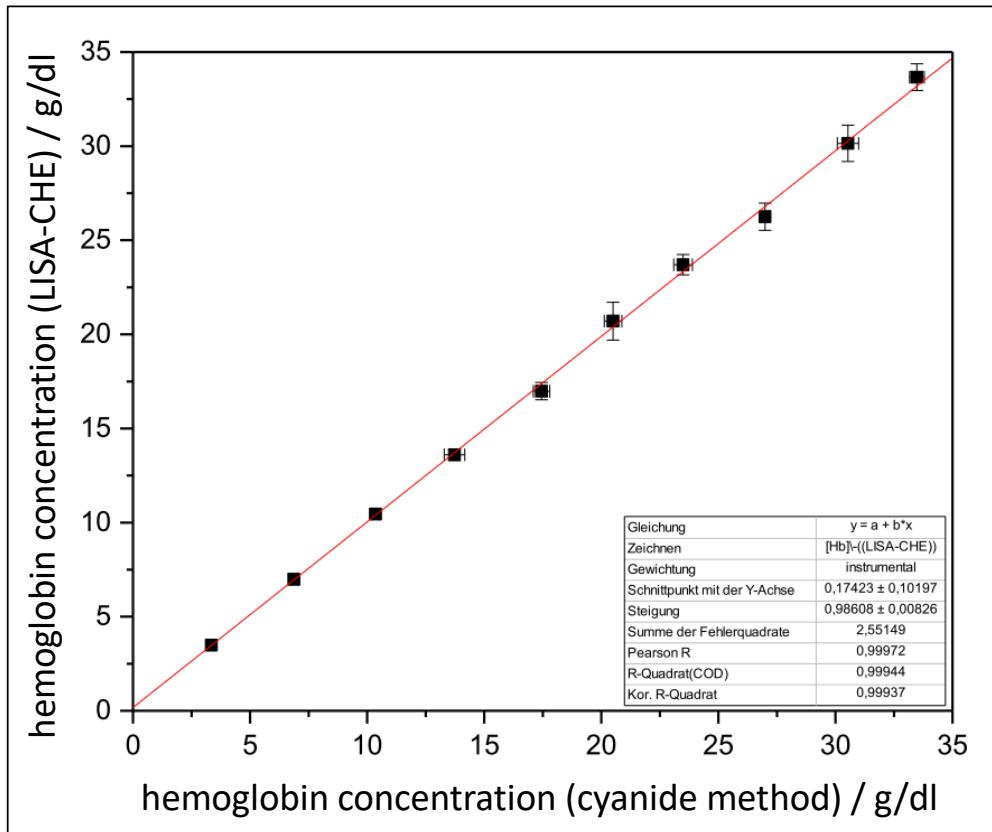


# LISA-CHE: Specifications

Measurement temperature range	Room temperature (20 °C – 40 °C)
Measuring range for AChE-activity	0-10.000 U/L 0-300 U/gHb
Measuring range for BChE-activity	0-10.000 U/L
Measuring range for Hb-concentration	3-33 g/dL
Operating time with full battery charge	Approx. 4 hours

# LISA-CHE: Performance

- Hemoglobin-Determination



Comparison with standard method for hemoglobinometry:

- 1) Potassium hexacyanoferrate oxidizes hemoglobin to hemiglobin (contains iron as a trivalent).
- 2) Potassium cyanide converts hemiglobin into stable cyanhemoglobin
- 3) The cyanhaemoglobin is photometrically determined at 540 nm



