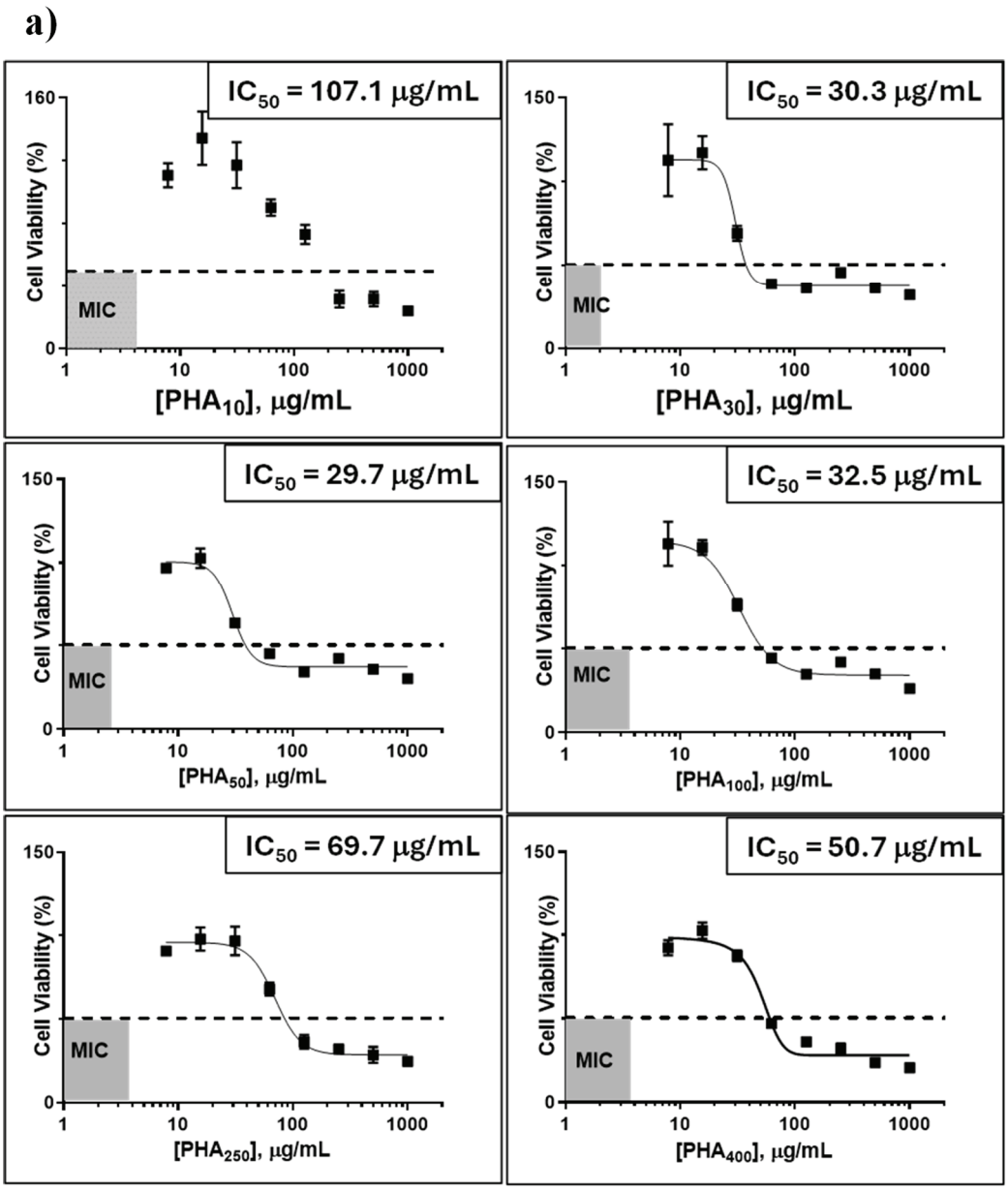
