



EUCAST

European Committee
on Antimicrobial
Susceptibility Testing

Escherichia coli

EUCAST rapid antimicrobial susceptibility testing (RAST)

Calibration of zone diameter breakpoints to MIC
values.

EUCAST RAST breakpoints version 9.0
January 2026

MIC and zone diameter correlates

- The following histograms present inhibition zone diameter distributions from EUCAST rapid antimicrobial susceptibility testing (RAST).
- The reference method is MIC with broth microdilution.
- In addition, SIR interpretations from standard disk diffusion have been used as a reference for isolates for which MICs are lacking.
- In most, the different colours of the bars indicate different MIC values. In some, the colours of the bars indicate a resistance gene or a resistance mechanism. When SIR interpretation from standard disk diffusion have been used as a reference this is shown as striped bars.
- This presentation is based on EUCAST RAST Clinical Breakpoint Table v. 9.0 (based on EUCAST Breakpoint Tables version 16.0).

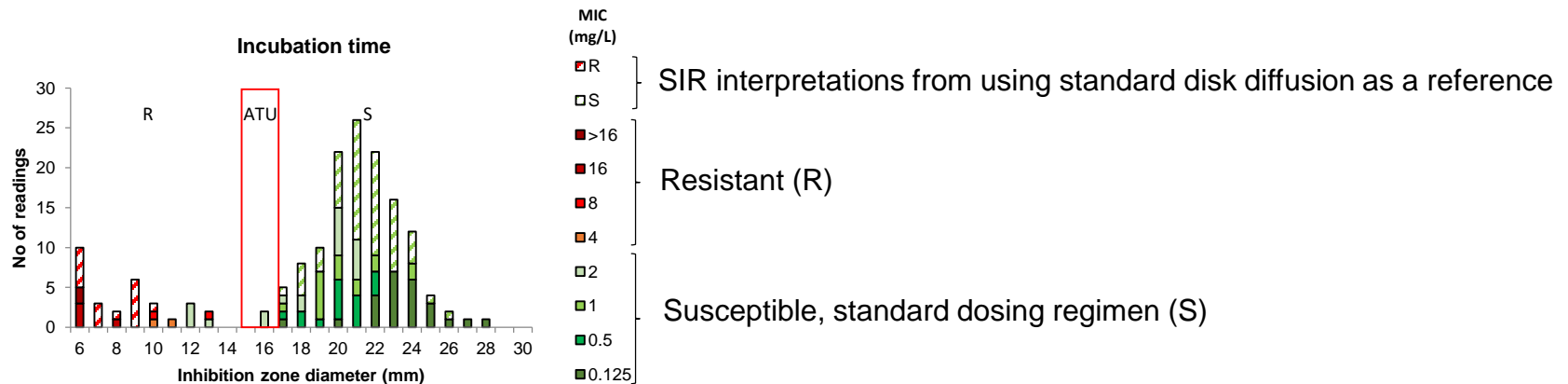
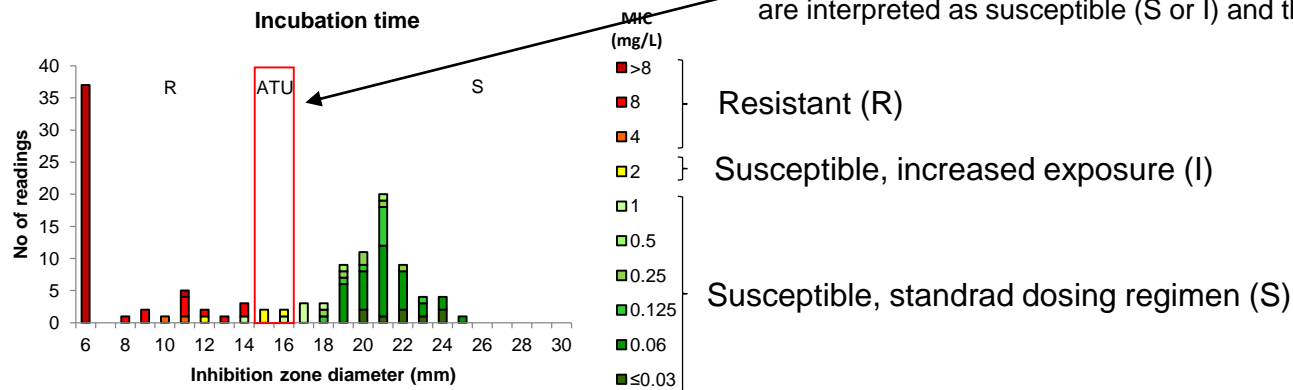
Changes from previous version

Changes
<ul style="list-style-type: none">• New distributions for aztreonam and aztreonam-avibactam.

Explanation of graphs:

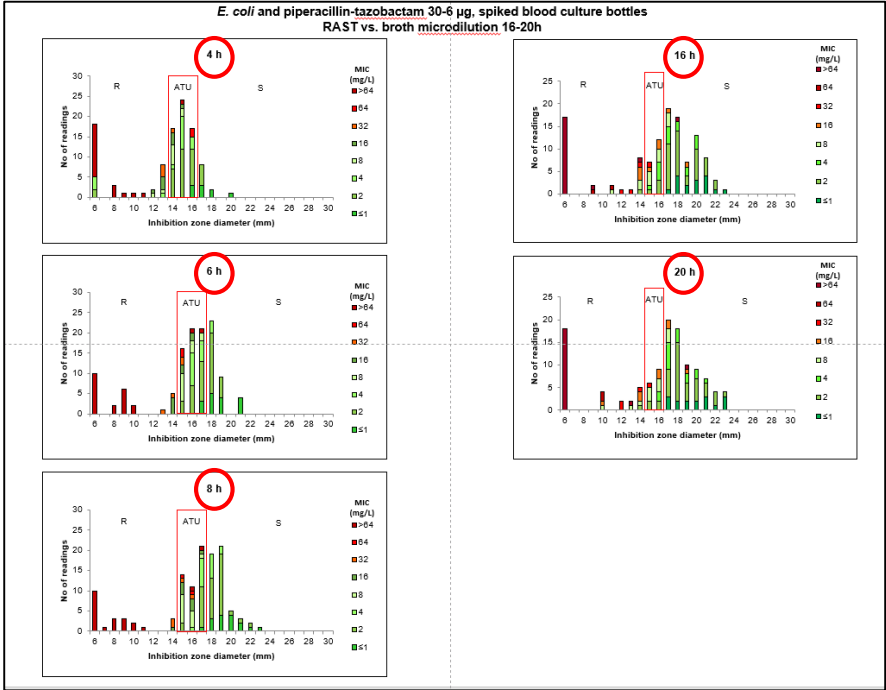
- These graphs show zone diameter distributions with MIC values or resistance mechanisms as coloured bars. Colours are related to current EUCAST MIC breakpoints.

Area of Technical Uncertainty (ATU), inhibition zone diameters above the ATU are interpreted as susceptible (S or I) and those below as resistant (R).



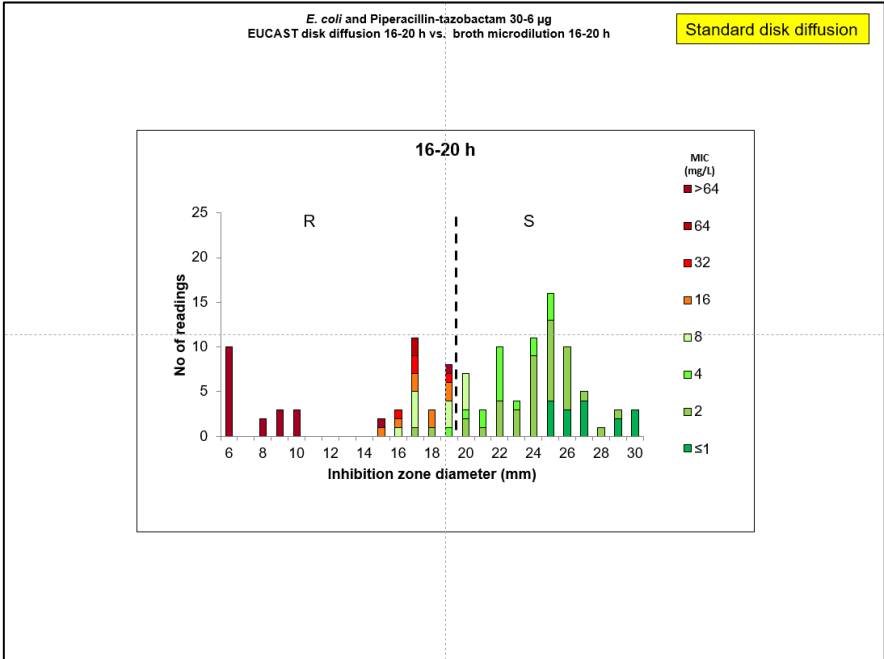
For each species-agent combination, the first slide shows RAST graphs versus reference method and the second slide shows data for the same isolates tested with EUCAST standard disk diffusion method versus reference method*. Graphs with RAST data are shown per incubation time; data for 16-20 hours incubation are shown as two graphs one for 16 and one for 20 hours.

*This slide will not be available for species-agent combinations where EUCAST standard disk diffusion is used as the reference.



← RAST versus reference method, one graph per available incubation time.

Standard disk diffusion versus reference method.



Material and method

- Isolates have been tested from spiked blood culture bottles.
- All isolates have been tested on media agar from two manufacturers. The number of tests are therefore twice the number of isolates except for enterococci where some tests were repeated more than once.

Escherichia coli

The proportion of readable zone diameters

The proportion of zone diameters (%) which are possible to read* after 4, 6, 8 and 16-20 h of incubation.

Organism	4 hours (%)	6 hours (%)	8 hours (%)	16-20 hours (%)
<i>Escherichia coli</i>	90	99	99	100

*The table displays “possible to read”, not “possible to interpret”, since some of the zone diameters will be in the ATU.

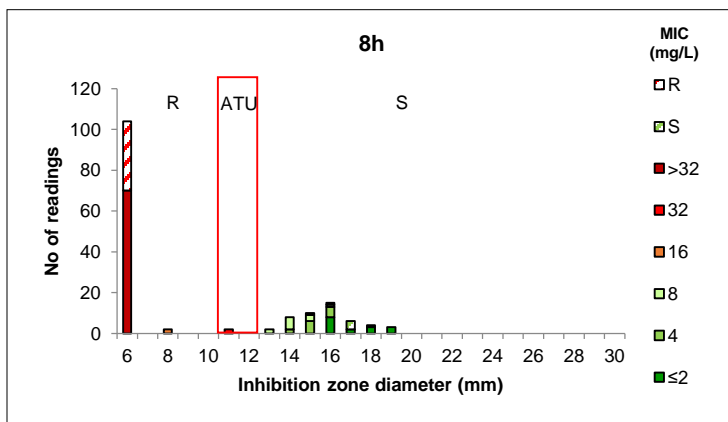
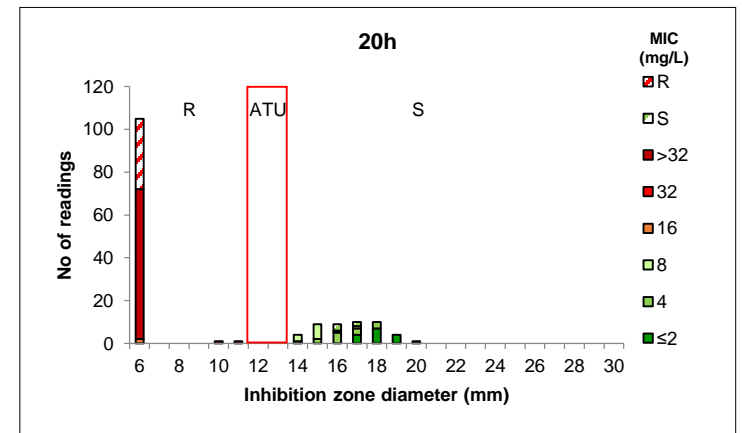
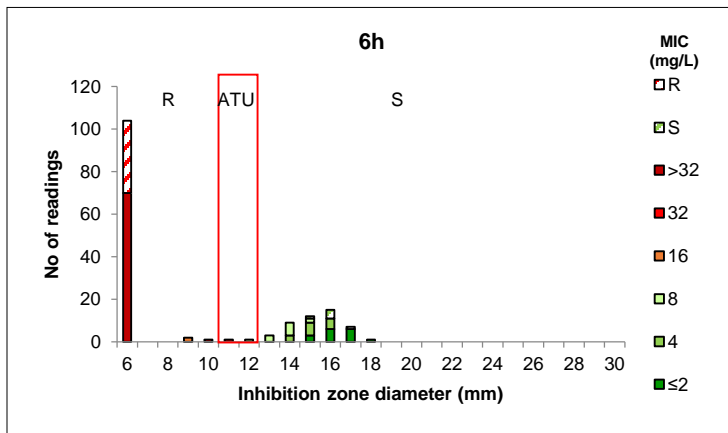
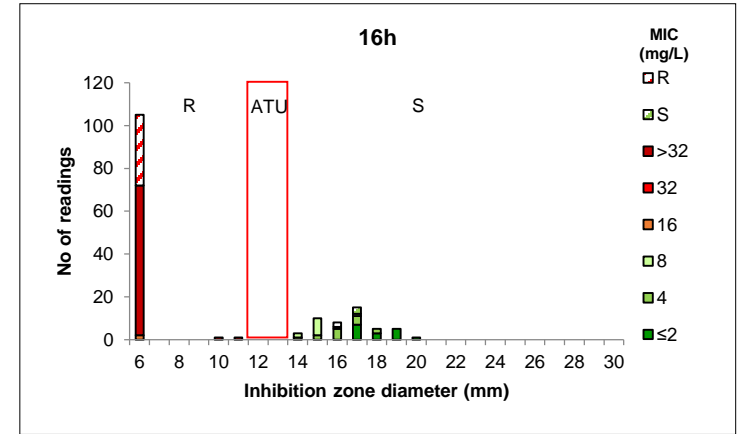
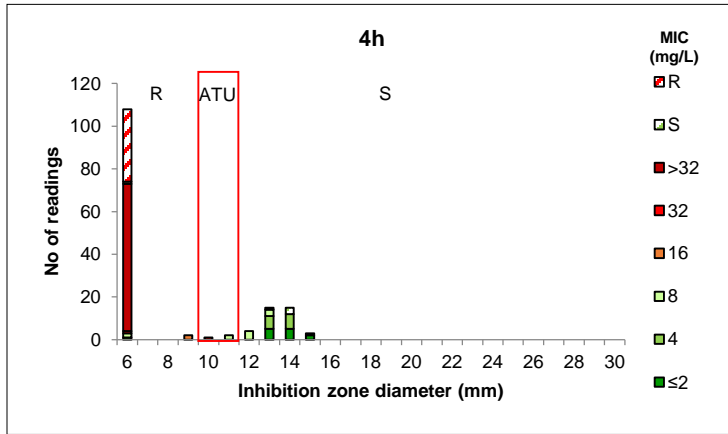
Escherichia coli

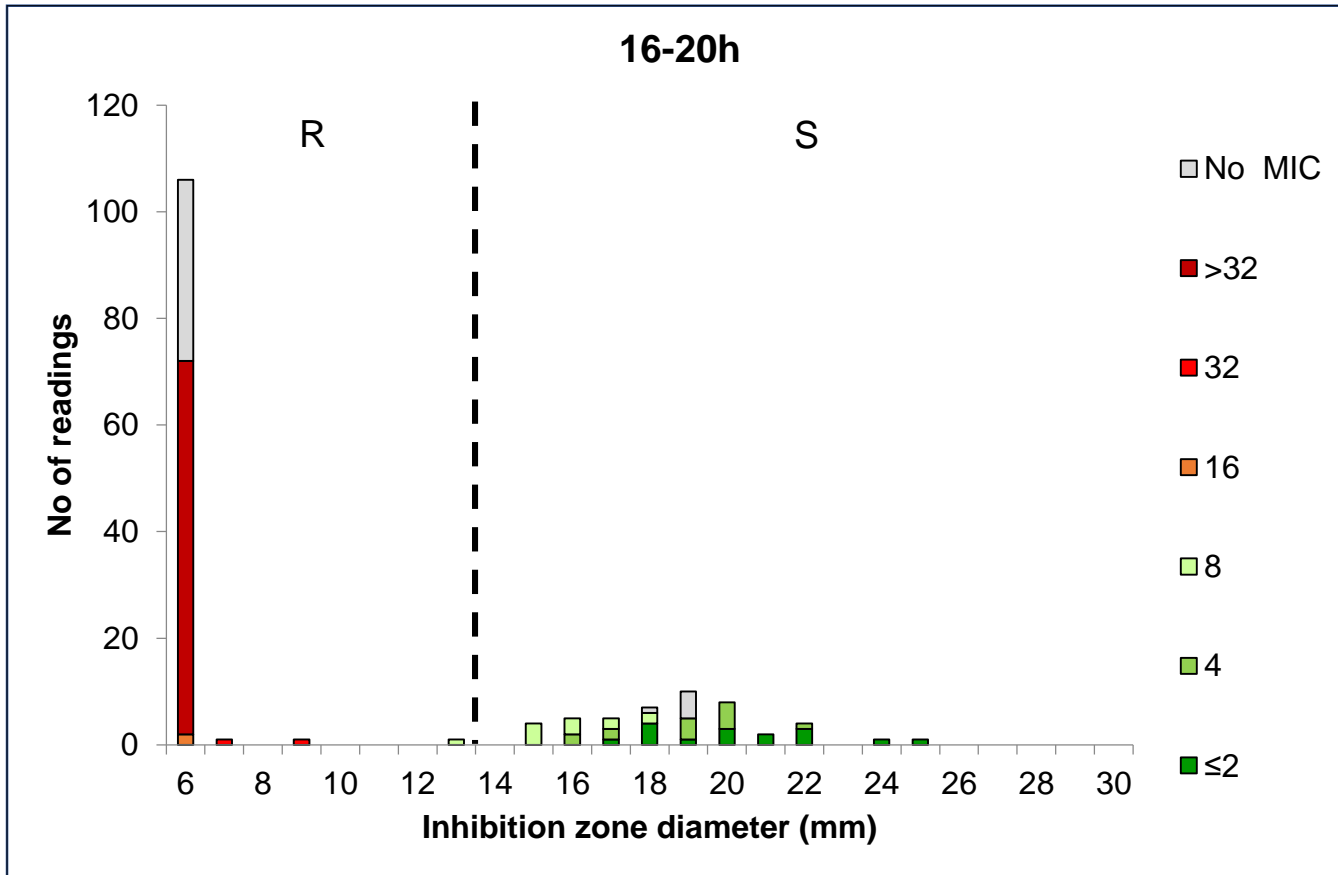
Antimicrobial agent and number of tested isolates

Antimicrobial agent	Number of tested isolates (number of tests)
Ampicillin	88 (176)
Amoxicillin-clavulanic acid	88 (176)
Piperacillin-tazobactam	59 (118)
Temocillin	88 (176)
Cefotaxime	59 (118)
Ceftazidime	59 (118)
Ceftazidime-avibactam	54 (108)
Ceftolozane-tazobactam	54 (108)
Imipenem	64 (128)
Imipenem-relebactam	78 (156)
Meropenem	59 (118)
Meropenem-vaborbactam	78 (156)
Aztreonam	50 (100)
Aztreonam-avibactam	50 (200*)
Ciprofloxacin	59 (118)
Levofloxacin	64 (128)
Amikacin	59 (118)
Gentamicin	59 (118)
Tobramycin	59 (118)
Trimethoprim-sulfamethoxazole	64 (128)