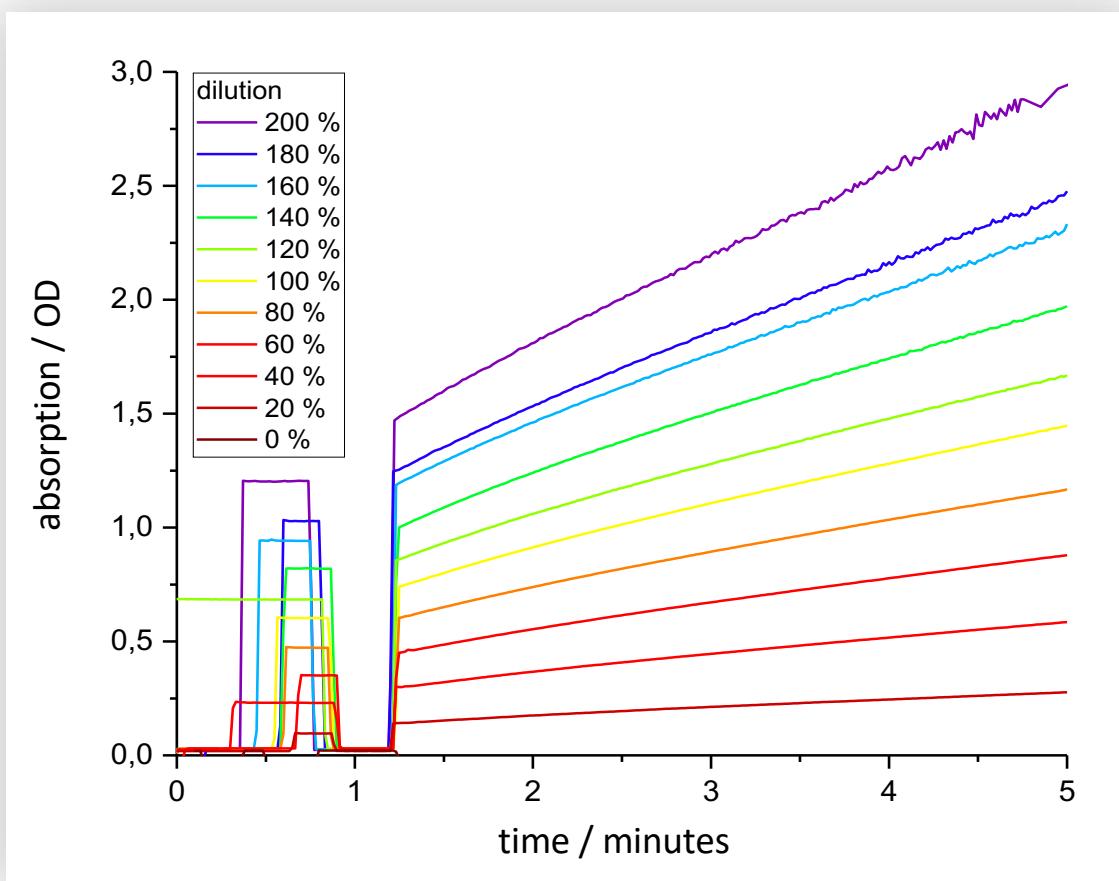
# LISA-CHE: Performance

- ChE-activity determination

Determination of ChE activities of the same sample

a) with LISA-CHE

b) with laboratory spectrometer

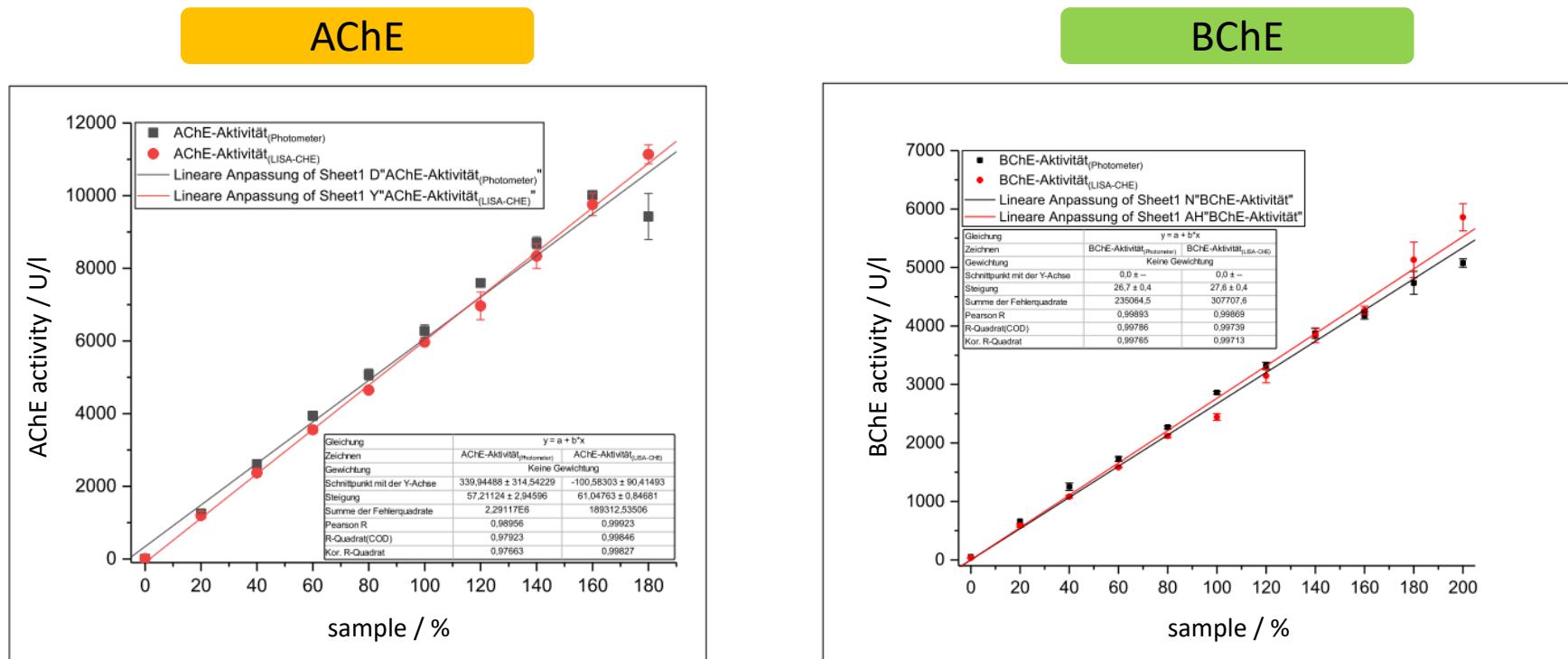


# LISA-CHE: Performance

- ChE-activity determination

Determination of ChE activities of the same sample    a) with LISA-CHE

b) with laboratory spectrometer





# LISA-CHE: Performance

Linearity

	Hemoglobin concentration	AChE-activity	BChE-activity
Correlation coefficient	> 0,999	> 0,99 *	> 0,99

\*for dilutions up to 180 %.

	Hemoglobin concentration (g/dl)	AChE-activity (U/l)	AChE-activity (U/gHb)	BChE-activity (U/l)
Mean value	18,1	6217	34,3	2695,6
Standard deviation (%)	1,2	0,8	1,1	4,7

# Summary

- activity of AChE and BChE can serve as biomarkers for:
  - delirium
  - mortality
  - Sepsis
  - Alzheimer's Disease
  - ...
- LISA-CHE: Point-of-care determination of cholinesterase-activity within five minutes
- Excellent accuracy and reliability of measurement results