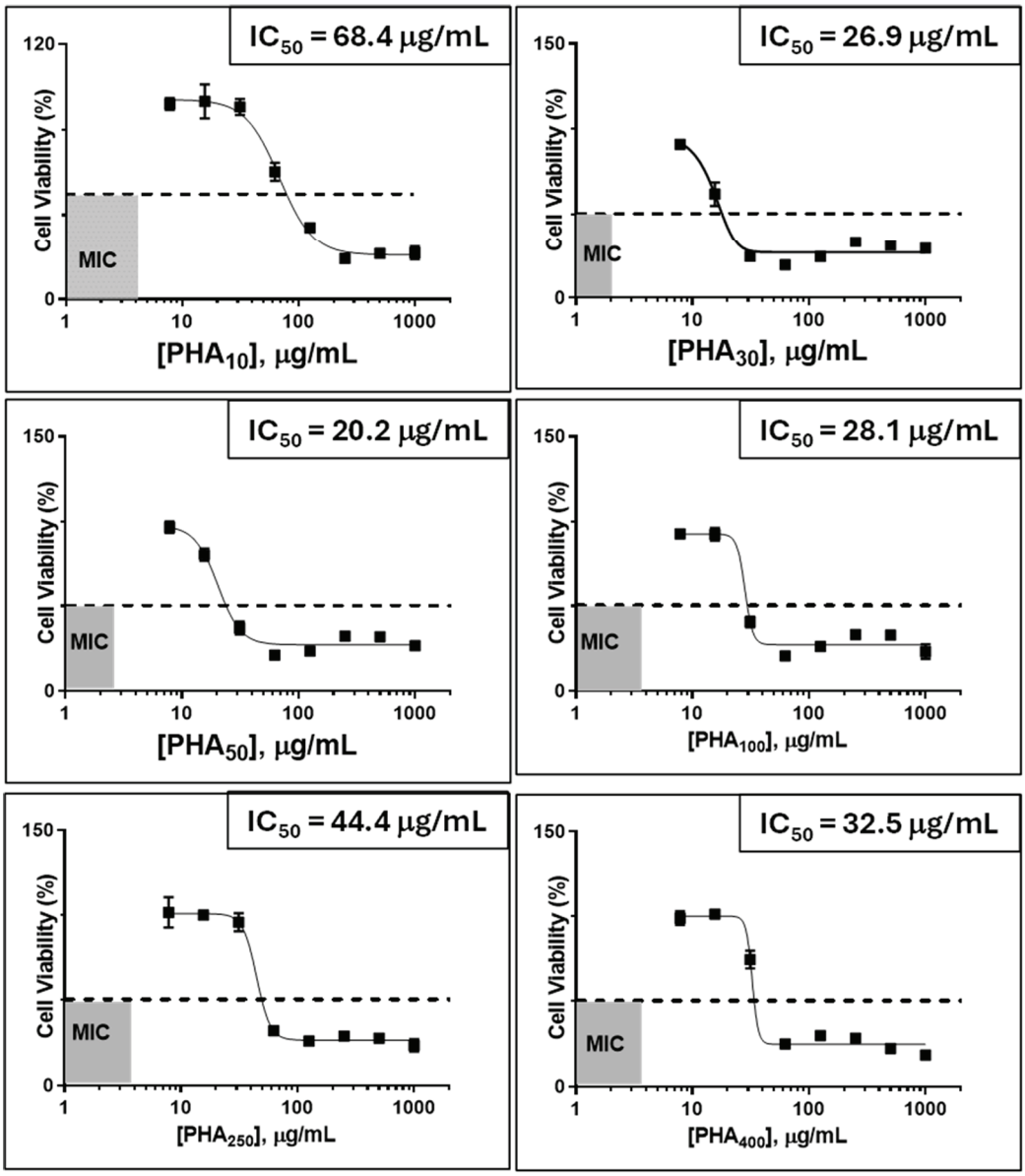
[Fig. 1]