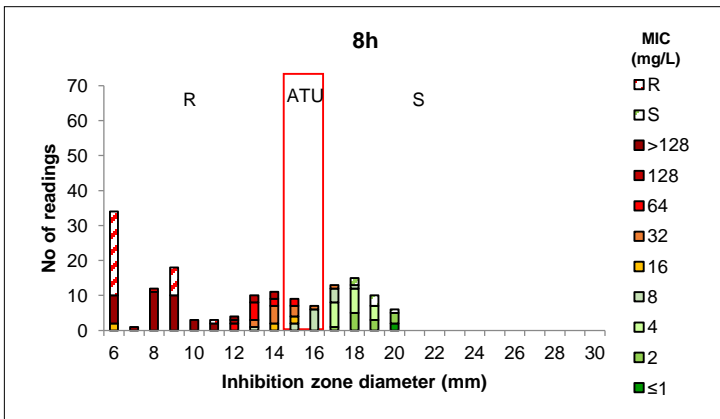
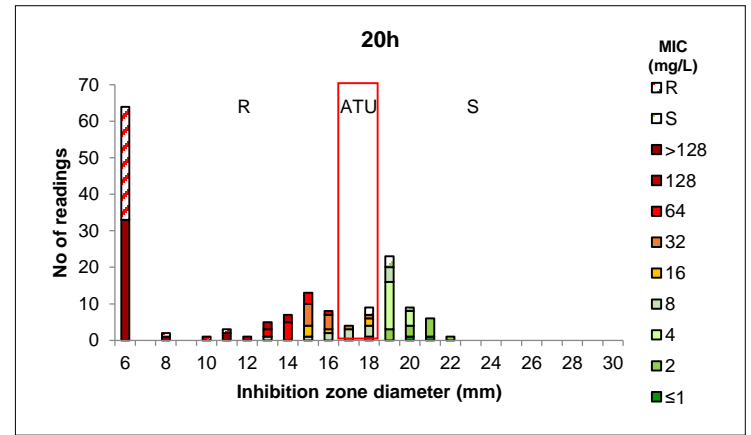
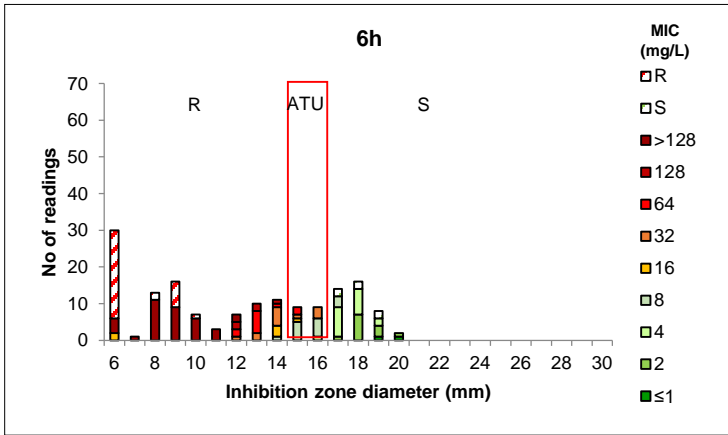
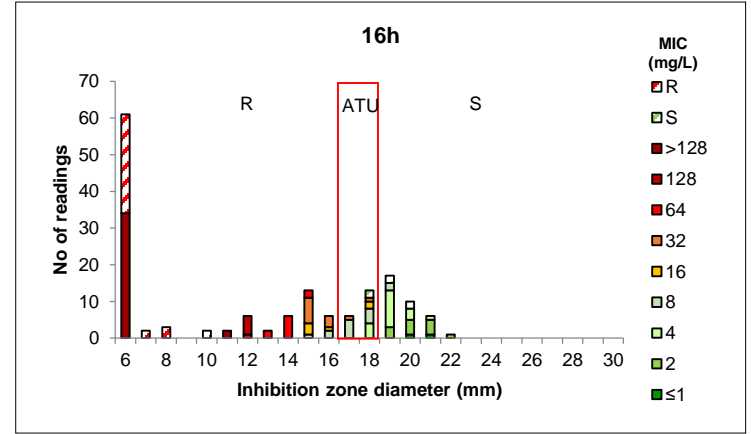
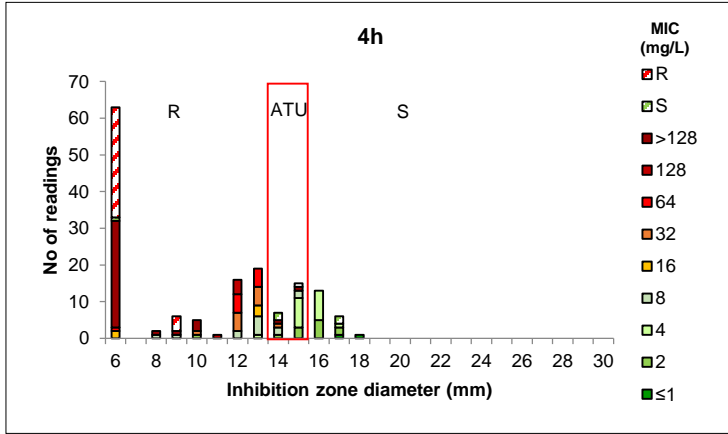
*Antimicrobial disks from two manufacturers have been tested.

***E. coli* and ampicillin 10 µg, spiked blood culture bottles
RAST vs. broth microdilution and EUCAST disk diffusion 16-20 h**

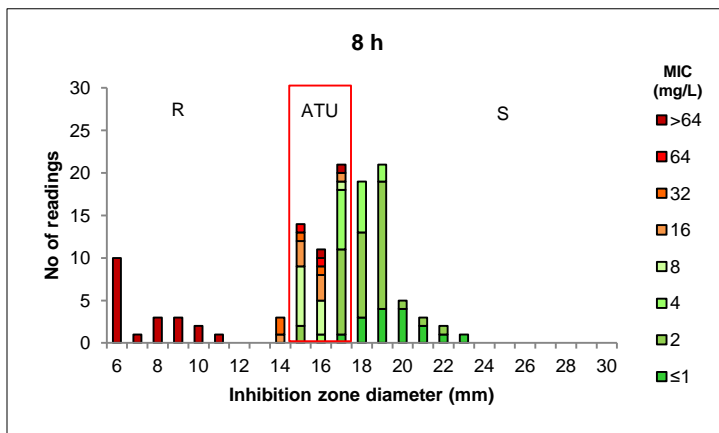
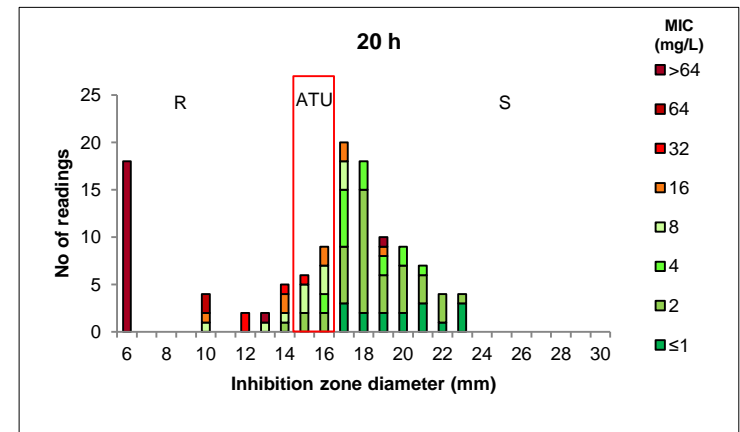
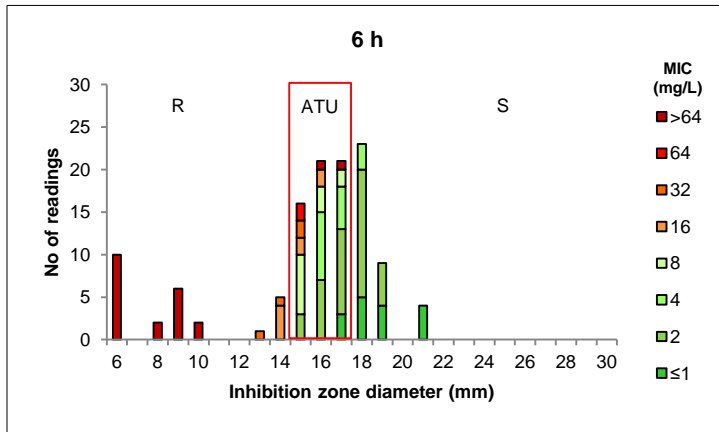
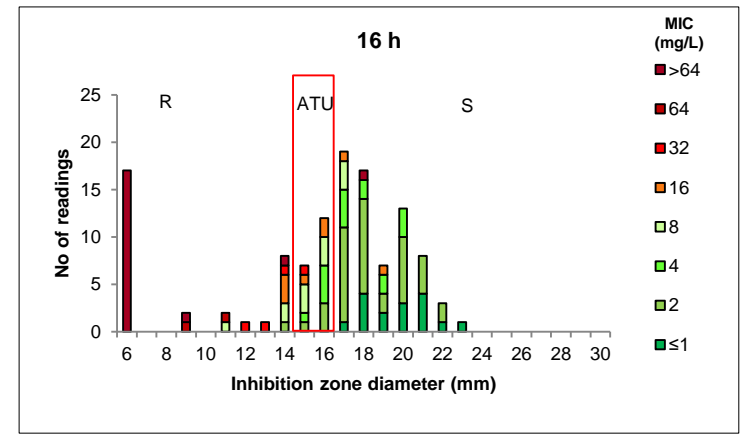
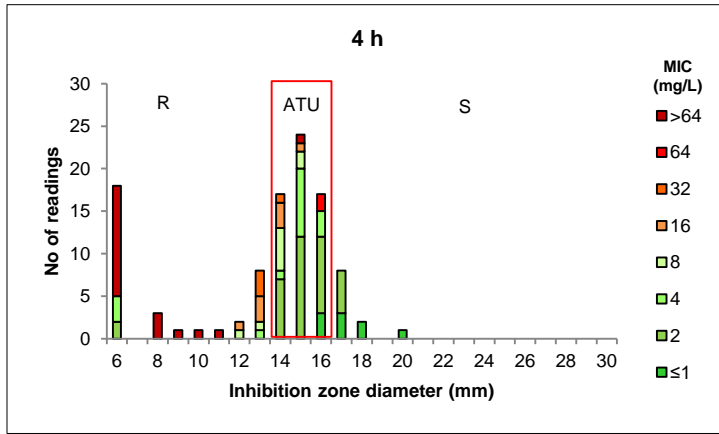




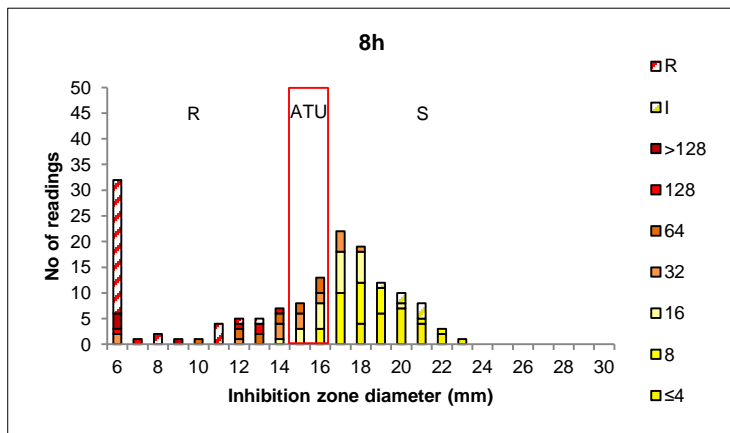
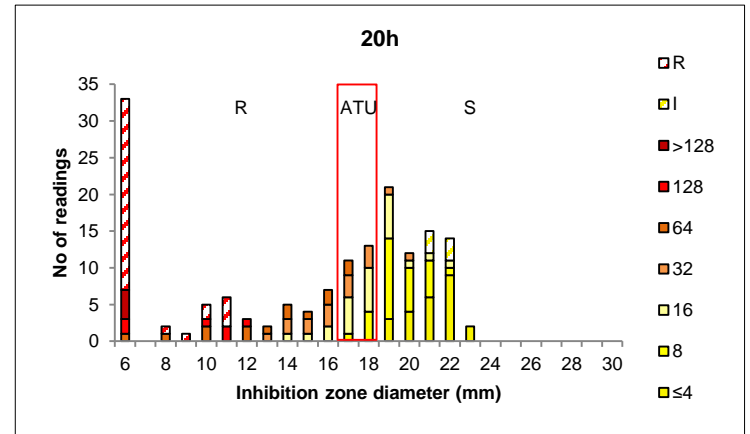
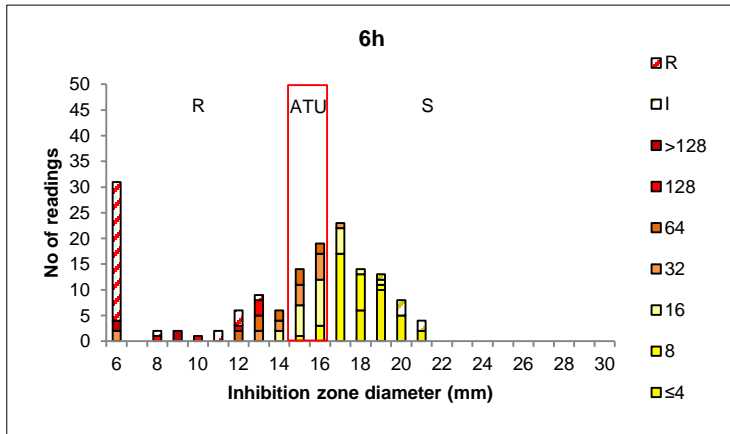
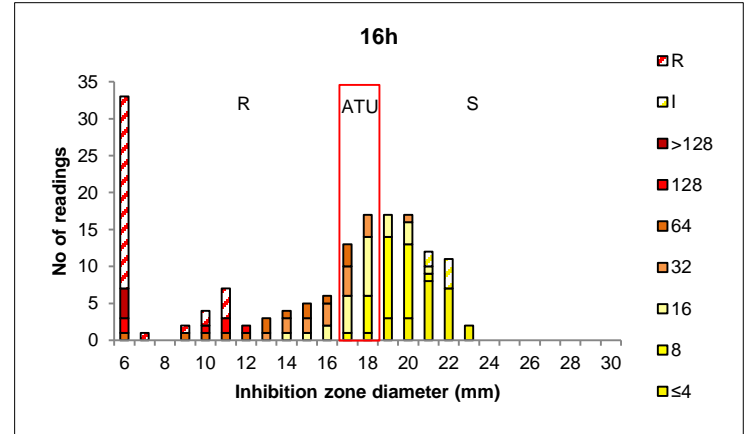
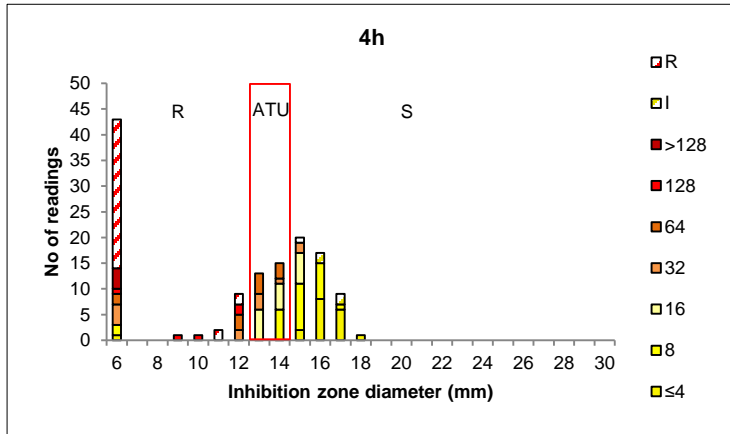
***E. coli* and amoxicillin-microdilution acid 20-10 µg, spiked blood culture bottles
RAST vs. broth microdilution and EUCAST disk diffusion 16-20 h**

