



## Screening Method for Detection of staphylococcal enterotoxins in Cheese, Milk and Meat:

### Ring Trial results

VII WORKSHOP DEL LABORATORIO NAZIONALE DI RIFERIMENTO  
(LNR) PER GLI STAFILOCOCCI COAGULASI POSITIVI COMPRESO  
*S.AUREUS*

Torino, 20 Novembre 2015

Bellio A. - LNR Stafilococchi coagulasi positivi, compreso *S.aureus*

Ingravalle F. - Biostatistica, Epidemiologia ed Analisi del Rischio (BEAR)

- Introduction
- Materials & Methods
- Results
- Conclusions

Ring Trial on reproducibility of:

European Screening Method for Detection of staphylococcal enterotoxins types SEA to SEE in all types of food matrices (Version 5, September 2010)


Ridascreen SET Total:  
*r-Biopharm (RIDAS)*



Vidas SET2:  
*BioMérieux (VIDAS)*

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## VI Ring Trial – 2015

Asti	24 labs	Pescara	
Brescia		Pisa	
Campobasso		Portici	
Caserta		Roma	
Cuneo		Roma D.O. Latte	
Firenze		Salerno	
Foggia		Savona	
Lugo di Ravenna		Sassari	
Novara		Siena	
Padova		Teramo	
Palermo		Torino	
Perugia			
Pesaro			



• Introduction

• Materials &  
Methods

• Results

• Conclusions

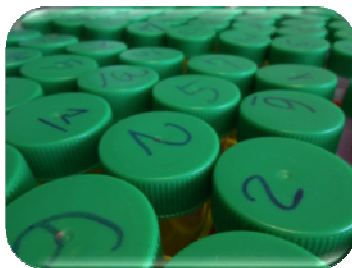
## 24 samples

VI Ring Trial  
2015

6 milk  
samples

6 cheese  
samples

12 meat  
samples



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Positive samples contaminated with  
Staphylococcal Enterotoxin type D solution



Positive and Negative samples tested by  
NRL before the shipment



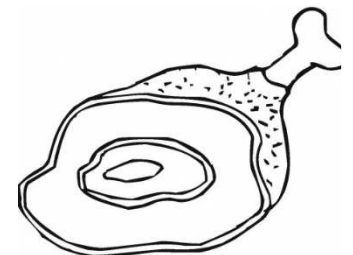
Sending samples to labs



Sample analyses



Sending Results to NRL



# Reproducibility ---> Cohen's *k*

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Valori di <i>k</i>	Interpretazioni proposte in letteratura			
	[LK77]	[Alt91]	[FLP03]	[Byr96]
≤ 0.00	Poor	Poor	Poor	No agreement
0.01 - 0.20	Slight	Poor	Poor	Poor
0.21 - 0.40	Fair	Fair	Poor	Slight
0.41 - 0.60	Moderate	Moderate	Fair to good	Fair
0.61 - 0.80	Substantial	Good	Fair to good	Good
0.81 - 1.00	Almost perfect	Very good	Excellent (≥ 0.75)	Very good (Excellent ≥ 0.92)

- for each pair of participants ---> **276 Cohen's *k***
- for each participant *vs* the Majority judgement (*GM*) ---> **24 Cohen's *k***
- for all participants together ---> **only one *k*-combined**

## Descriptive analysis about general information

- temperature measured at the receipt of the sample;
- storage temperature of the sample;
- Dates: receipt and examination of the sample; expiration of the lot

## Accuracy

- Sensitivity (*Se*)
- Specificity (*Sp*)

# Results reported by the participants

---> no discordances

---> perfect agreement

Matrice ↓ Sequenza ⇒ Metodo ⇒	L01	L02	L03	L05	L06	L07	L08	L09	L10	L11	L12	L13	L14	L15	L16	L17	L18	L19	L20	L21	L22	L23	L24	L25	GM	GS	
LATTE	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
LATTE	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
LATTE	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
LATTE	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
LATTE	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
LATTE	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
FORMAGGIO	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
FORMAGGIO	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
FORMAGGIO	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
FORMAGGIO	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
FORMAGGIO	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
FORMAGGIO	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
CARNE	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
CARNE	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
CARNE	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
CARNE	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
CARNE	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
CARNE	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
CARNE	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
CARNE	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
CARNE	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
CARNE	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
CARNE	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
CARNE	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P

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## • Materials &amp; Methods