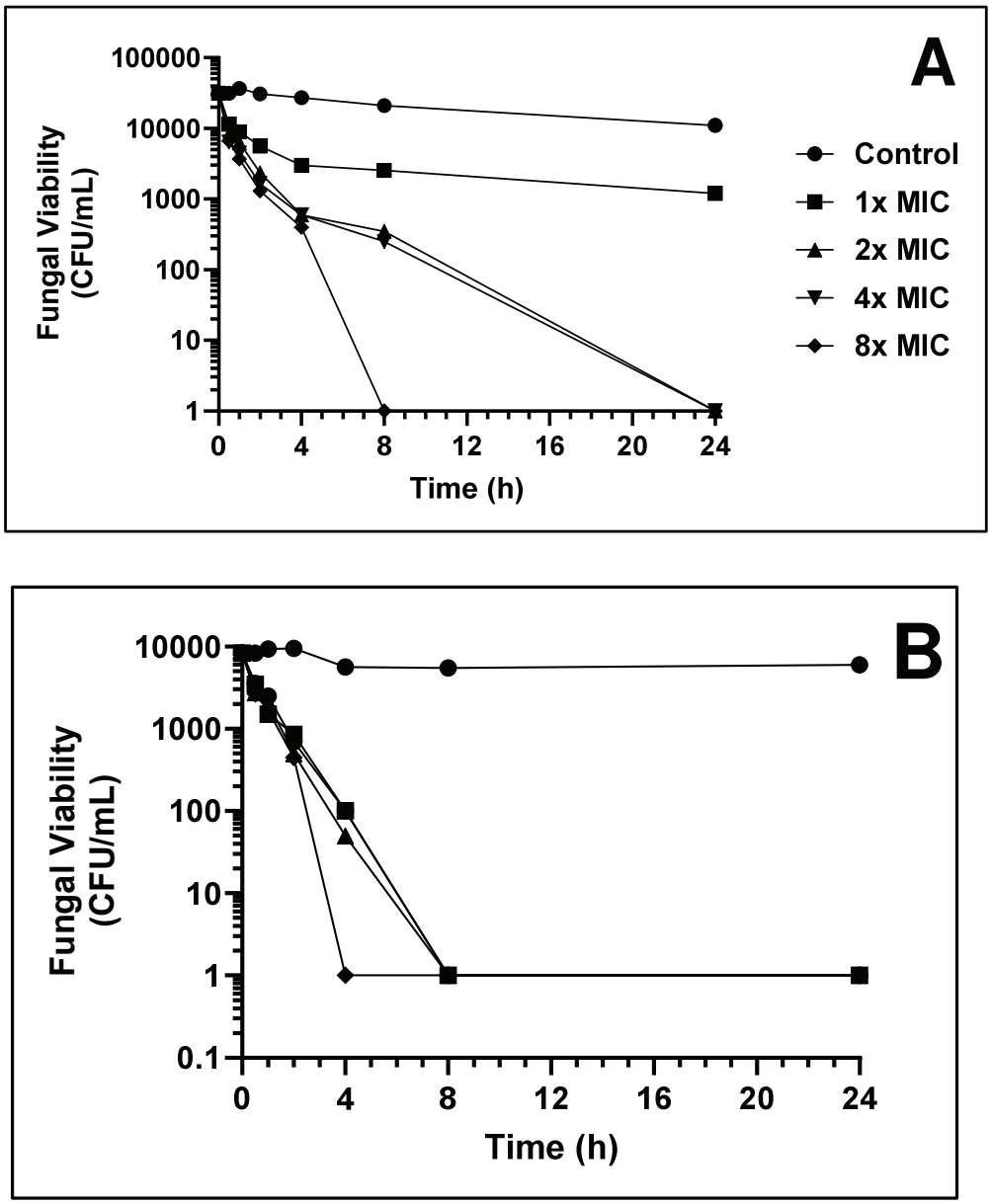

a)
IC50 = 107.1 μg/mL
Cell Viability (%)
MIC
[PHA10], μg/mL
IC50 = 30.3 μg/mL
[PHA30], μg/mL
IC50 = 29.7 μg/mL
[PHA50], μg/mL
IC50 = 32.5 μg/mL
[PHA100], μg/mL
IC50 = 69.7 μg/mL
[PHA250], μg/mL
IC50 = 50.7 μg/mL
[PHA400], μg/mL

[Fig. 1] cont.

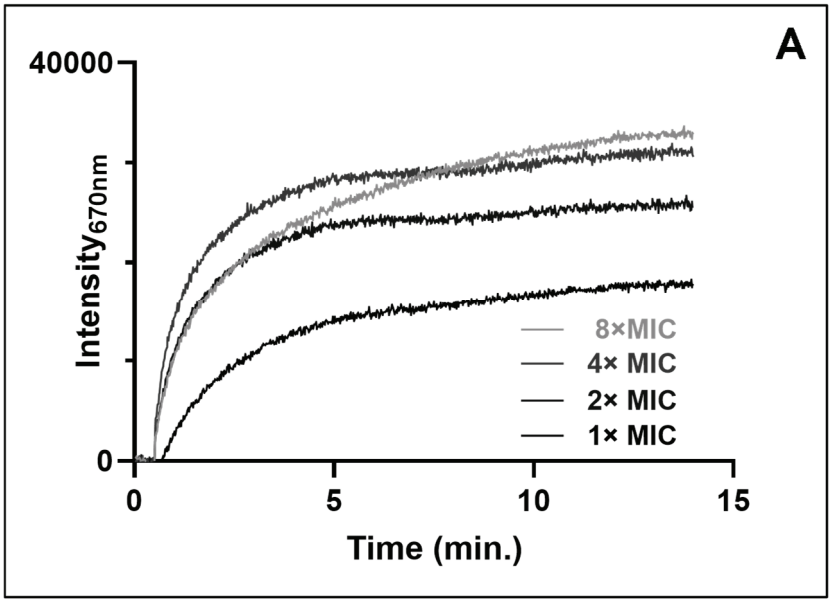
b)