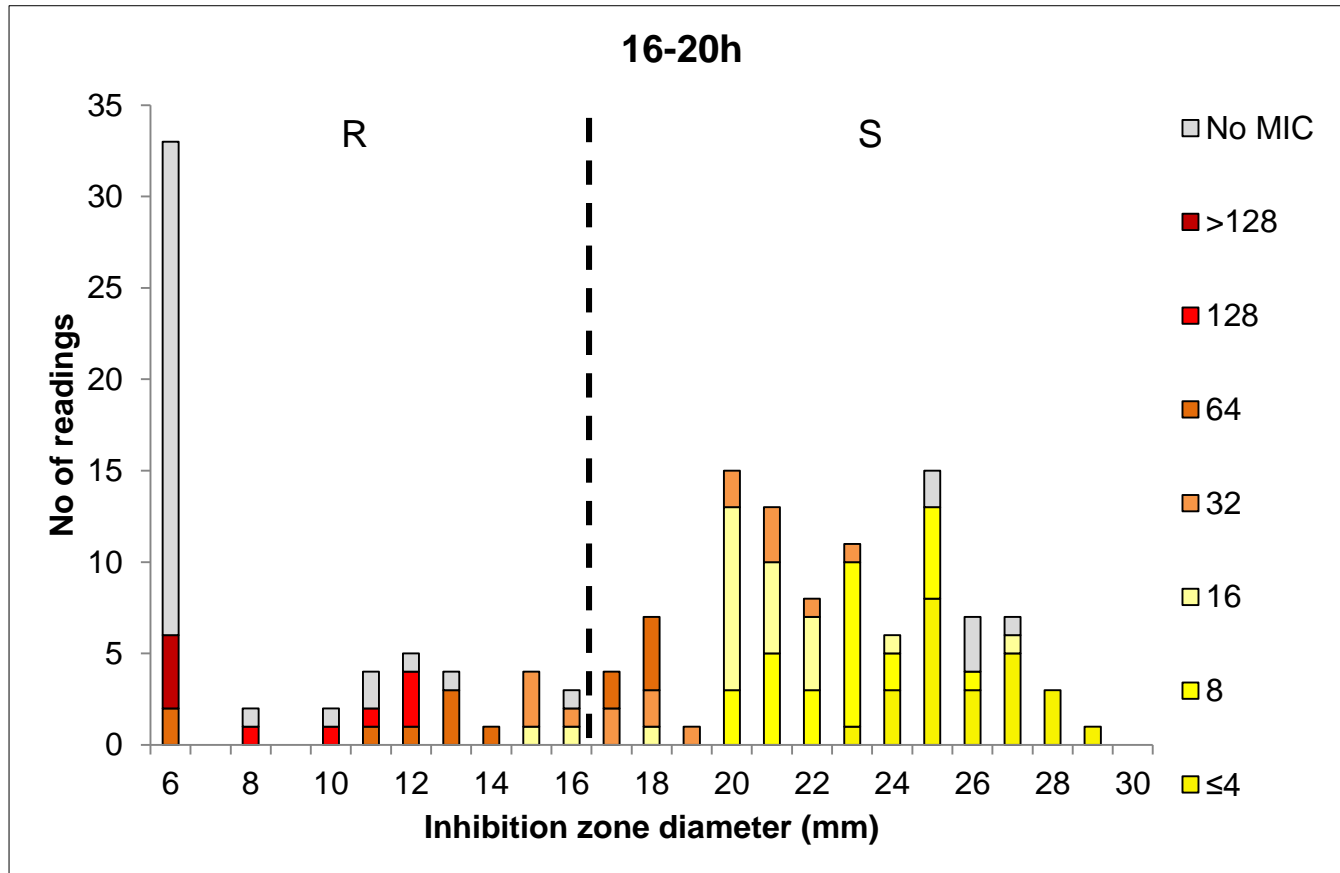


E. coli and piperacillin-tazobactam 30-6 µg, spiked blood culture bottles
 RAST vs. broth microdilution 16-20h

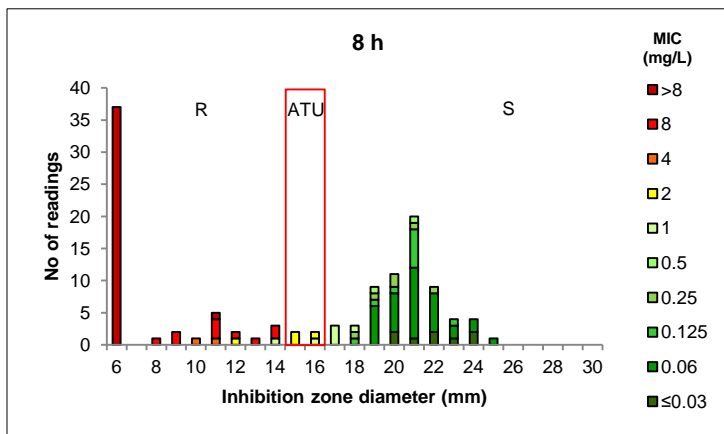
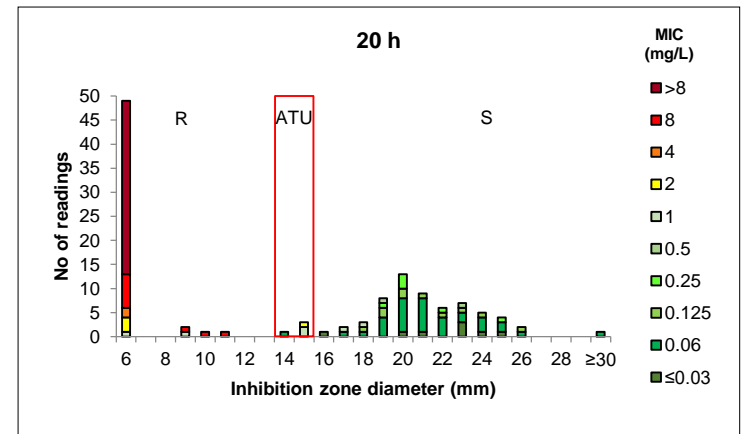
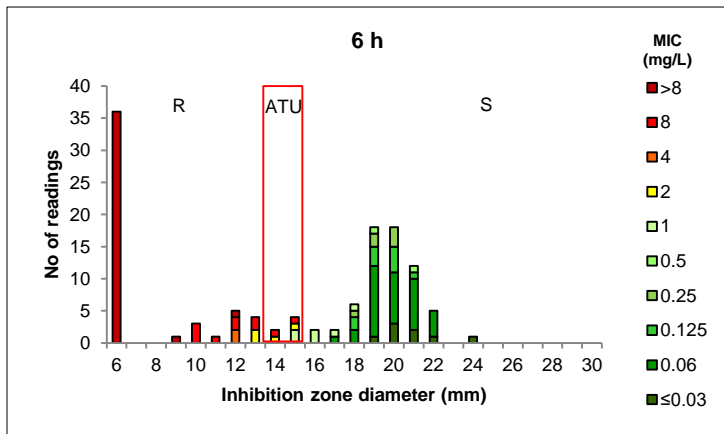
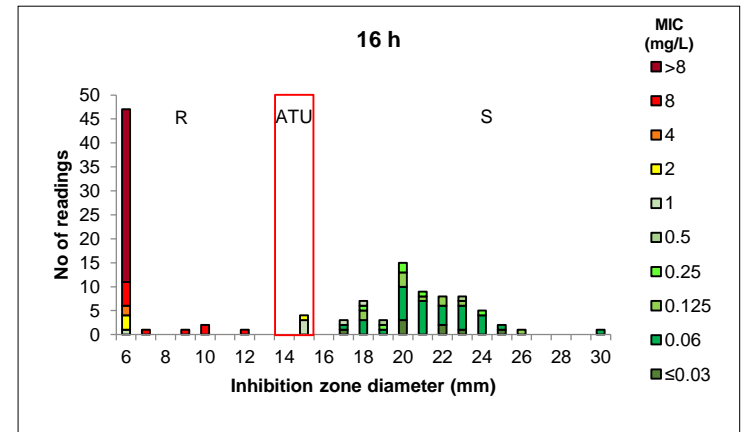
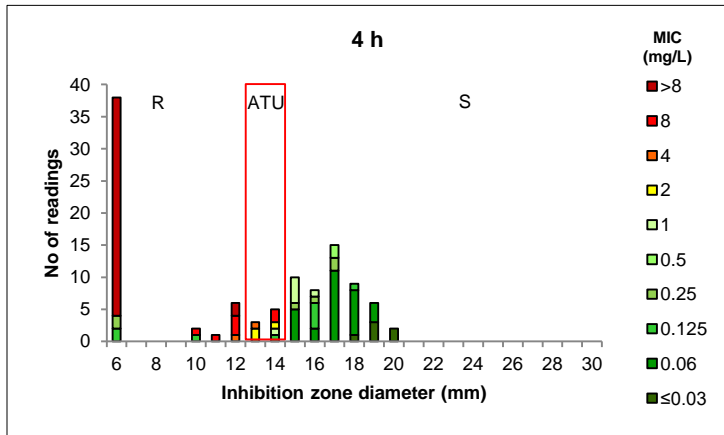


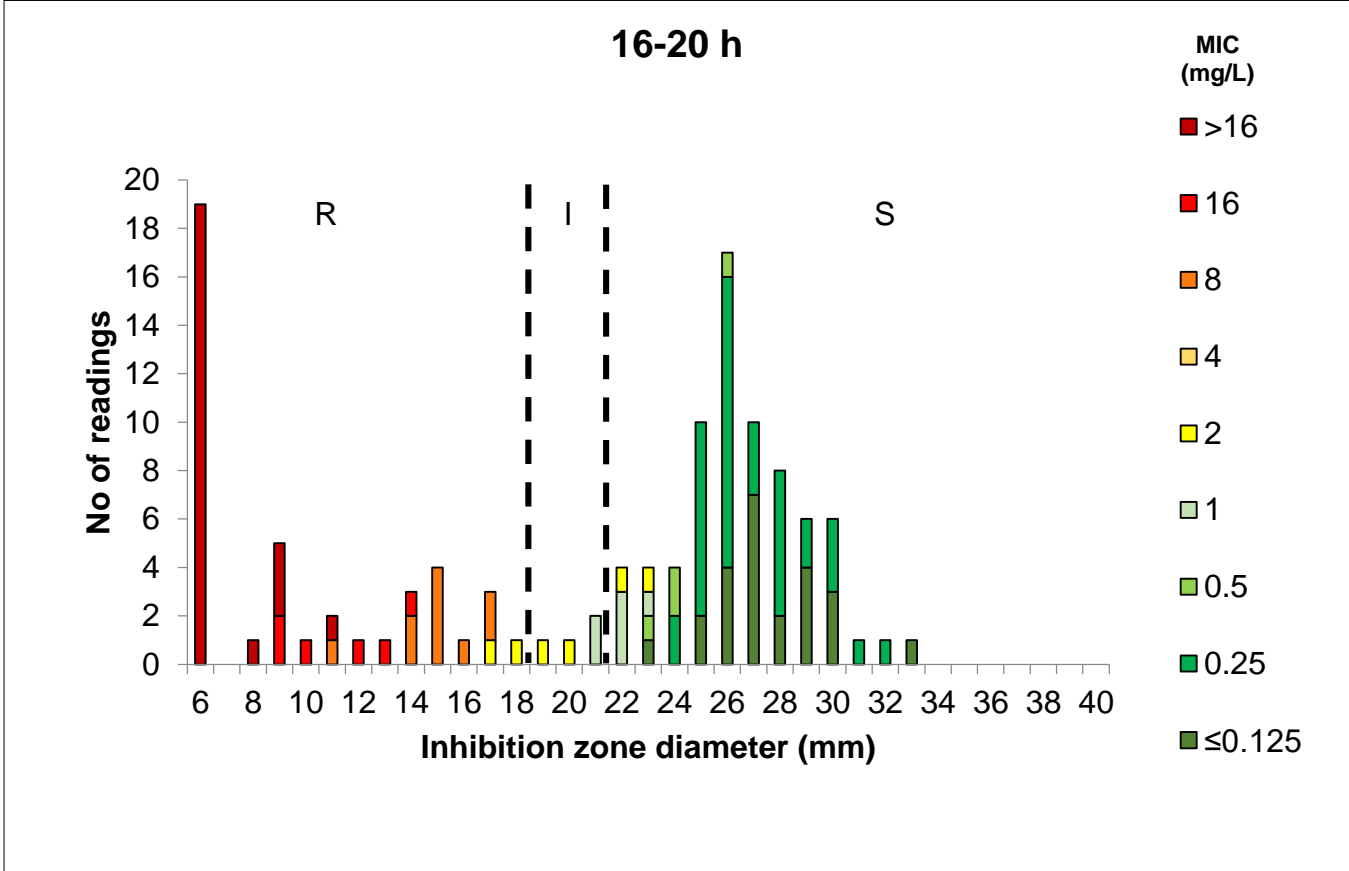
***E. coli* and temocillin 30 µg, spiked blood culture bottles
RAST vs. broth microdilution and EUCAST disk diffusion 16-20 h**



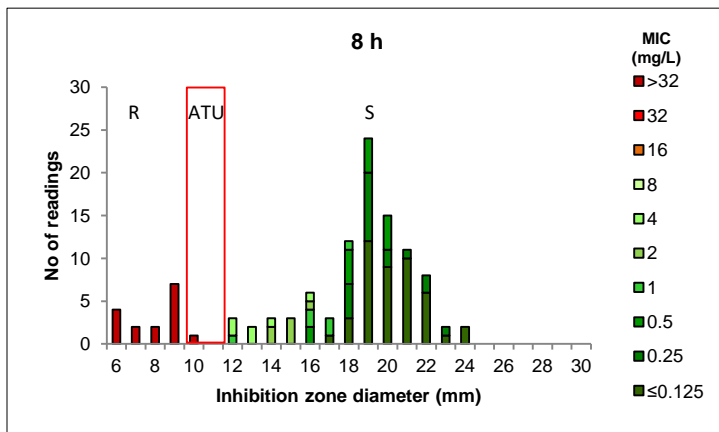
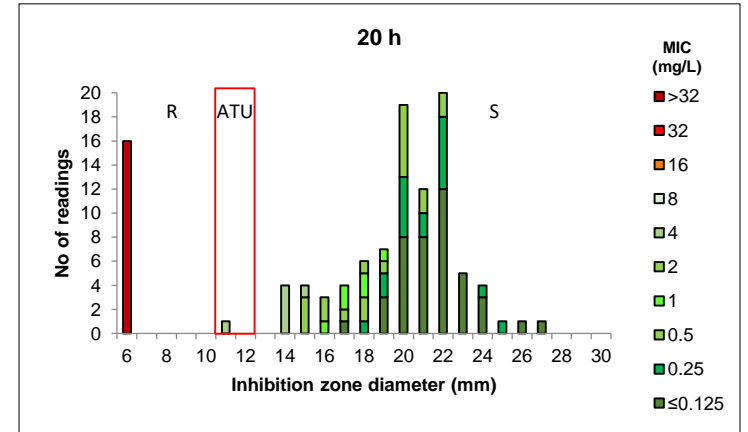
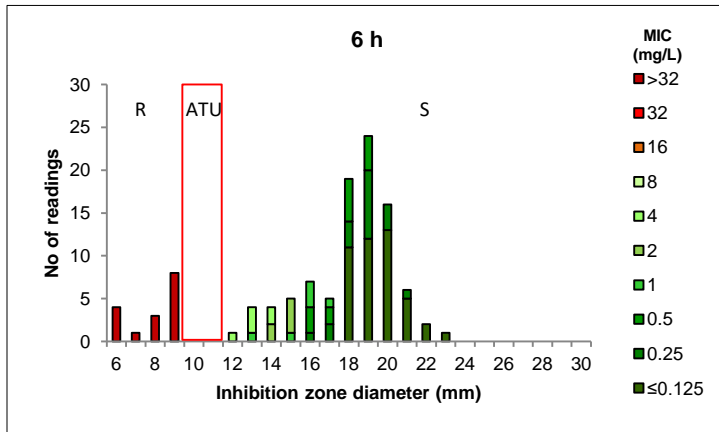
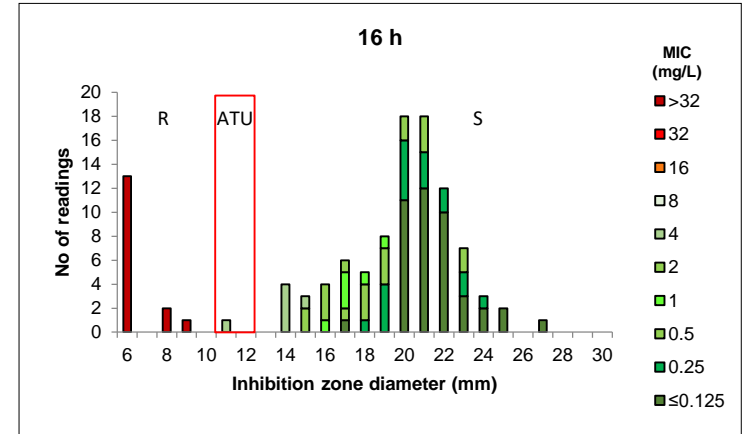
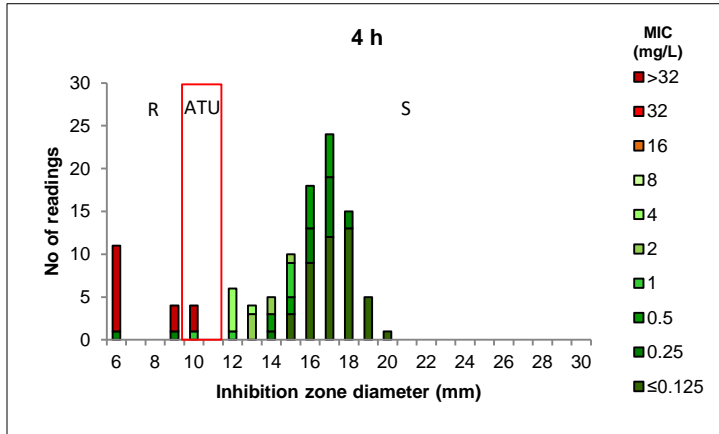


E. coli and cefotaxime 5 µg, spiked blood culture bottles
RAST vs. broth microdilution 16-20h

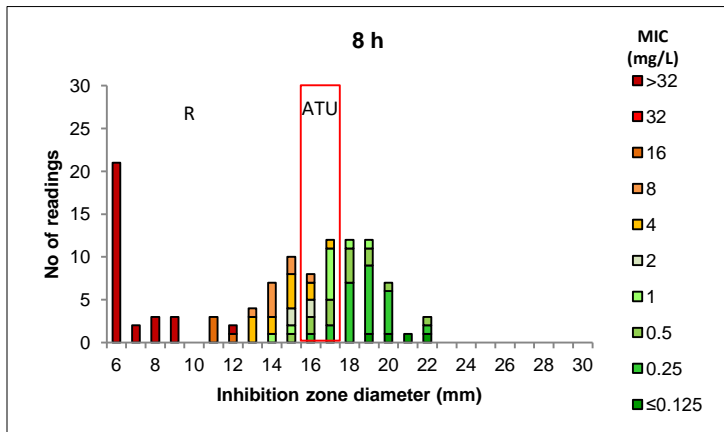
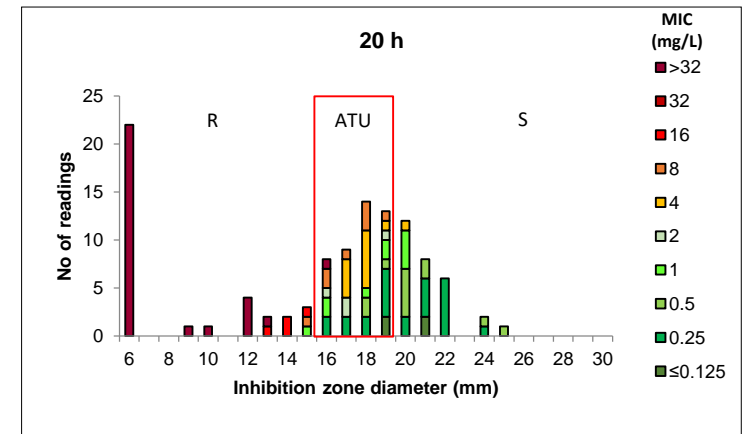
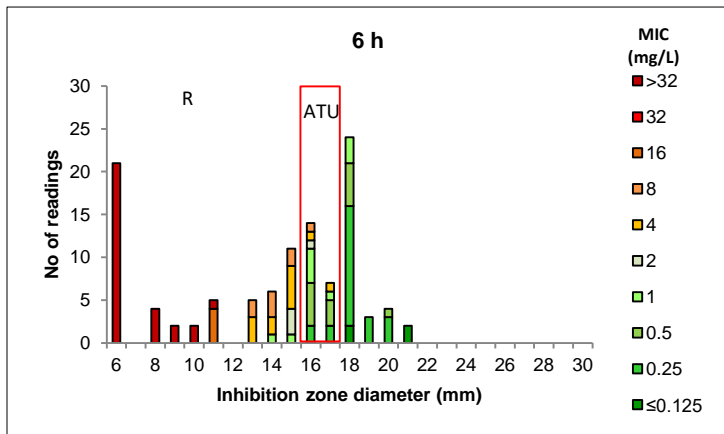
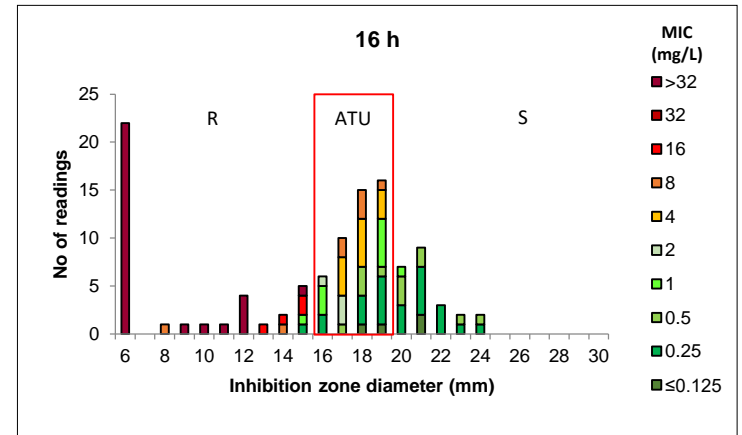
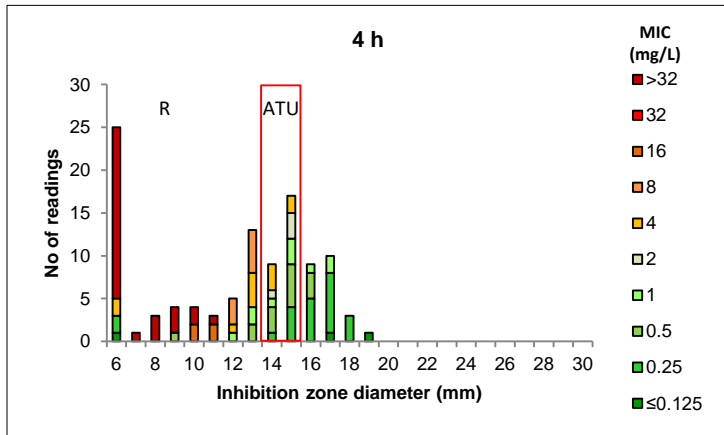