## • Results

## • Conclusions

## Reproducibility ---> Cohen's $k$

- for each pair of participants ---> **253  $k=1$  (lb=0,6); 23  $k=1$  (lb=0,43)**
- for each participant *vs* GM ---> **23  $k=1$  (lb=0,6); 1  $k=1$  (lb=0,43)**
- for all participants together --->  **$k$ -combined = 1 (lb=0,98)**

<i>Matrice</i>	N° di partecipanti	N° di campioni esaminati	N° di confronti a coppie	<i>Kappa-combined</i> (+IC95%)
CARNE	23	12	253	1.00 (0.96 - 1.00)
FORMAGGIO	24	6	276	1.00 (0.95 - 1.00)
LATTE	24	6	276	1.00 (0.95 - 1.00)

## Accuratezza

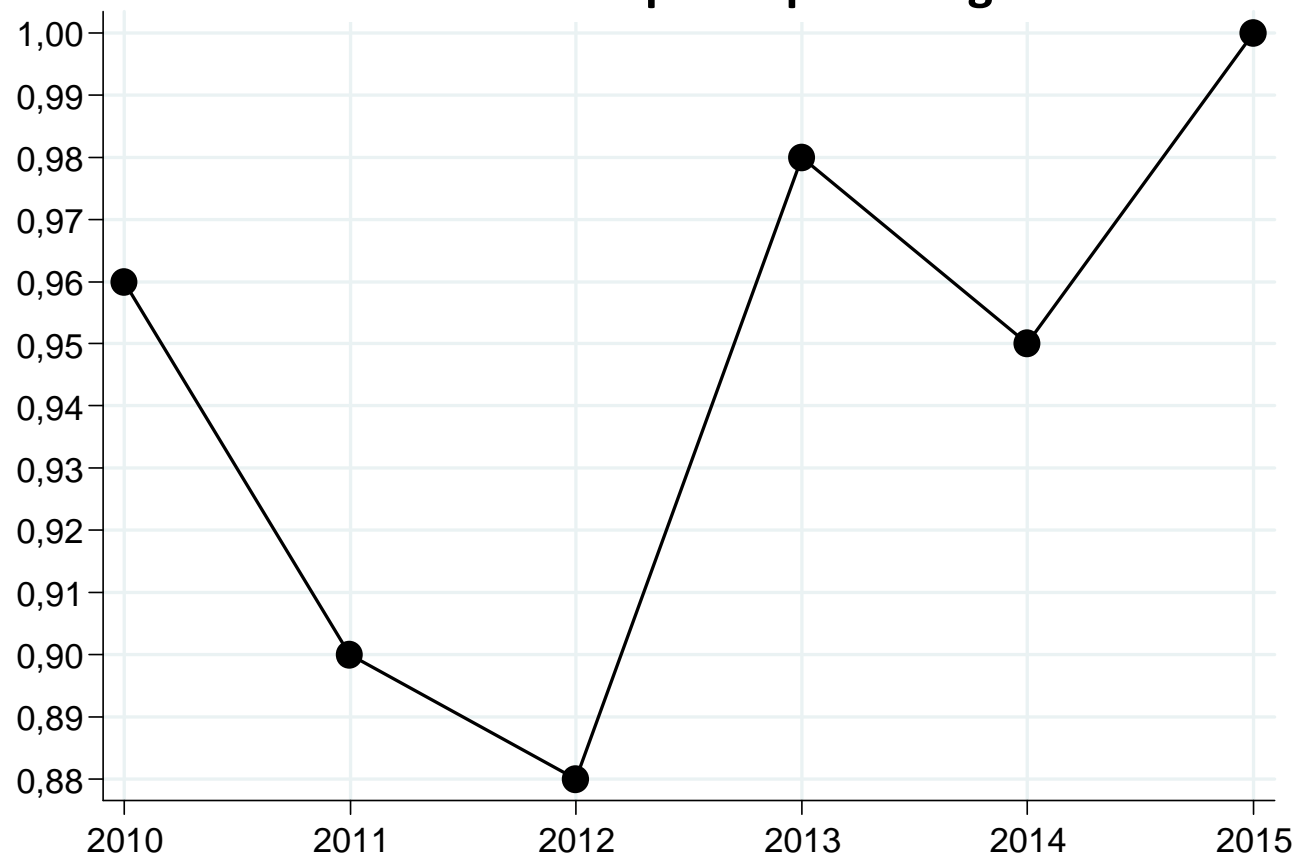
- **$Se$**  for each participant ---> **23  $Se=100%$  (lb=63%); 1  $Se=100%$  (lb=40%)**
- **$Sp$**  for each participant ---> **23  $Sp=100%$  (lb=79%); 1  $Sp=100%$  (lb=63%)**