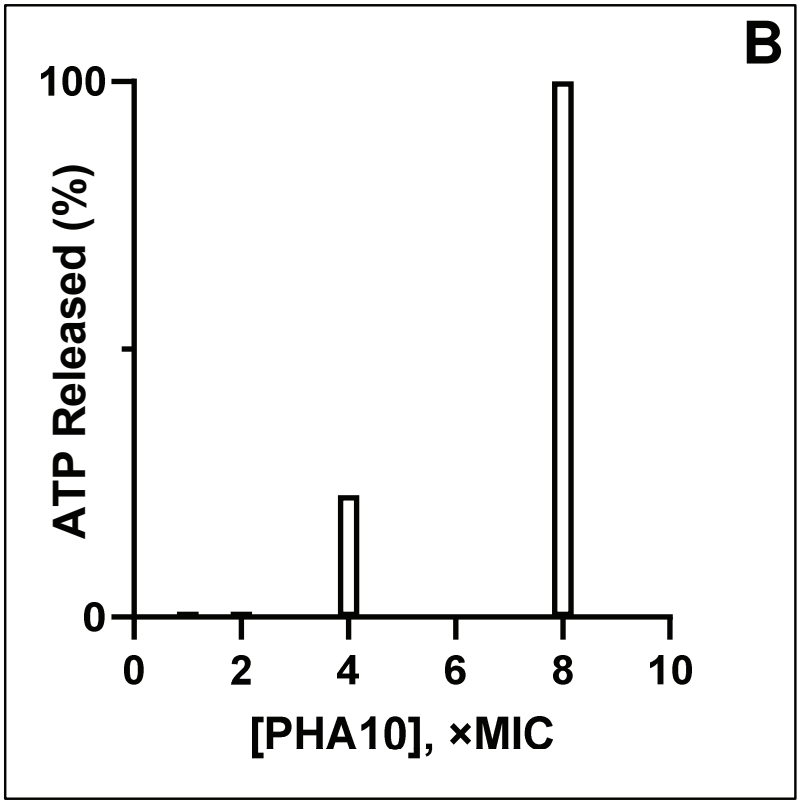

IC50 = 68.4 μg/mL
Cell Viability (%)
MIC
[PHA10], μg/mL
IC50 = 26.9 μg/mL
[PHA30], μg/mL
IC50 = 20.2 μg/mL
[PHA50], μg/mL
IC50 = 28.1 μg/mL
[PHA100], μg/mL
IC50 = 44.4 μg/mL
[PHA250], μg/mL
IC50 = 32.5 μg/mL
[PHA400], μg/mL

[Fig. 2]