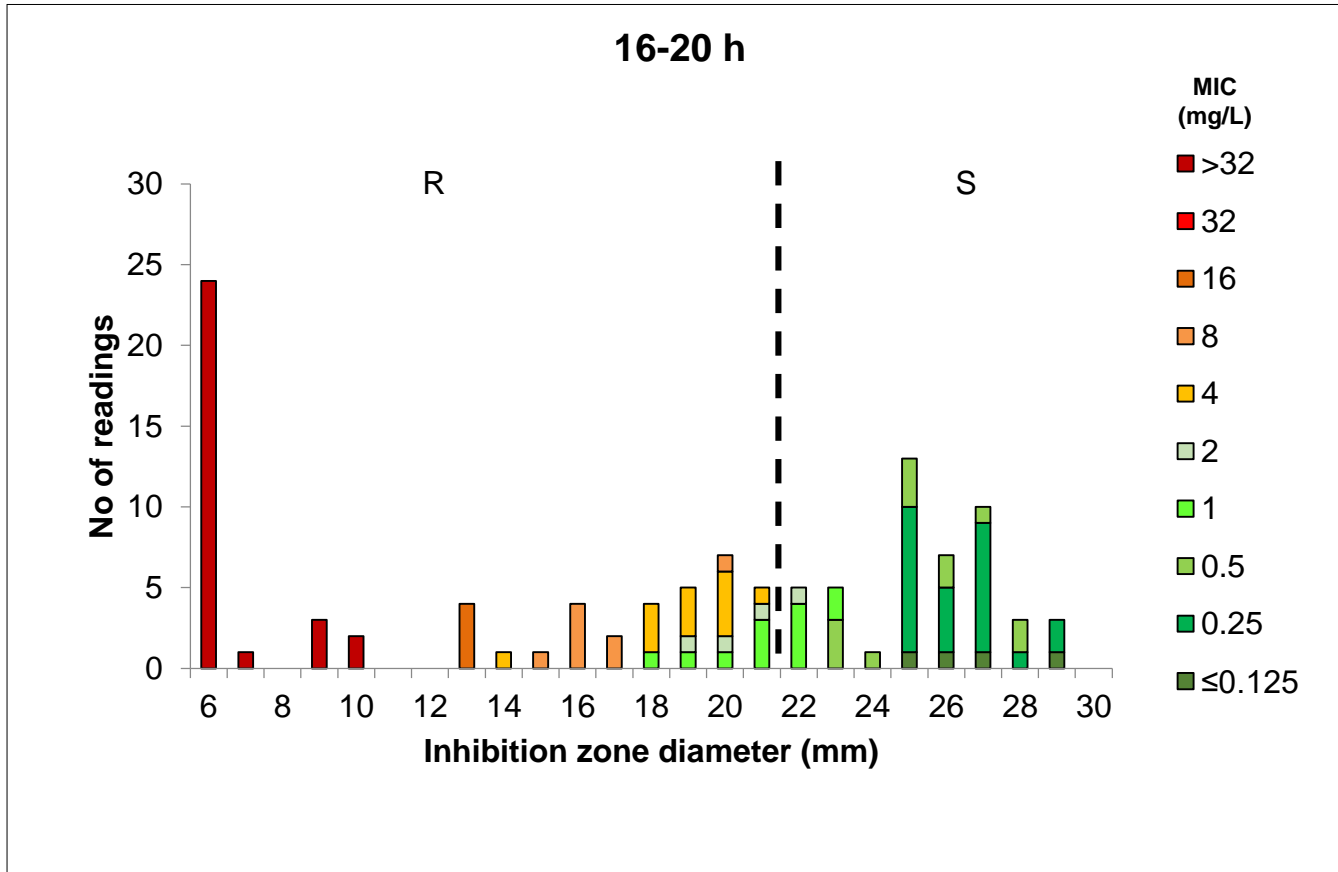


E. coli and ceftazidime-avibactam 10-4 µg, spiked blood culture bottles
RAST vs. broth microdilution 16-20 h

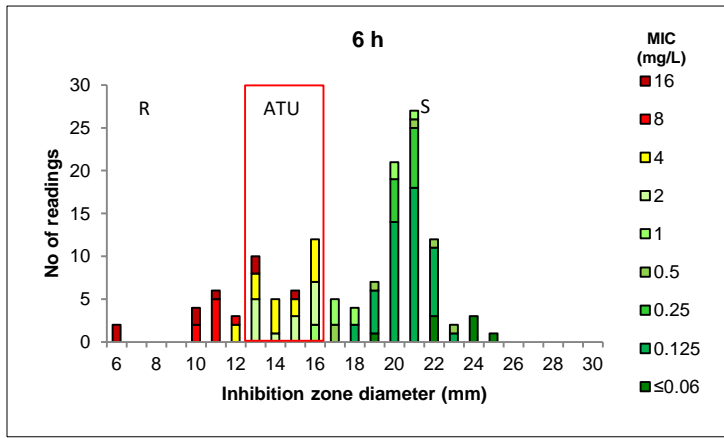
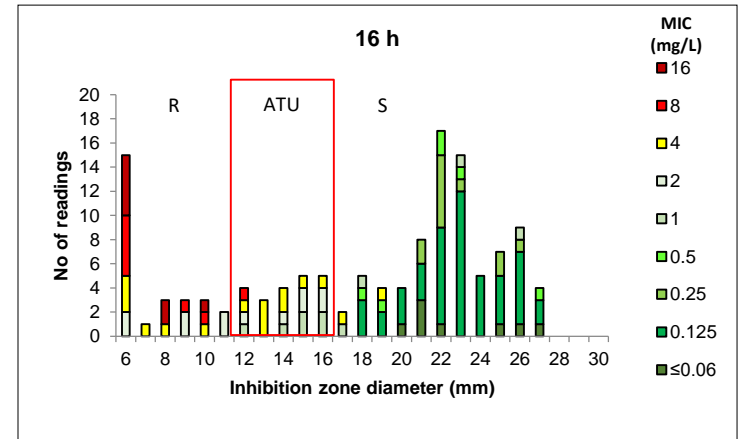
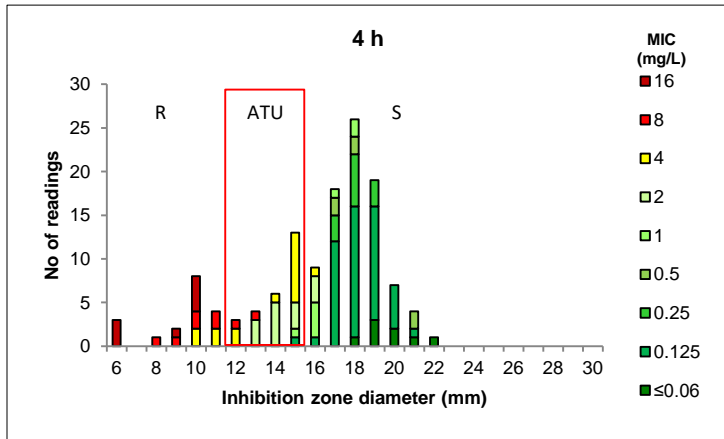


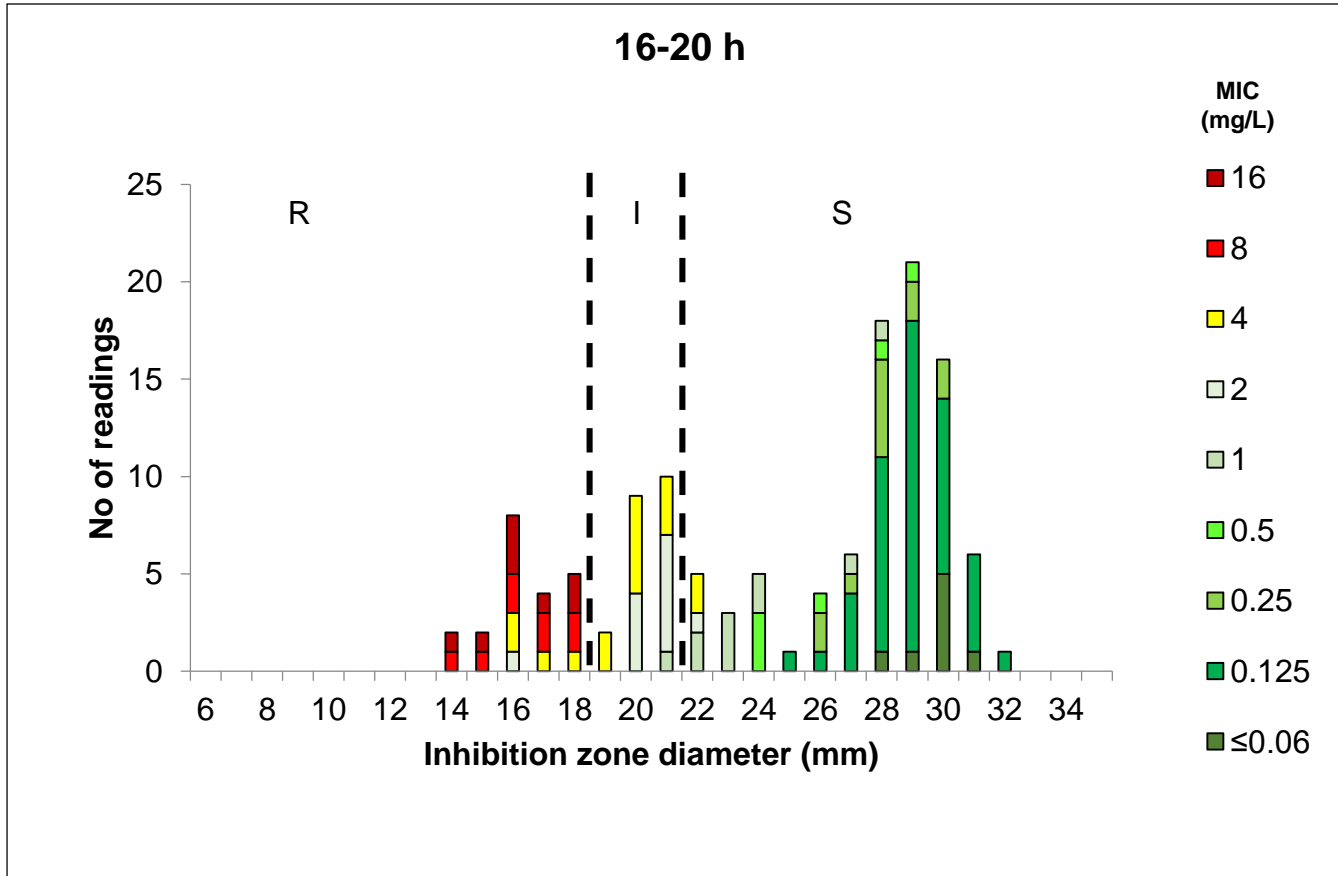
***E. coli* and ceftolozane-bactam 30-10 µg, spiked blood culture bottles
RAST vs. broth microdilution 16-20h**



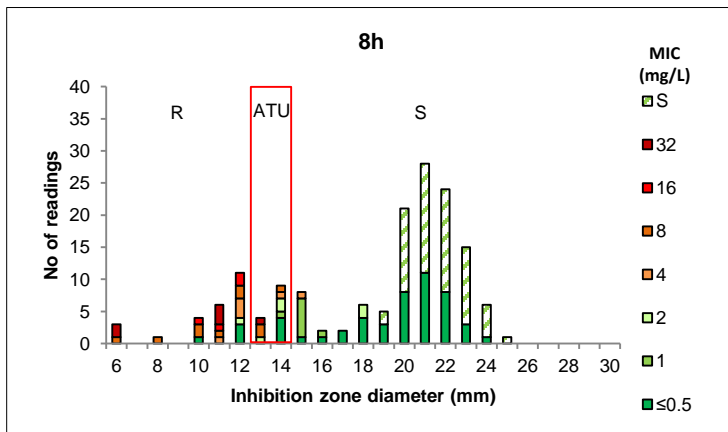
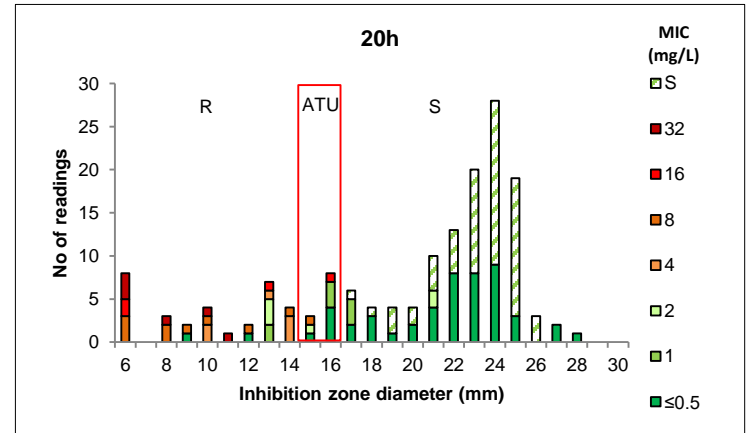
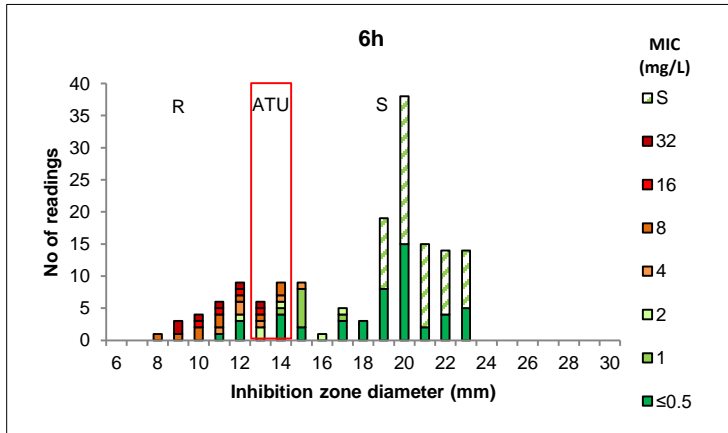
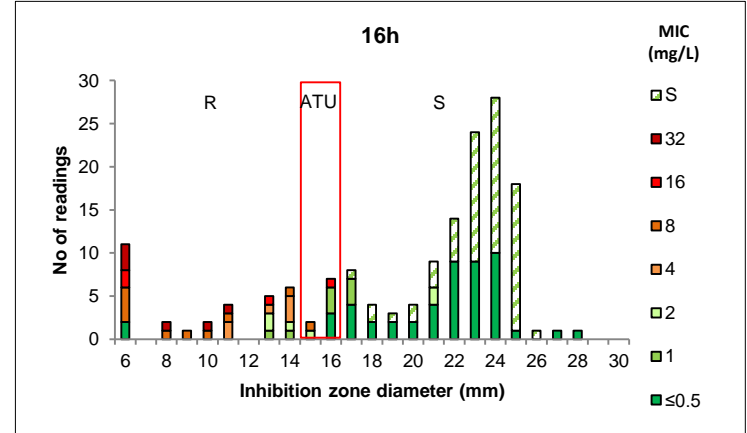
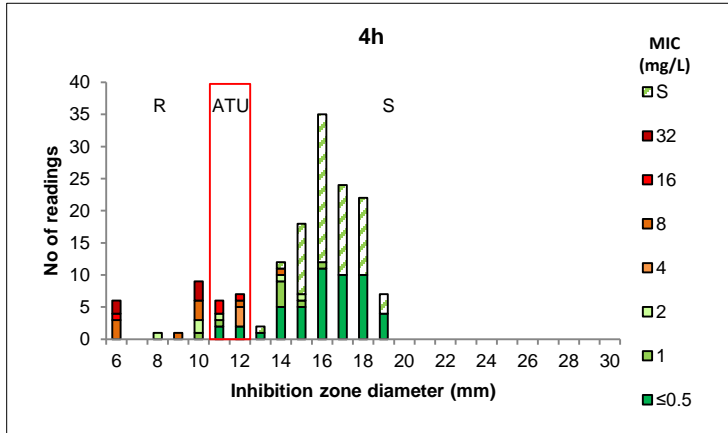


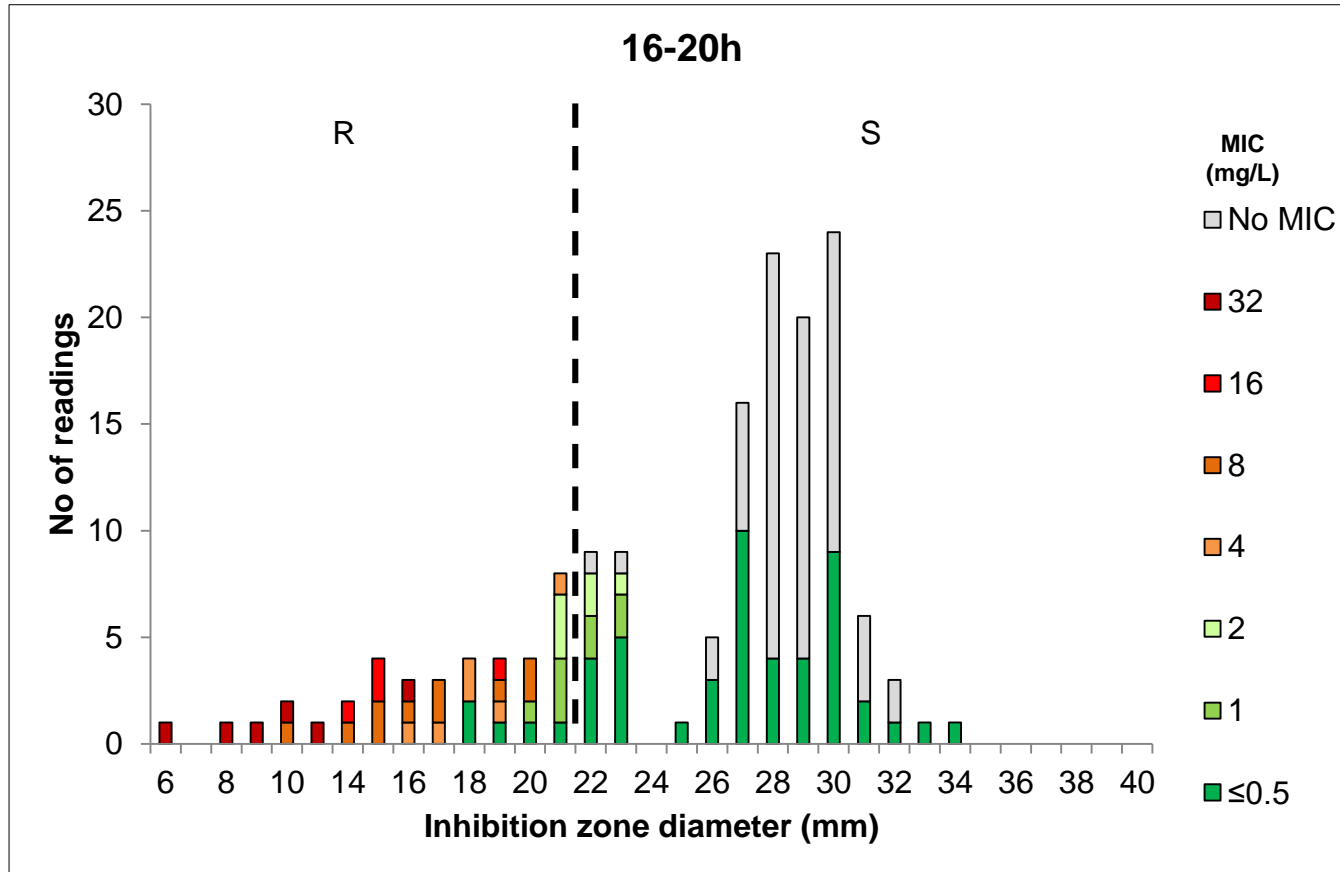
E. coli and imipenem 10 µg, spiked blood culture bottles
RAST vs. broth microdilution 16-20h