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## The results of RT: today and the past

*k-combined*: all participants together



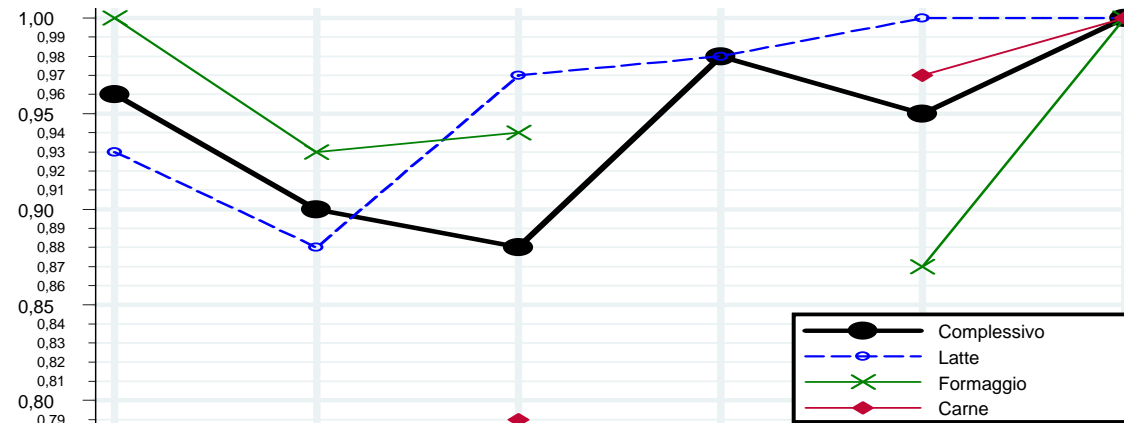
• Introduction

• Materials &  
Methods

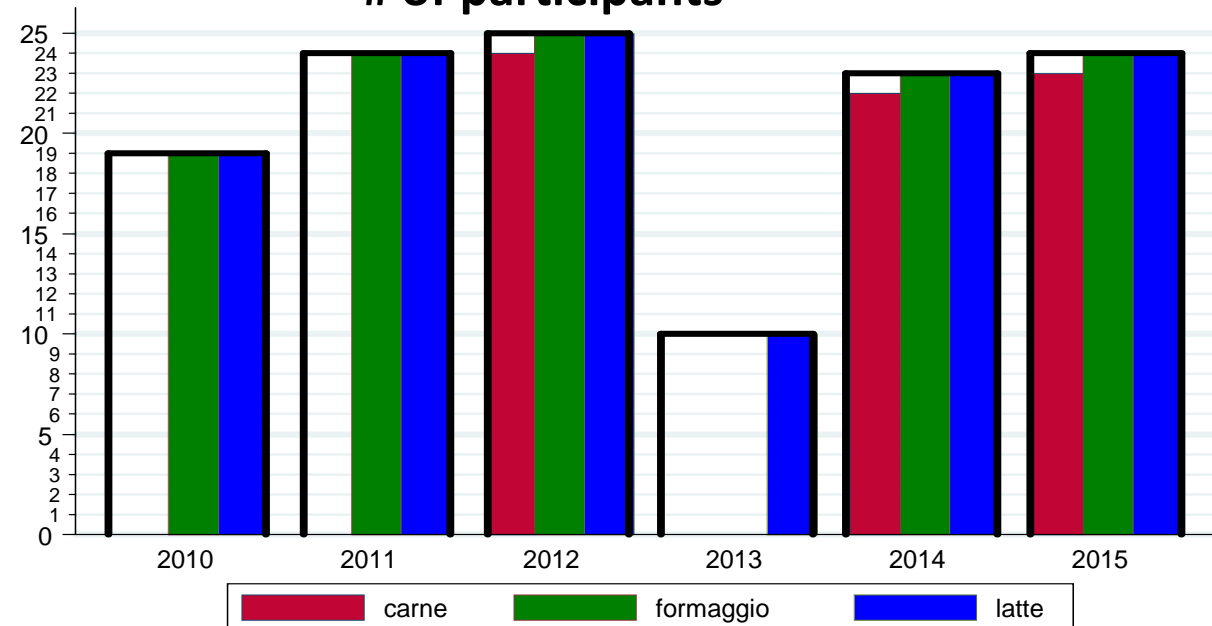
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• Conclusions

## The results of RT: today and the past



# of participants



# Grazie per l'attenzione

Ringraziamento a tutto il personale dei laboratori della rete IZZSS