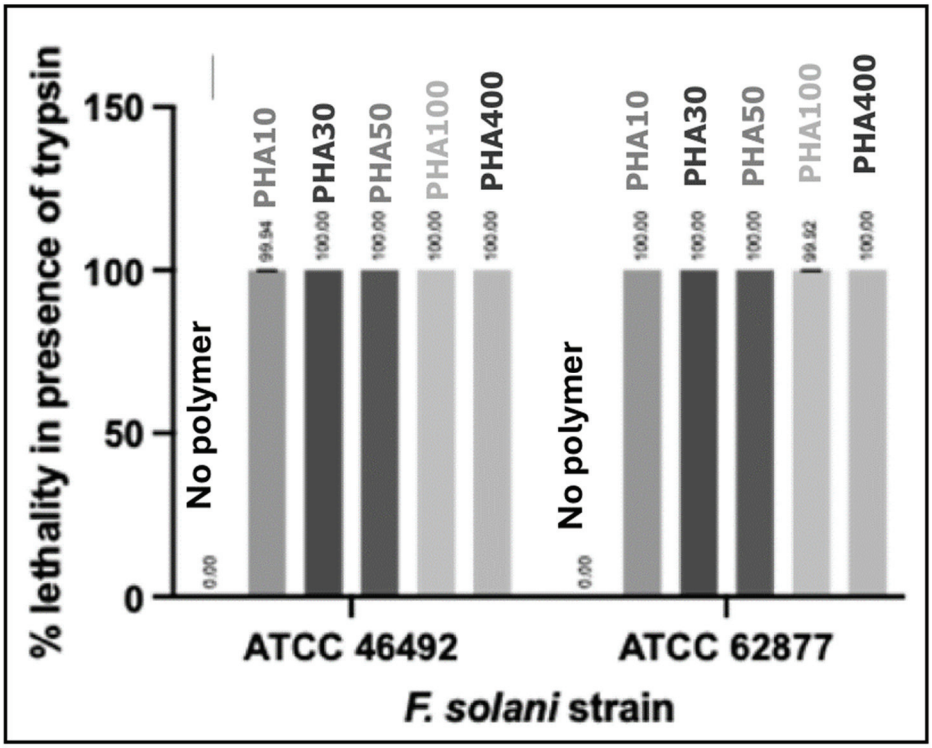

A
Fungal Viability (CFU/mL)
100000
10000
1000
100
10
1
0
4
8
12
16
20
24
Time (h)
Control
1x MIC
2x MIC
4x MIC
8x MIC
B
Fungal Viability (CFU/mL)
10000
1000
100
10
1
0.1
0
4
8
12
16
20
24
Time (h)

[Fig. 3]

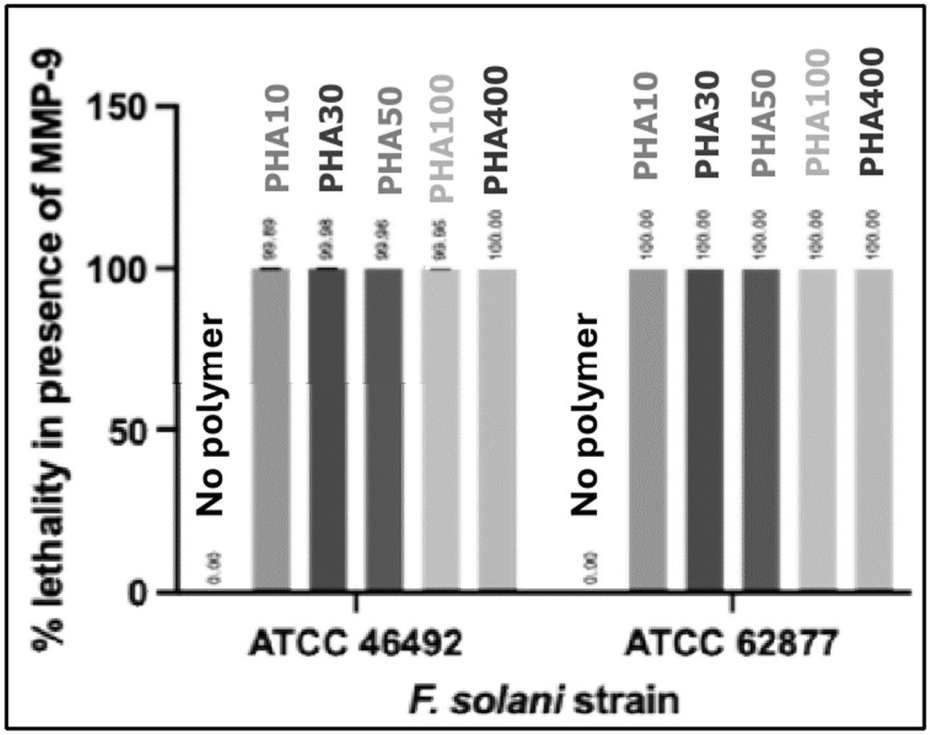

A
40000
0
Intensity670nm
0
5
10
15
Time (min.)
8×MIC
4× MIC
2× MIC
1× MIC


B
100
0
ATP Released (%)
0
2
4
6
8
10
[PHA10], ×MIC

[Fig. 4]