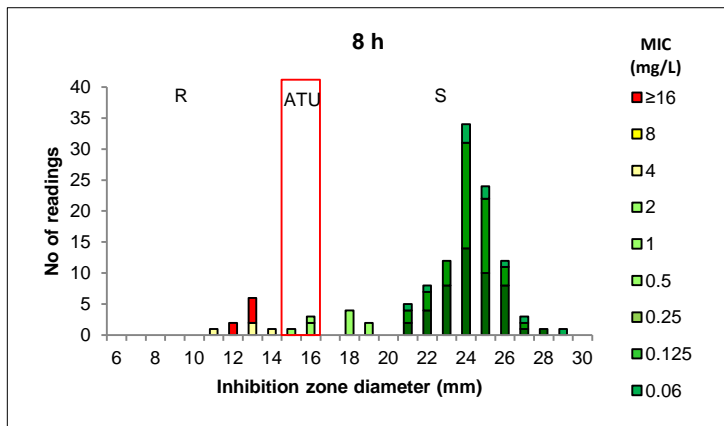
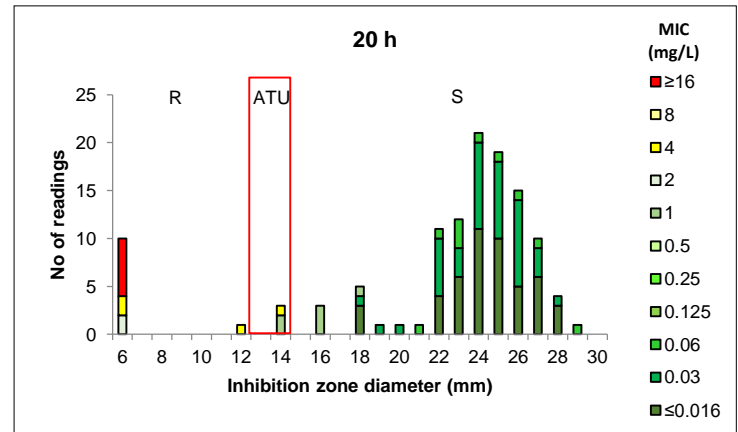
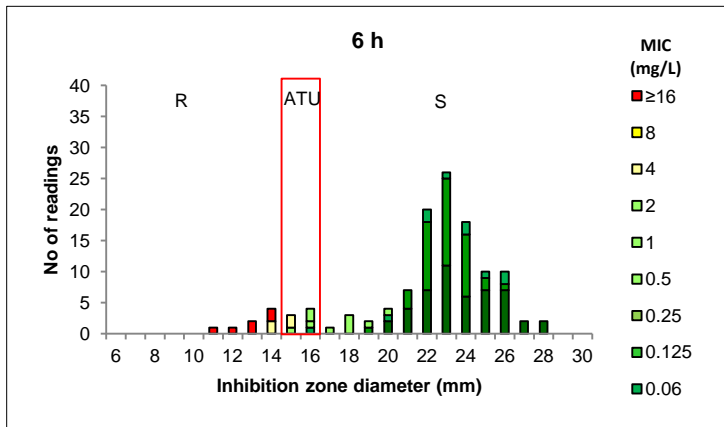
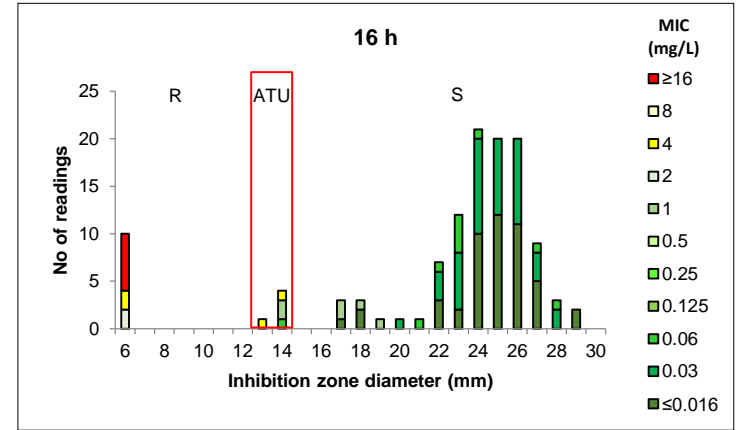
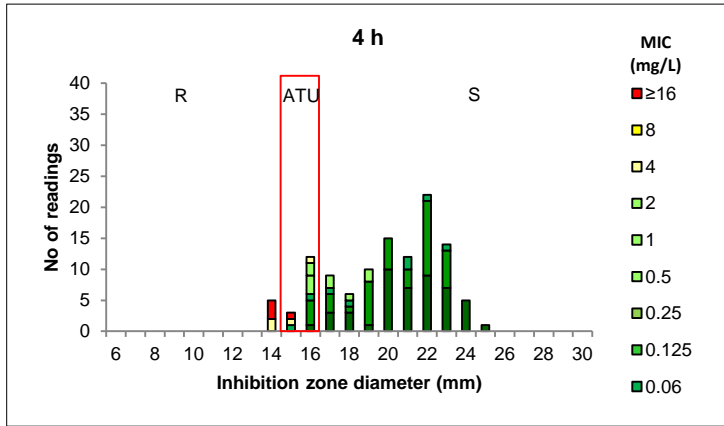


***E. coli* and imipenem-relebactam 10-25 µg, spiked blood culture bottles
RAST vs. broth microdilution and EUCAST disk diffusion 16-20 h**

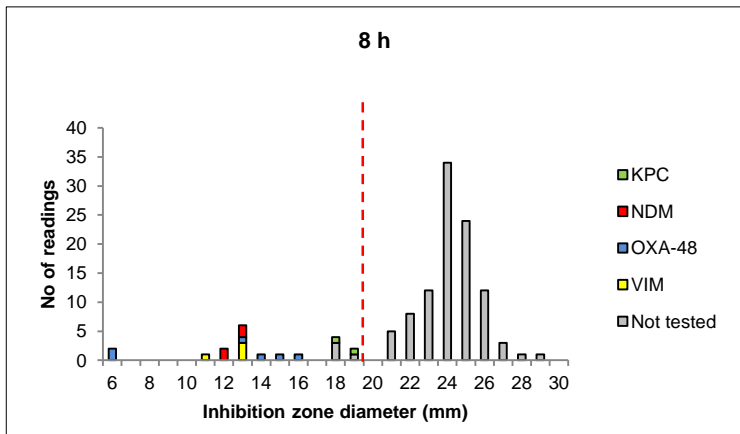
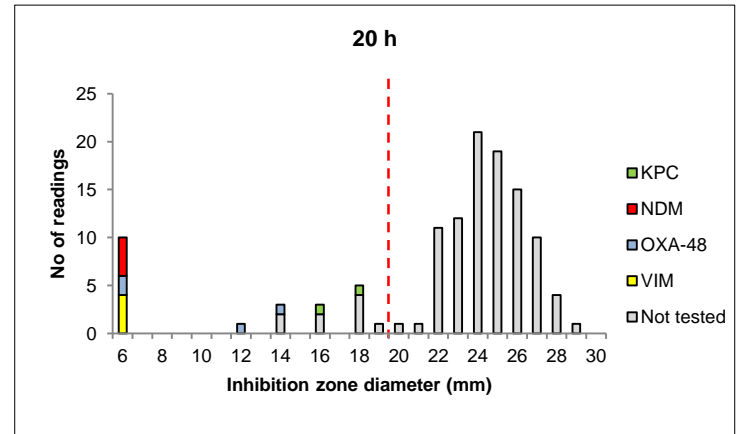
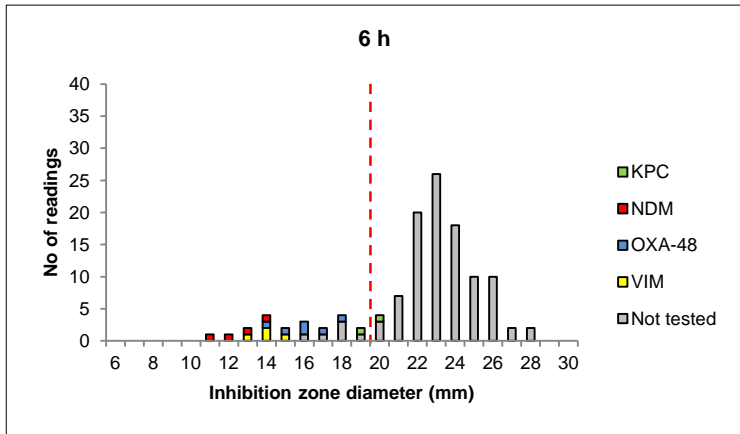
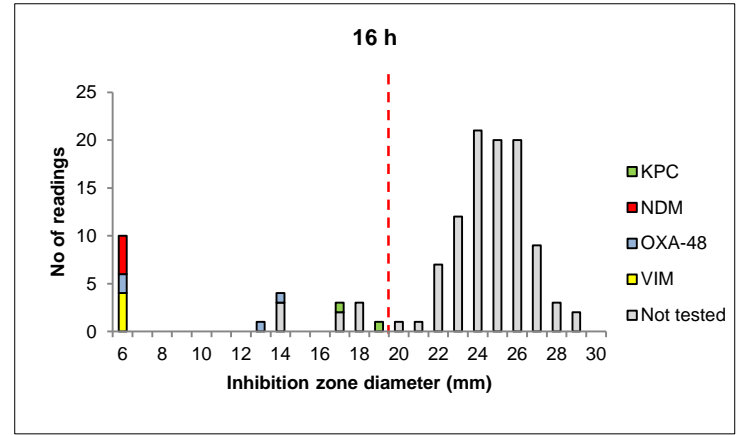
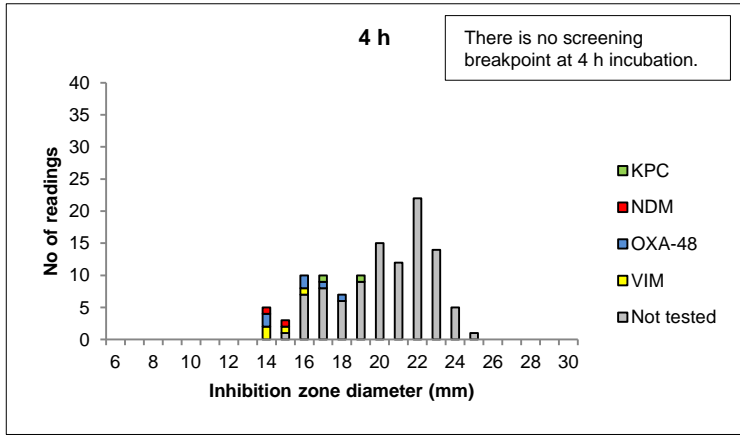




***E. coli* and meropenem 10 µg, spiked blood culture bottles
RAST vs. broth microdilution 16-20h**

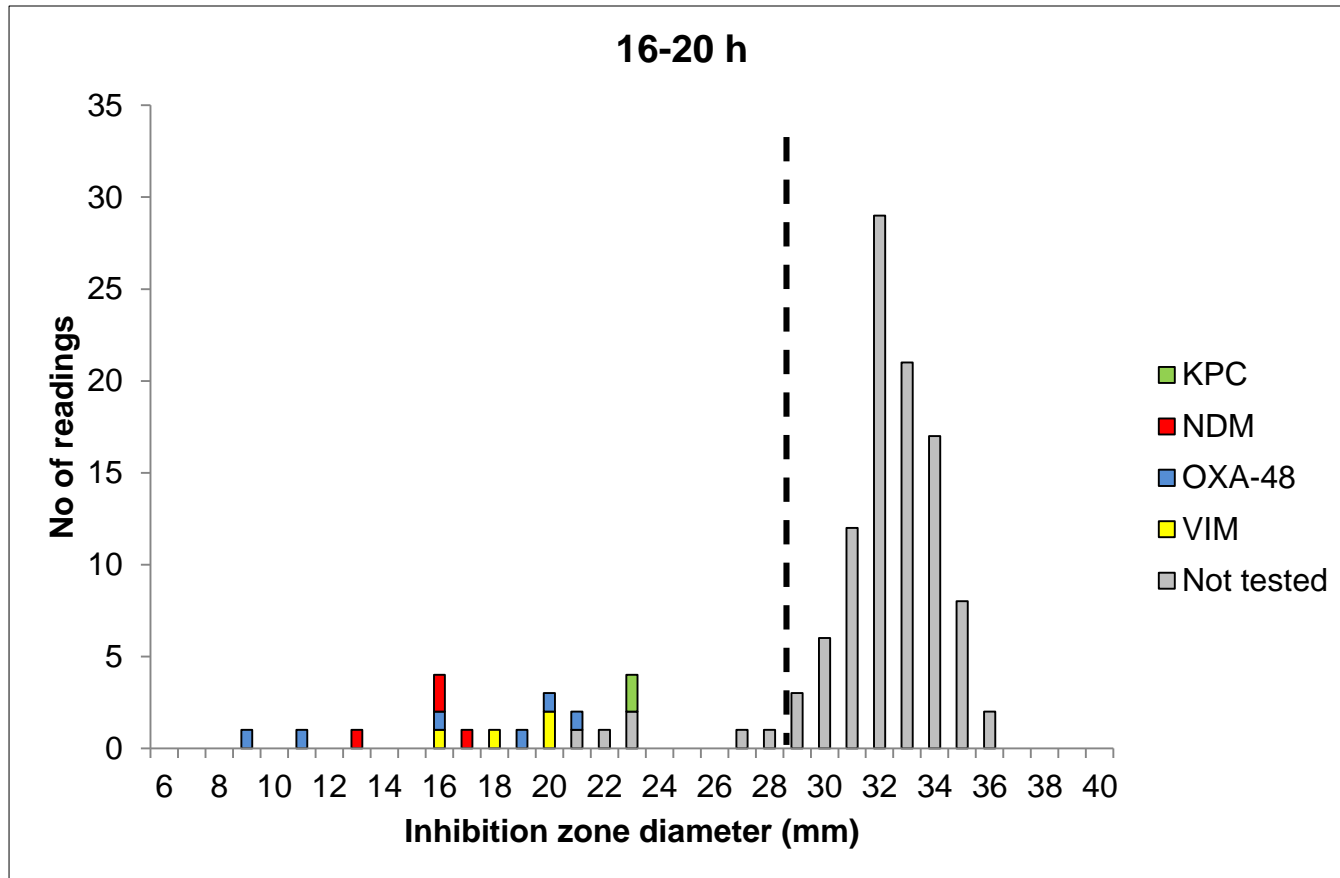


***E. coli* and meropenem 10 µg, spiked blood culture bottles
RAST vs. carbapenemase-producing *Escherichia coli***



The dotted line corresponds to the screening cut-off for carbapenemase-producing *E. coli*.

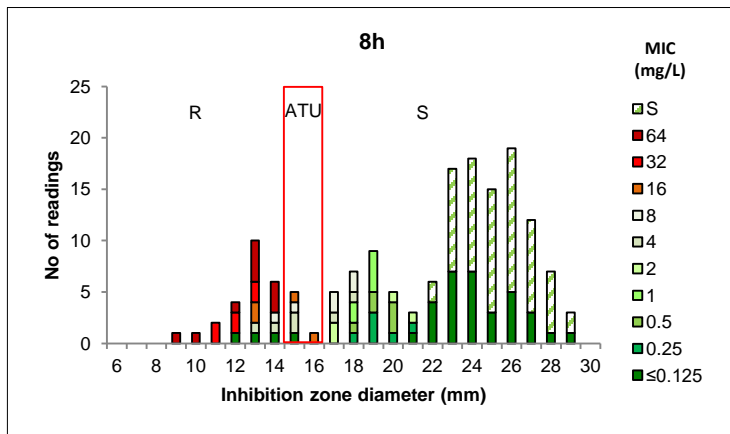
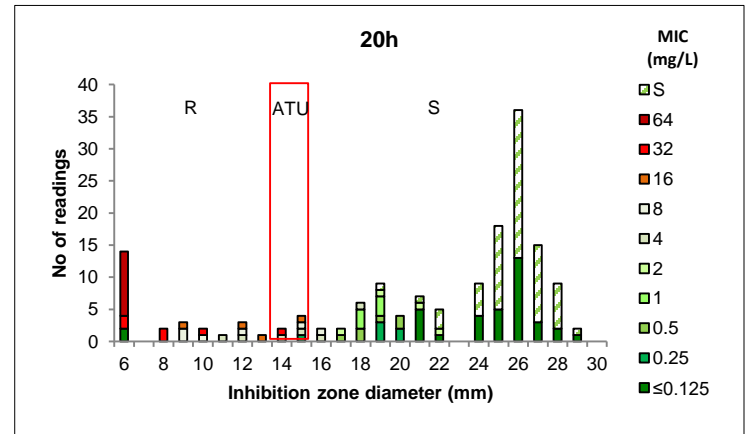
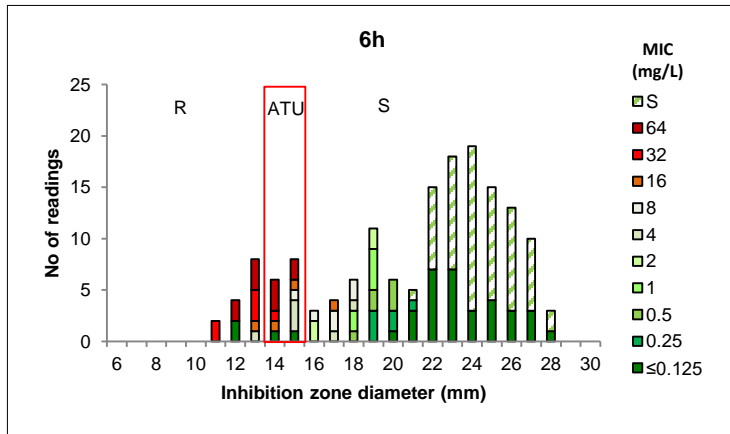
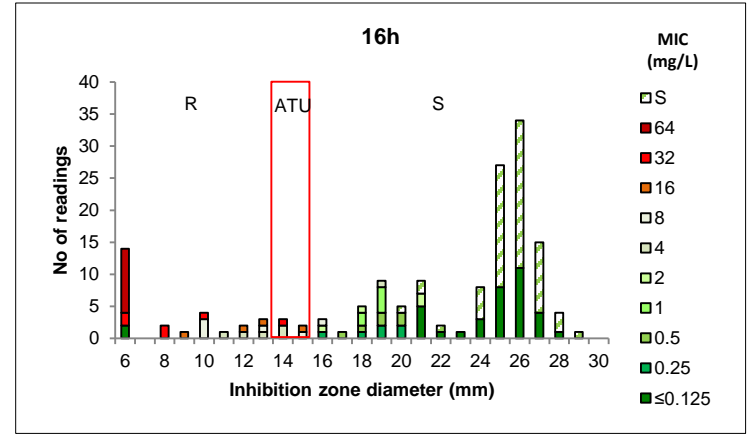
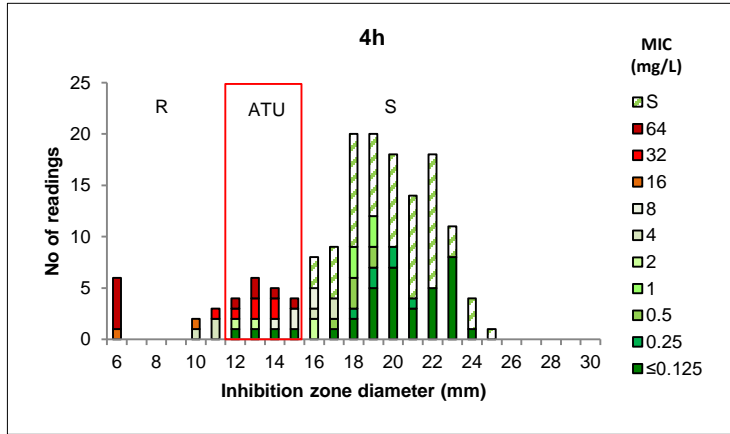
Isolates with carbapenem resistance mechanisms:
KPC (n=1), NDM-1 (2), OXA-48 (n=4), VIM-1 (n=2)