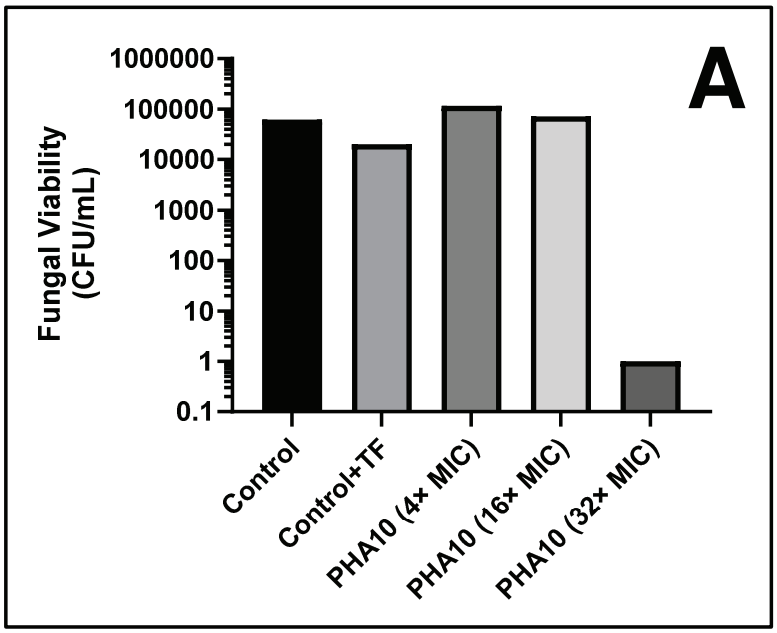

% lethality in presence of trypsin
150
100
50
0
No polymer
0.00
PHA10
99.94
PHA30
100.00
PHA50
100.00
PHA100
100.00
PHA400
100.00
No polymer
0.00
PHA10
100.00
PHA30
100.00
PHA50
100.00
PHA100
99.92
PHA400
100.00
ATCC 46492
ATCC 62877
F. solani strain

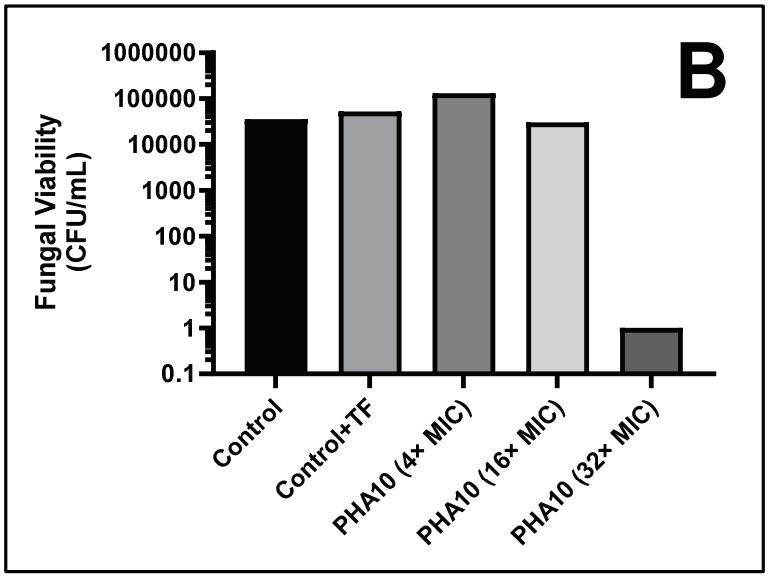
A


% lethality in presence of MMP-9
150
100
50
0
No polymer
0.00
PHA10
99.89
PHA30
99.94
PHA50
99.96
PHA100
99.96
PHA400
100.00
No polymer
0.00
PHA10
100.00
PHA30
100.00
PHA50
100.00
PHA100
100.00
PHA400
100.00
ATCC 46492
ATCC 62877
F. solani strain