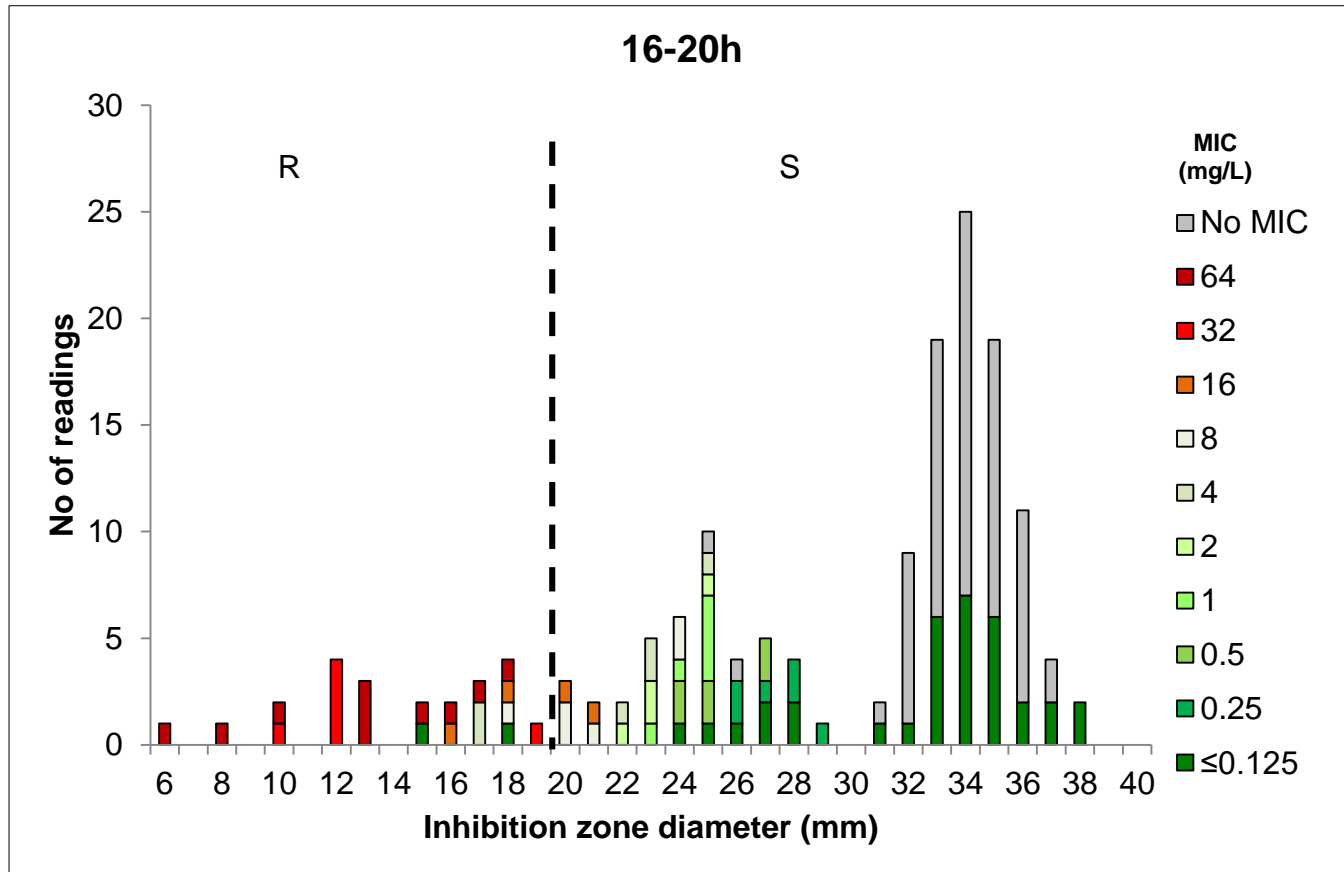


The dotted line corresponds to the screening cut-off for carbapenemase-producing *Enterobacterales*.

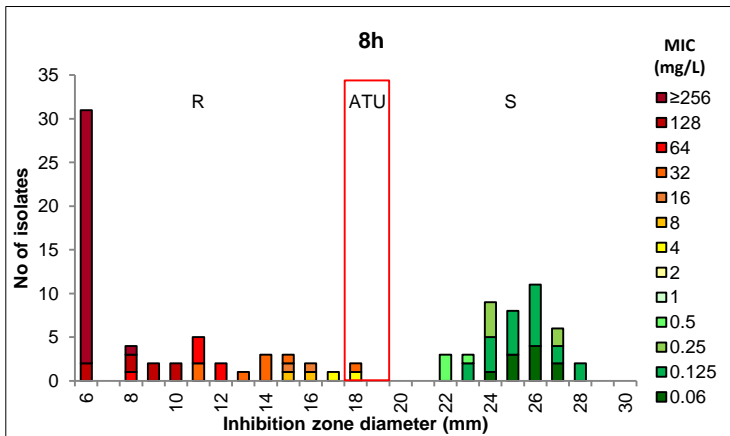
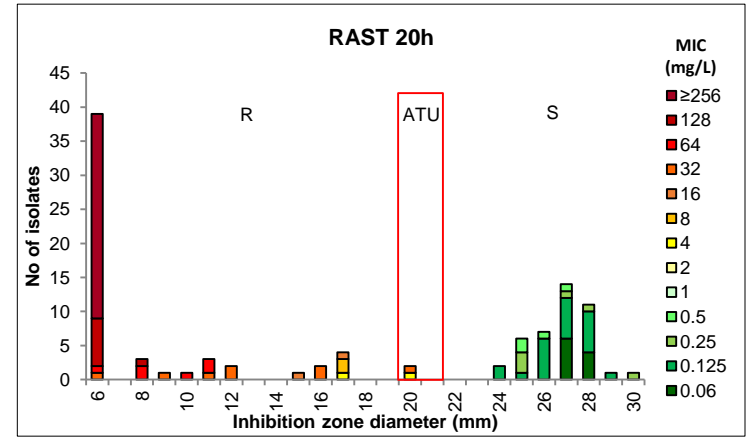
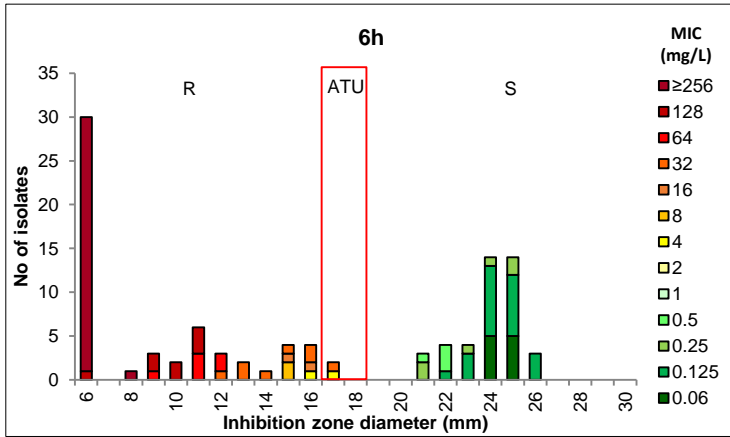
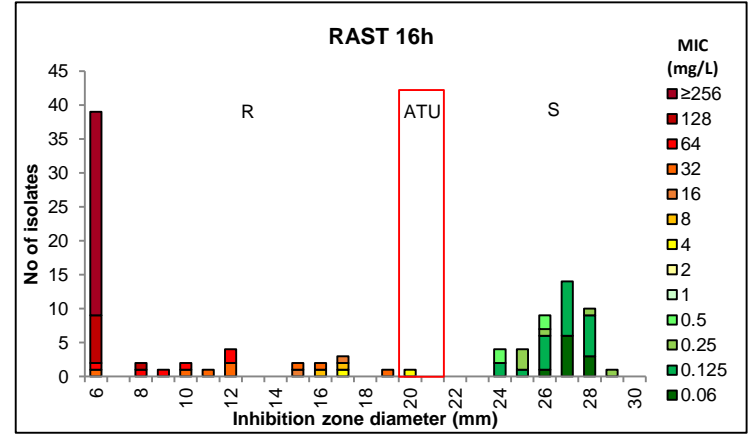
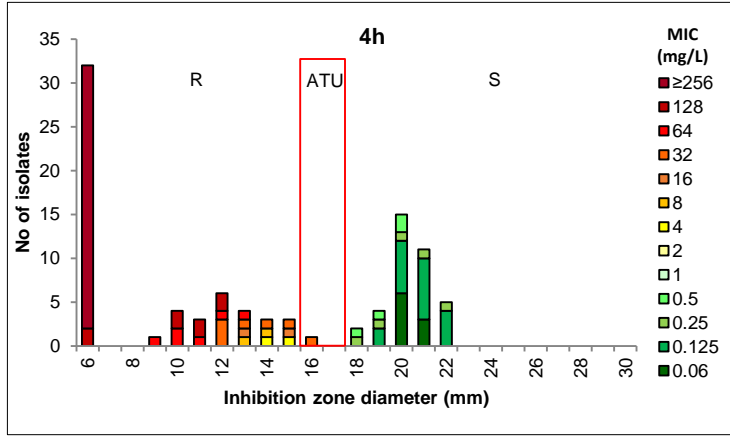
Isolates with carbapenem resistance mechanisms:
KPC (n=1), OXA-48 (n=1)
Carba – unidentified carbapenem resistance mechanisms (n=8)

***E. coli* and meropenem-vaborbactam 20-10 µg, spiked blood culture bottles
RAST vs. broth microdilution and EUCAST disk diffusion 16-20 h**

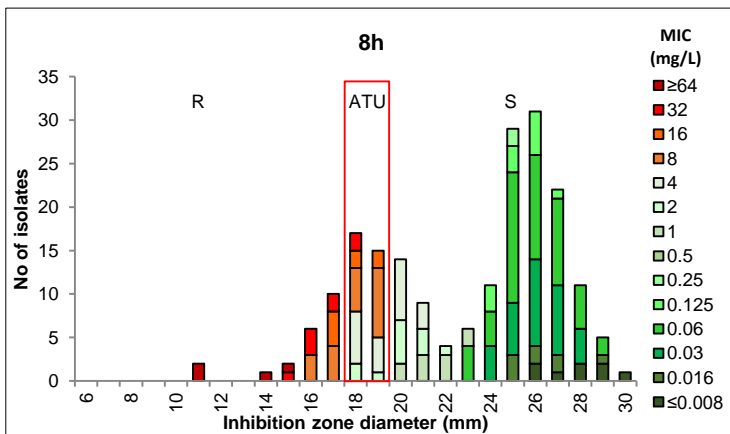
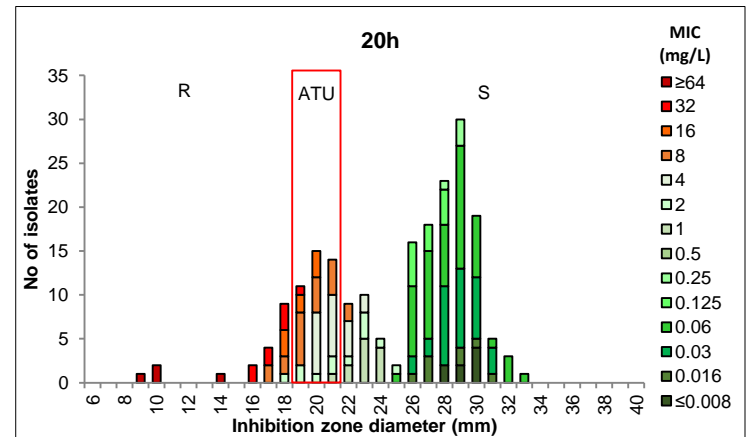
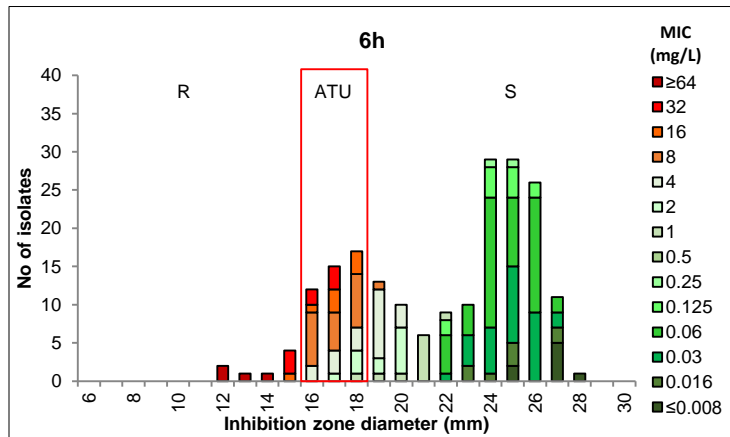
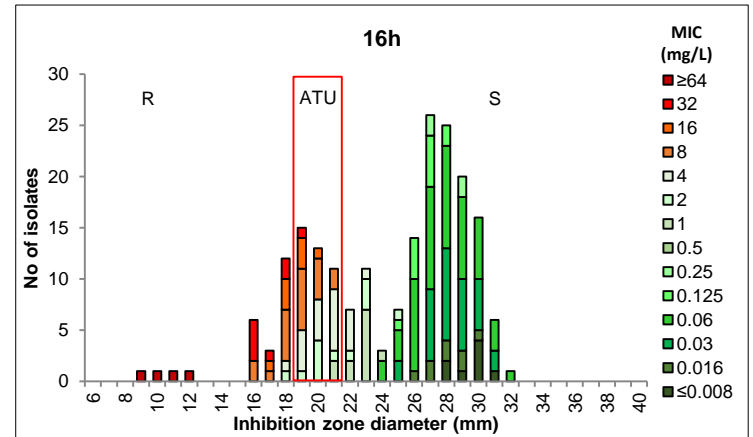
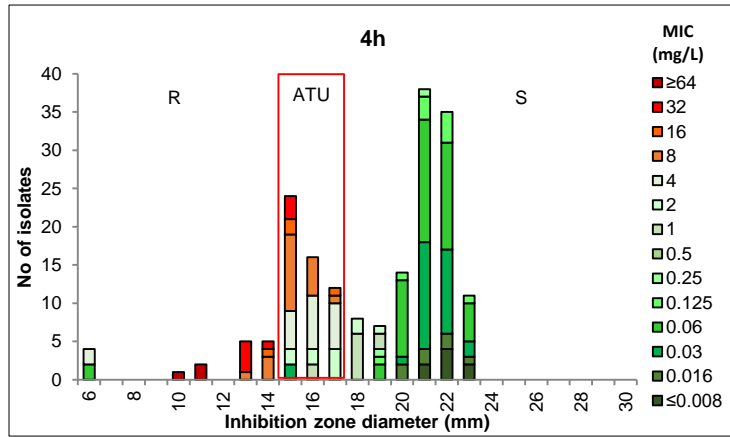