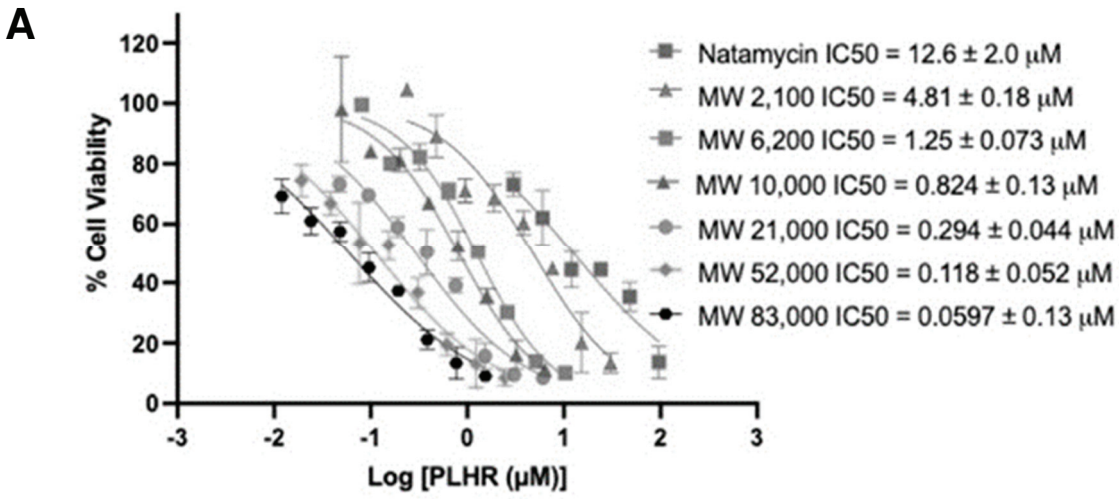
B

[Fig. 5]

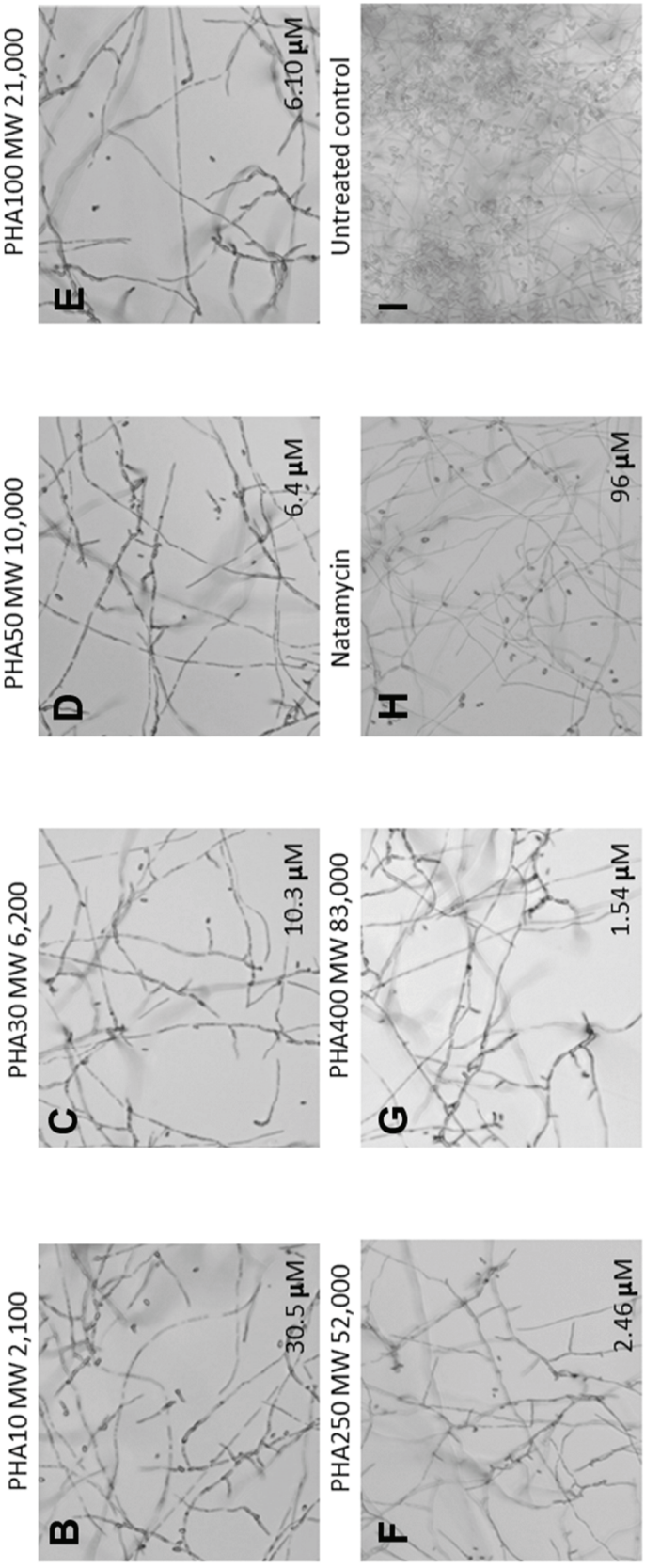

A
Fungal Viability (CFU/mL)
1000000
100000
10000
1000
100
10
1
0.1
Control
Control+TF
PHA10 (4× MIC)
PHA10 (16× MIC)
PHA10 (32× MIC)