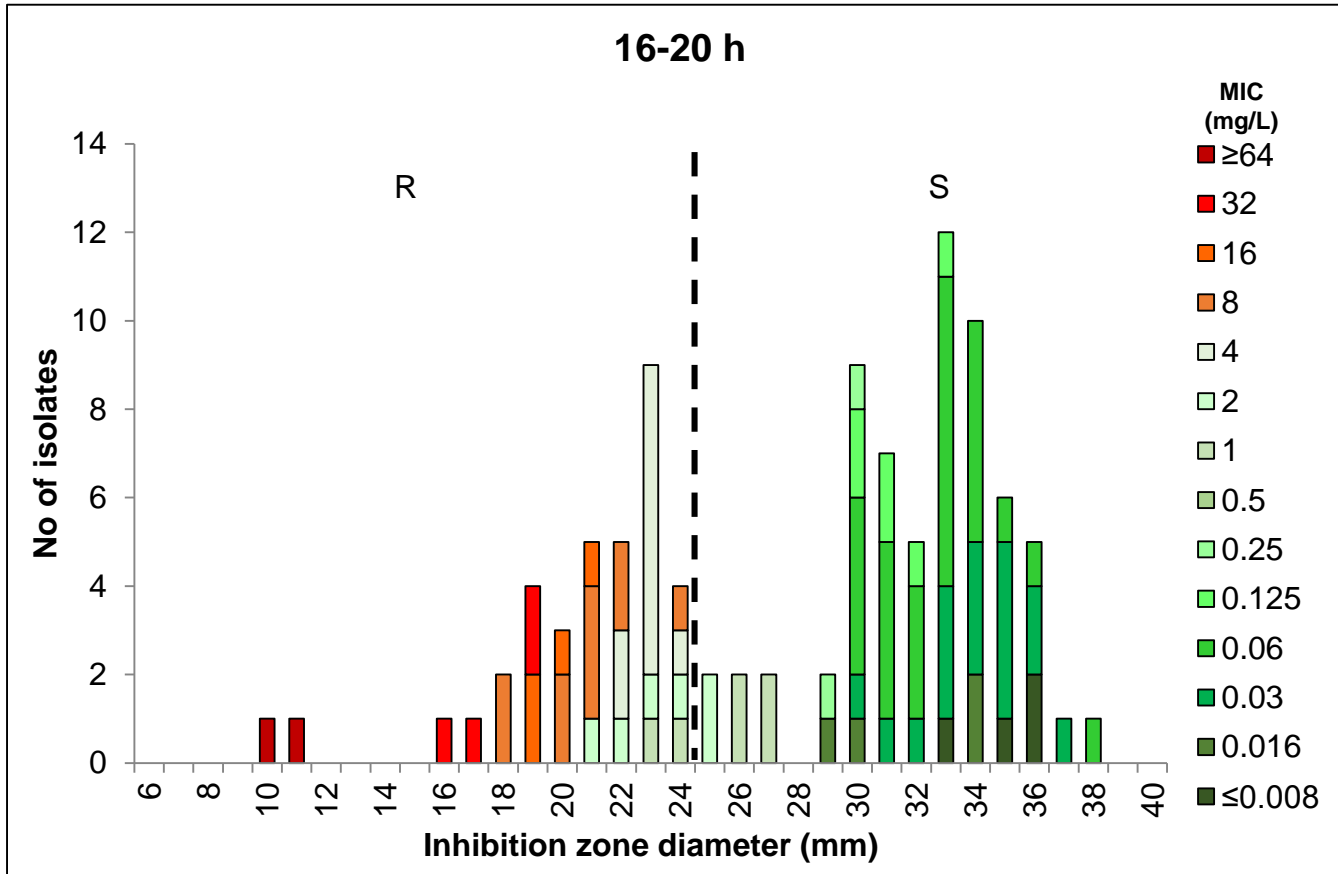


***E. coli* and aztreonam 30 µg, spiked blood culture bottles
RAST vs. broth microdilution 16-20 h**

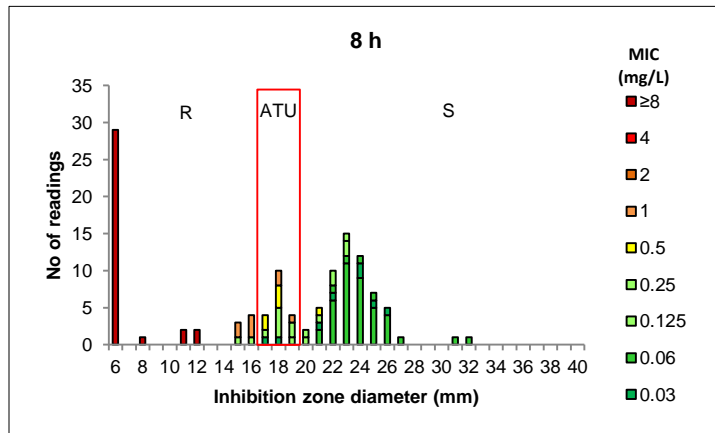
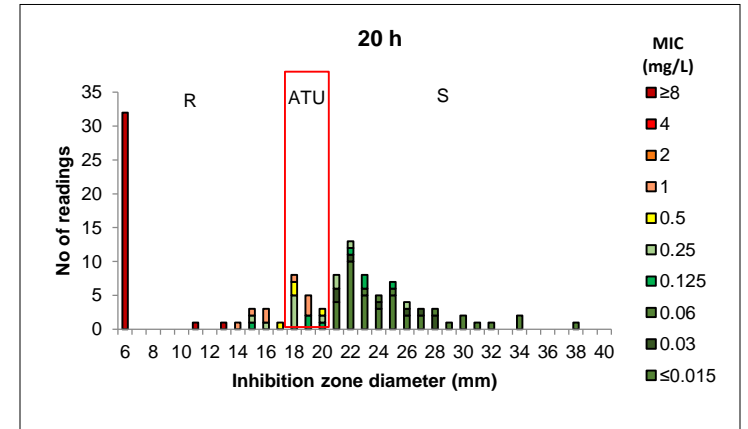
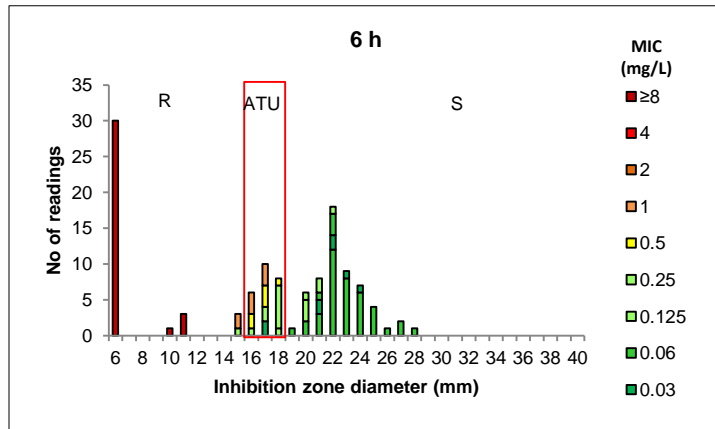
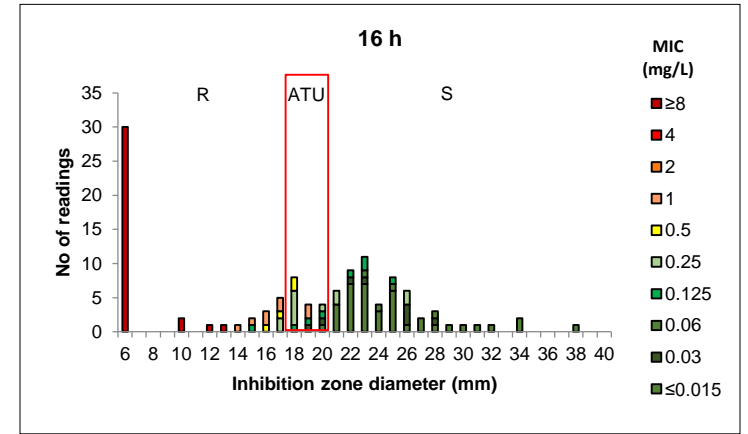
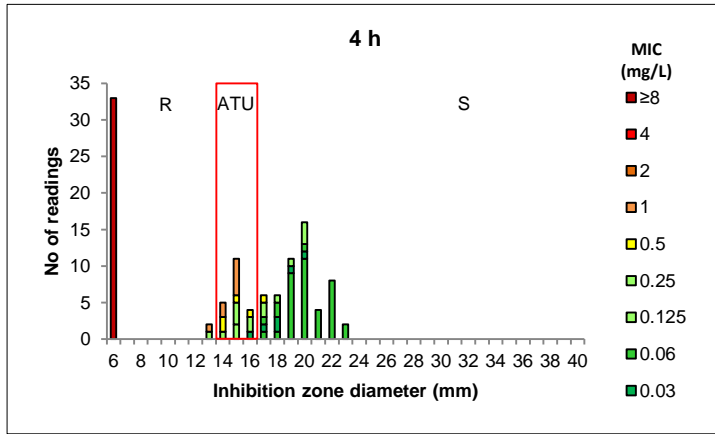


***E. coli* and aztreonam-avibactam 30-20 µg, spiked blood culture bottles
RAST vs. broth microdilution 16-20 h**

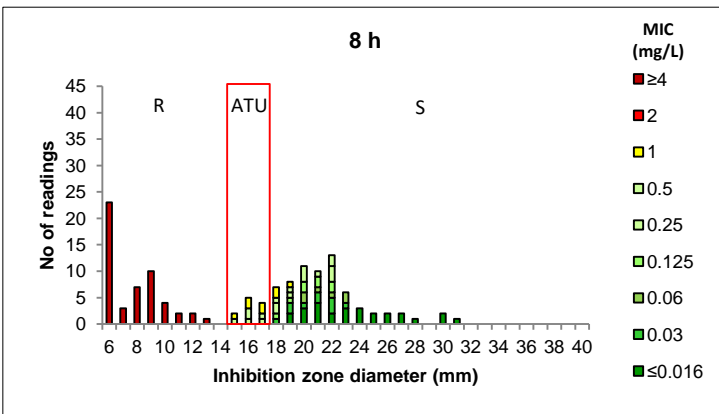
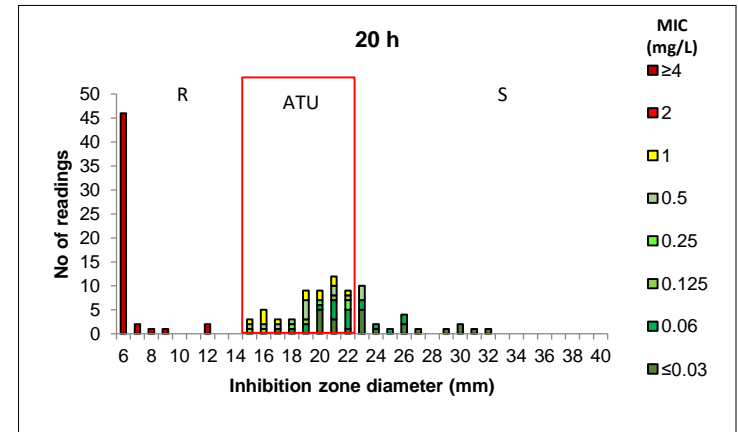
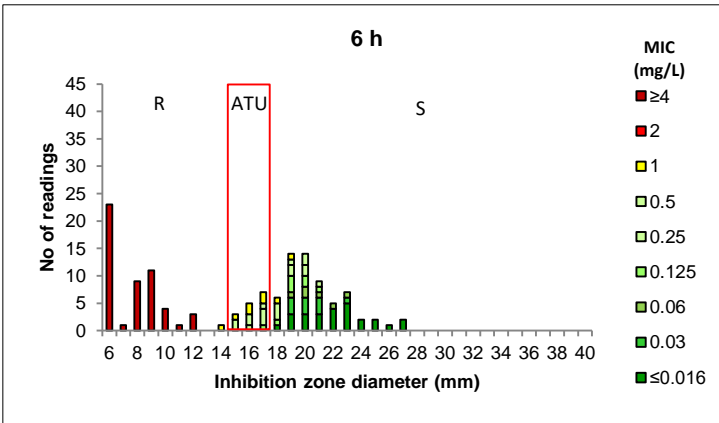
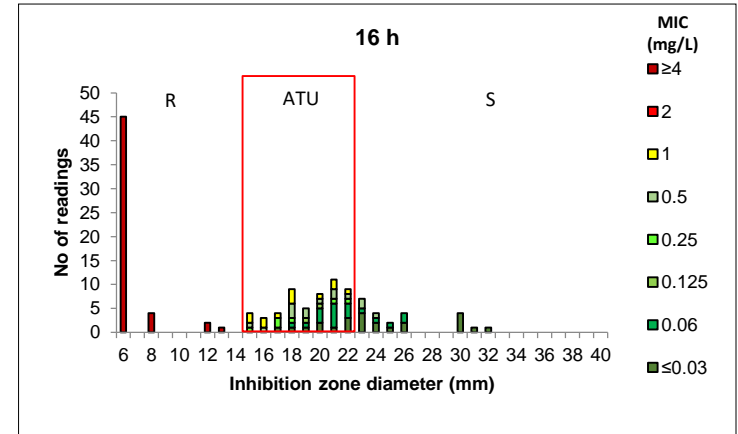
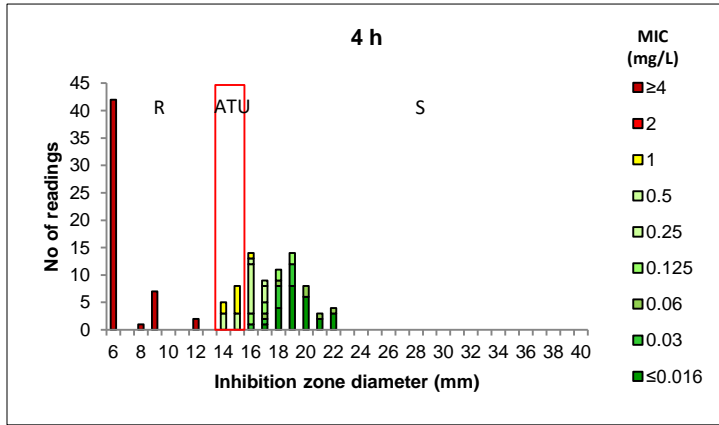


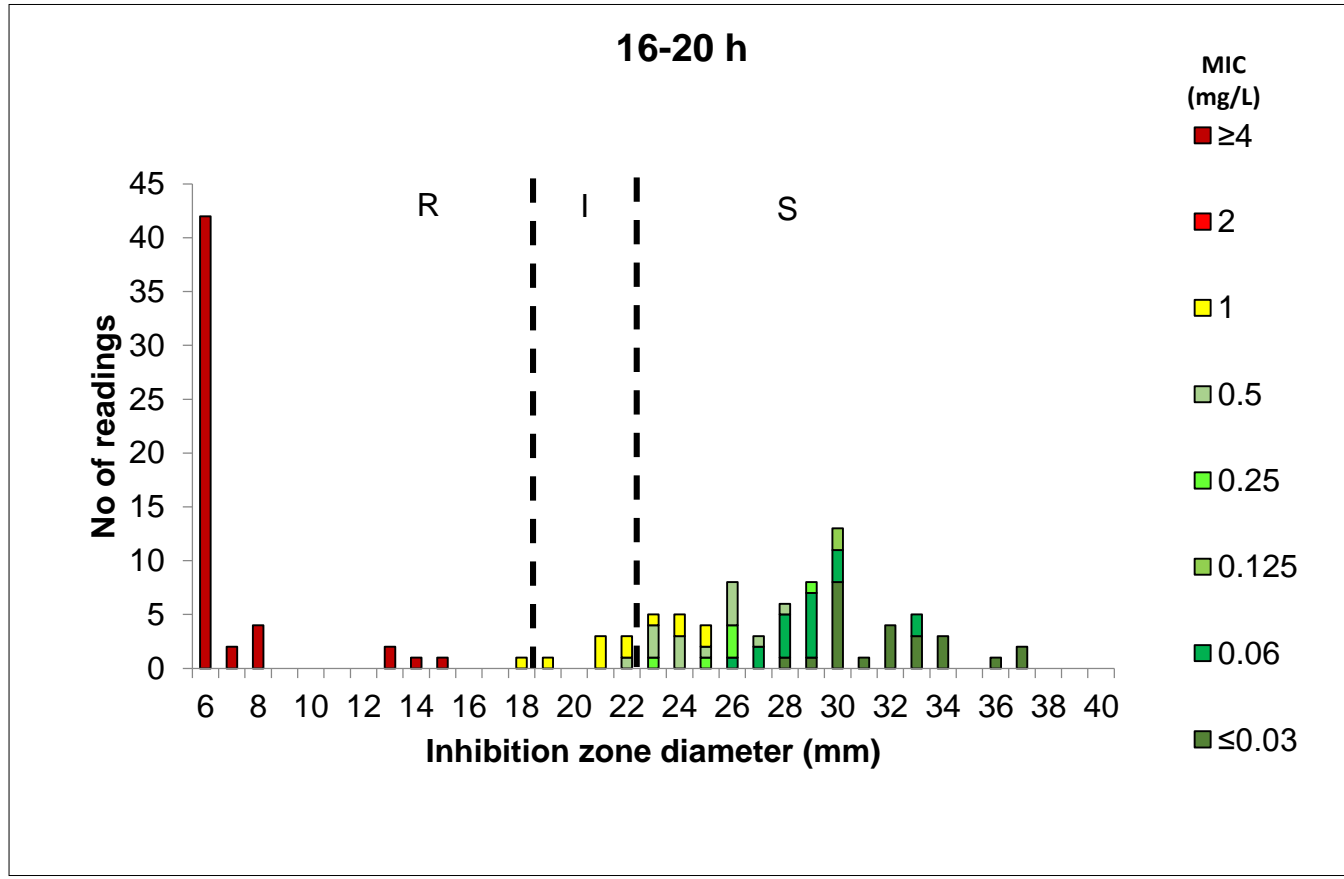


***E. coli* and ciprofloxacin 5 µg, spiked blood culture bottles
RAST vs. broth microdilution 16-20h**

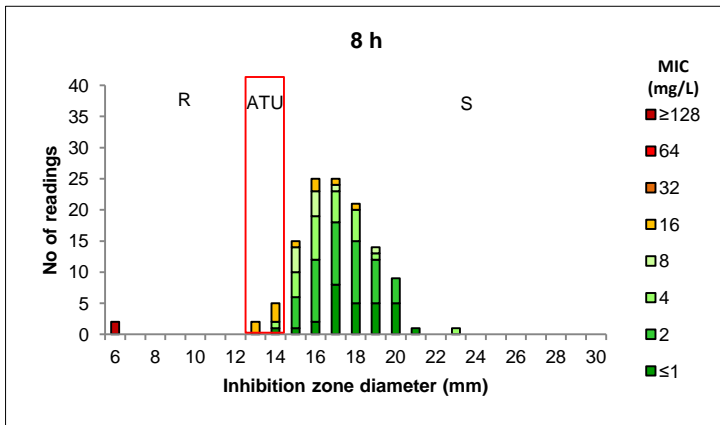
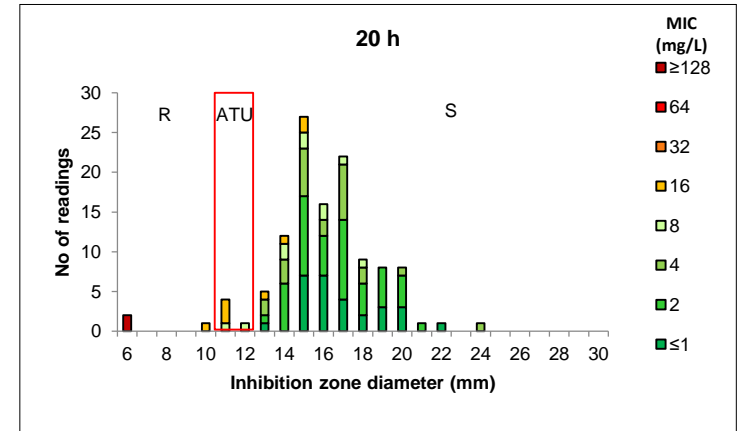
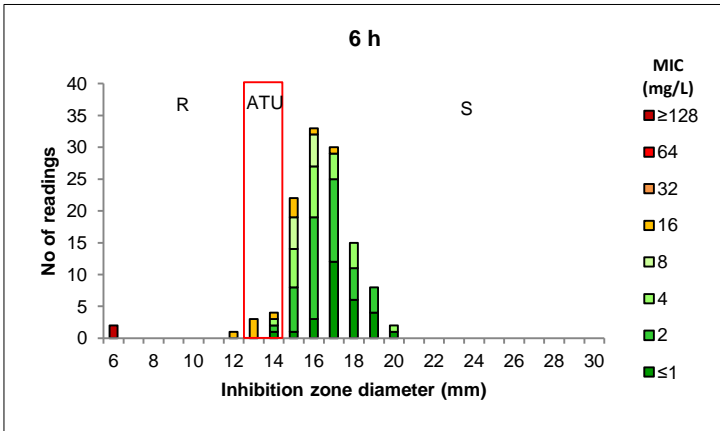
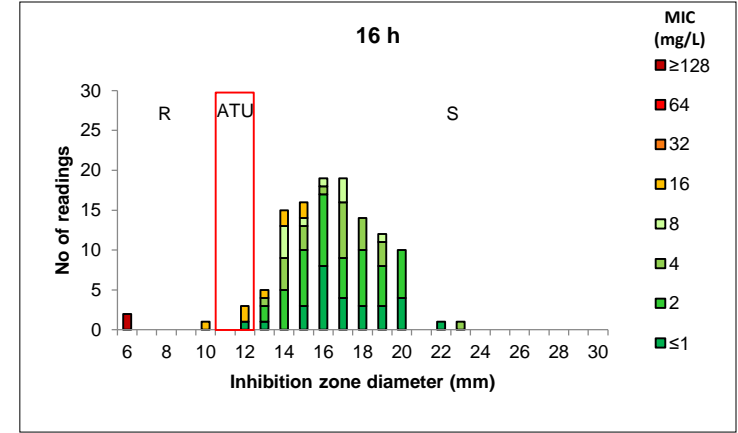
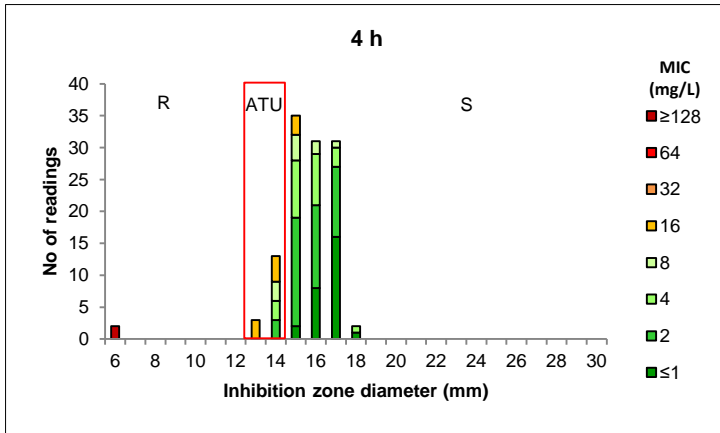


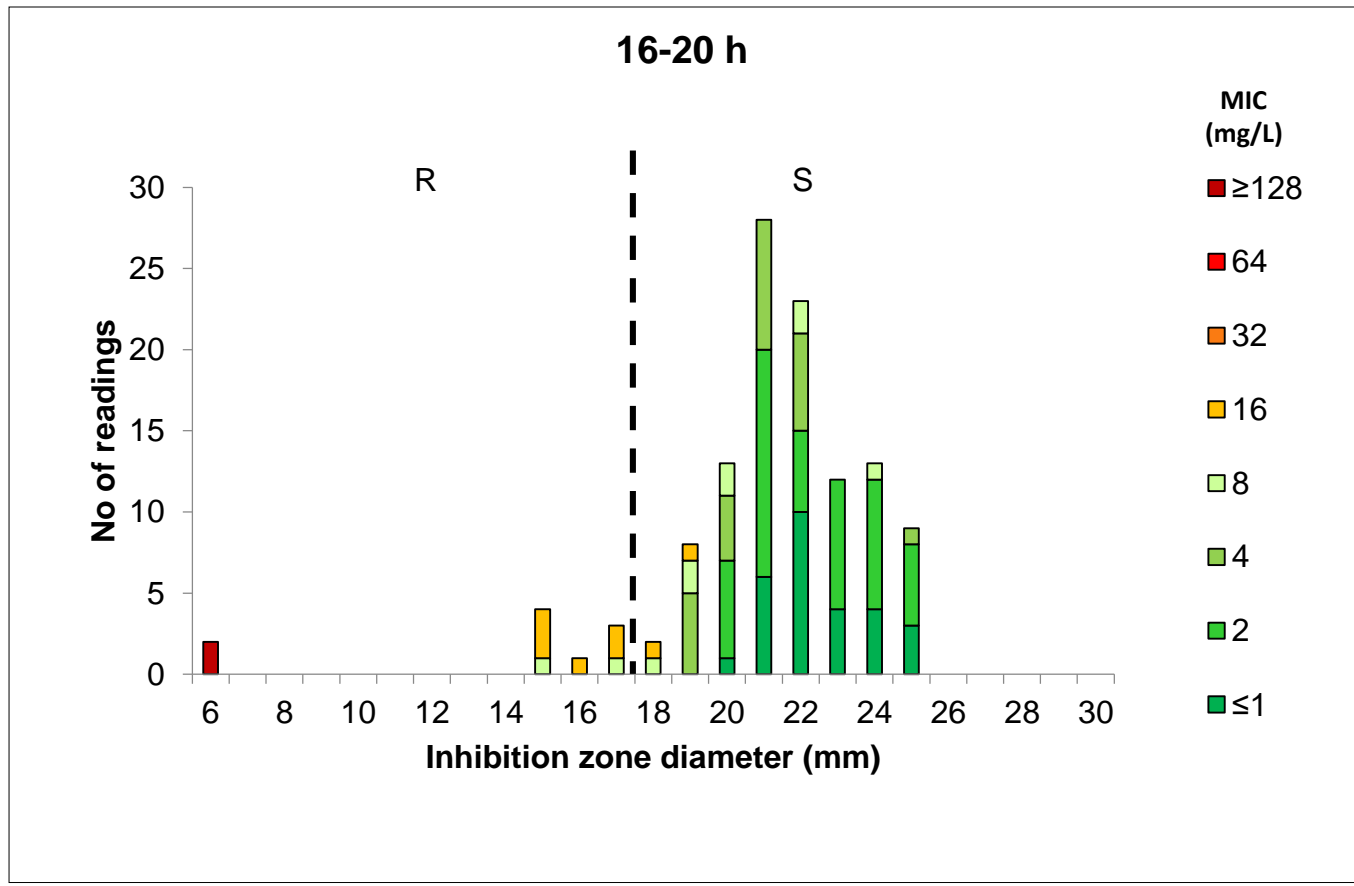
***E. coli* and levofloxacin 5 µg, spiked blood culture bottles
RAST vs. broth microdilution 16-20h**



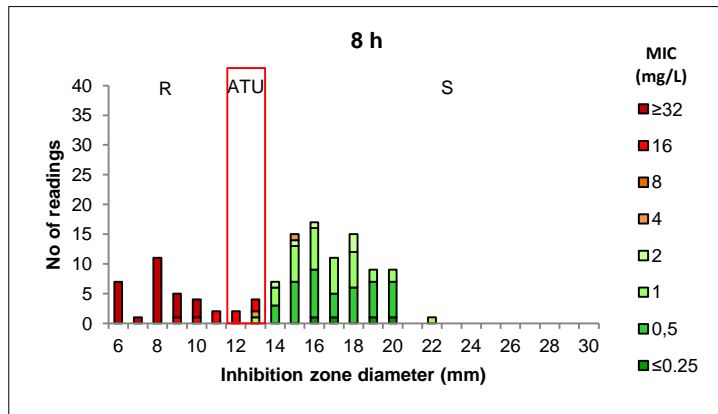
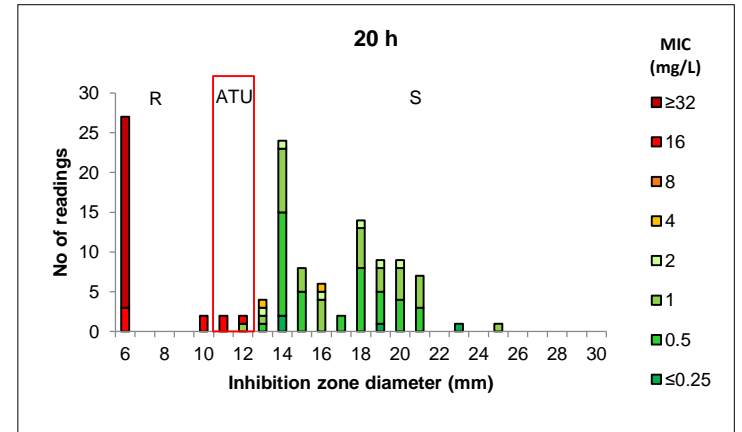
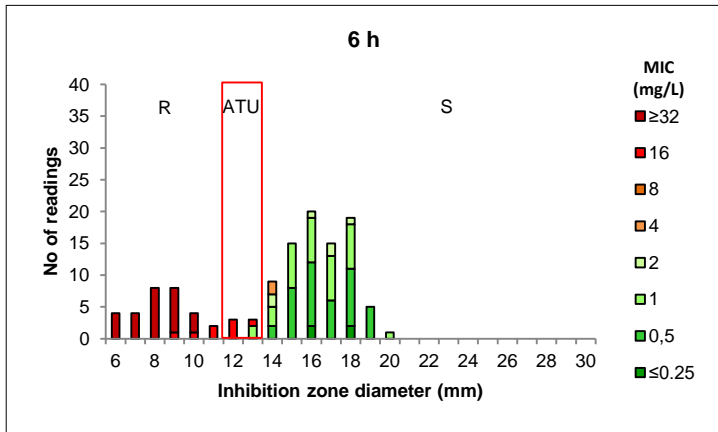
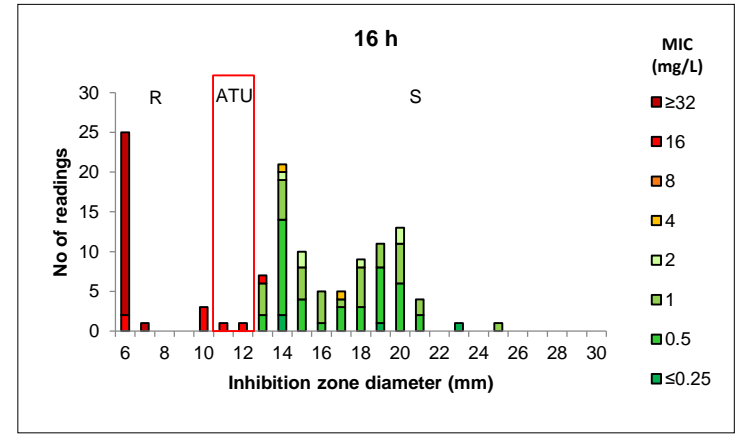
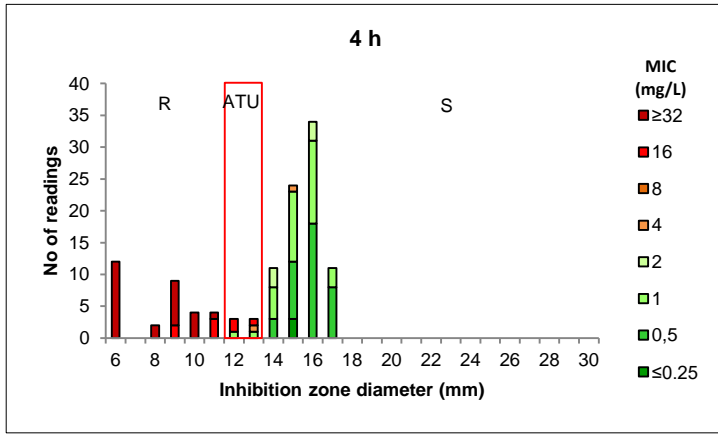


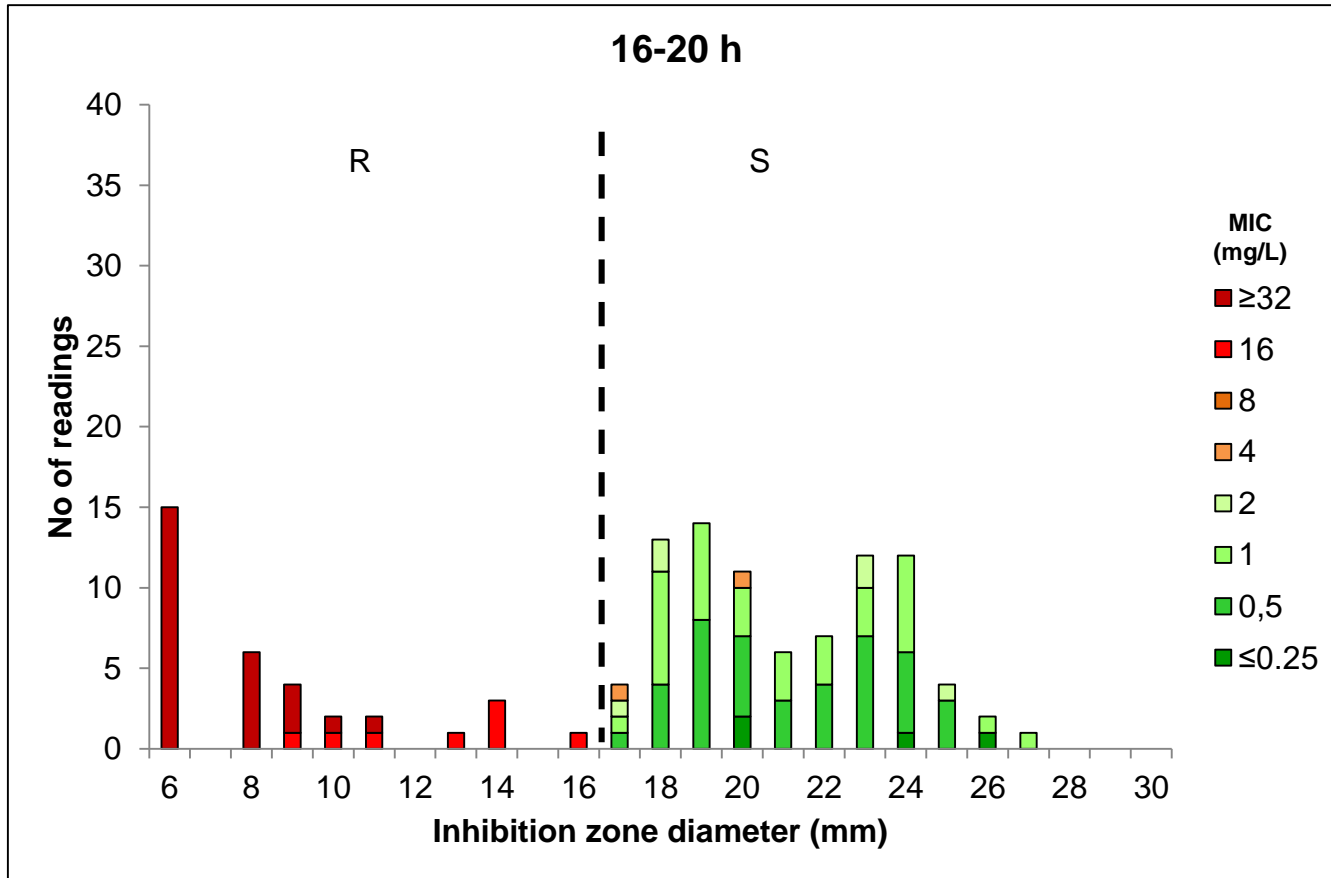
E. coli and amikacin 30 µg, spiked blood culture bottles
RAST vs. broth microdilution 16-20h



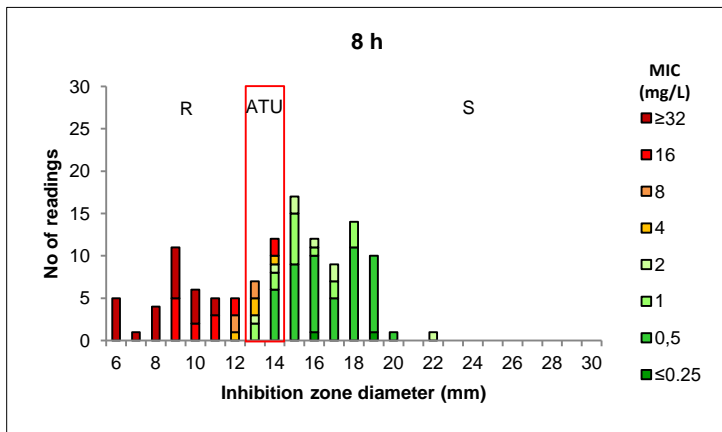
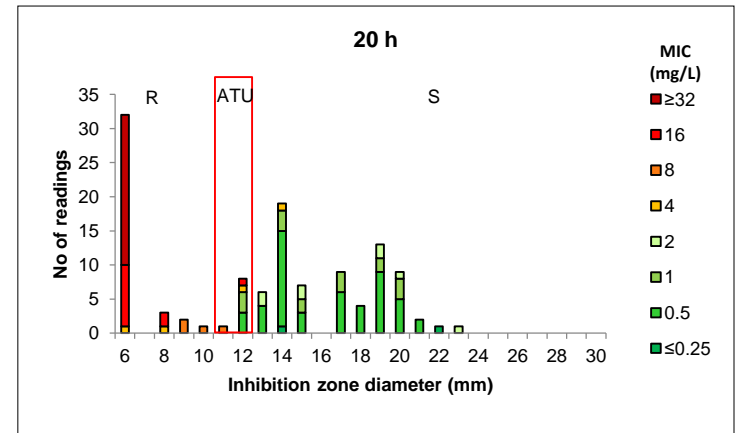
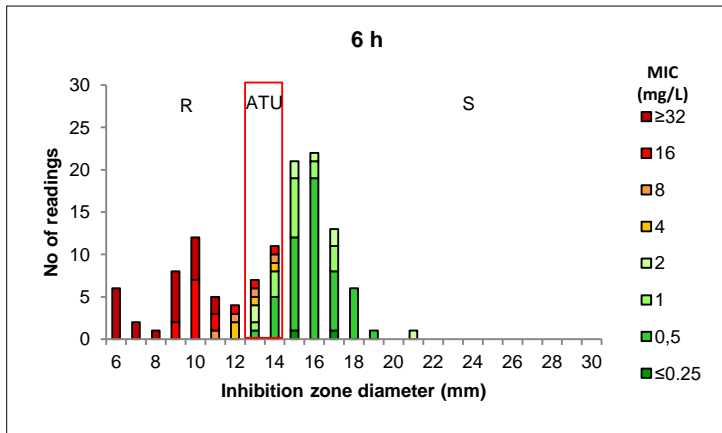
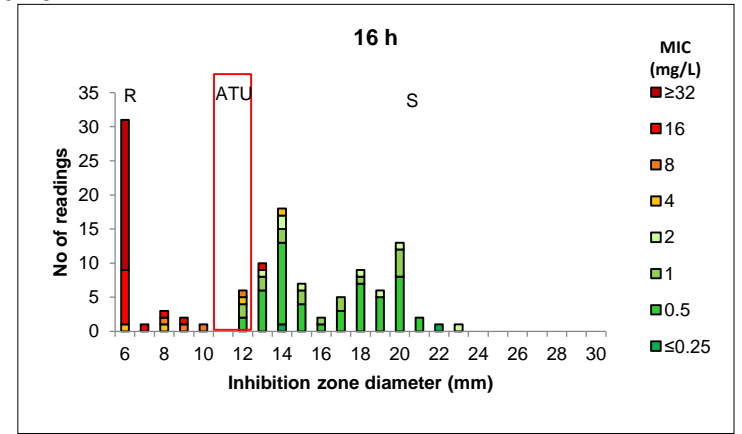
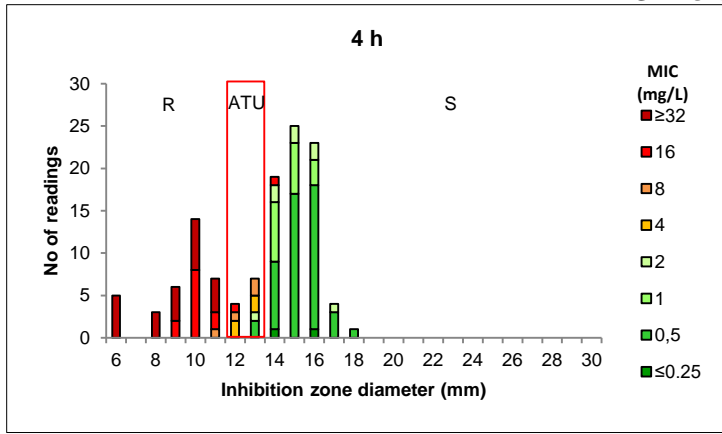


***E. coli* and gentamicin 10 µg, spiked blood culture bottles
RAST vs. broth microdilution 16-20h**





***E. coli* and tobramycin 10 µg, spiked blood culture bottles
RAST vs. broth microdilution 16-20h**



***E. coli* and trimethoprim-sulfamethoxazole 1.25-23.75 µg, spiked blood culture bottles
RAST vs. broth microdilution 16-20 h**