B
Fungal Viability (CFU/mL)
1000000
100000
10000
1000
100
10
1
0.1
Control
Control+TF
PHA10 (4× MIC)
PHA10 (16× MIC)
PHA10 (32× MIC)

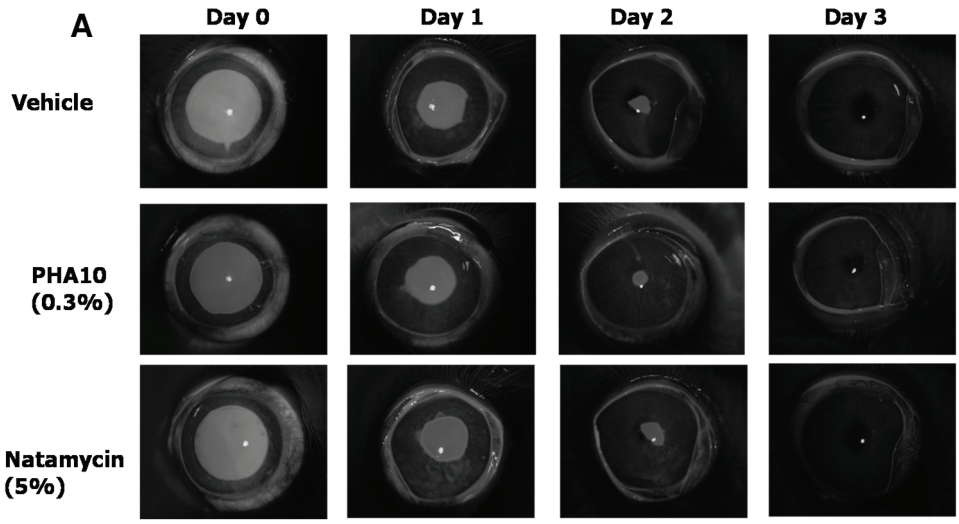
[Fig. 6]

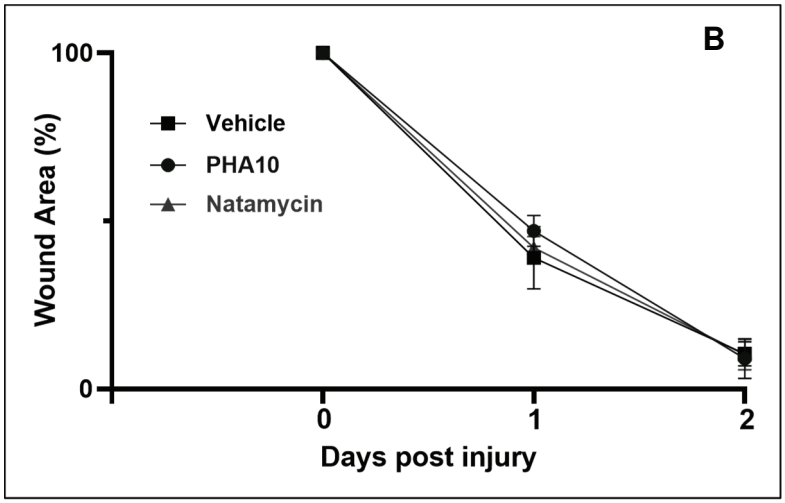

A
% Cell Viability
120
100
80
60
40
20
0
-3
-2
-1
0
1
2
3
Log [PLHR (μM)]
Natamycin IC50 = 12.6 ± 2.0 μM
MW 2,100 IC50 = 4.81 ± 0.18 μM
MW 6,200 IC50 = 1.25 ± 0.073 μM
MW 10,000 IC50 = 0.824 ± 0.13 μM
MW 21,000 IC50 = 0.294 ± 0.044 μM
MW 52,000 IC50 = 0.118 ± 0.052 μM
MW 83,000 IC50 = 0.0597 ± 0.13 μM

[Fig. 6] cont.

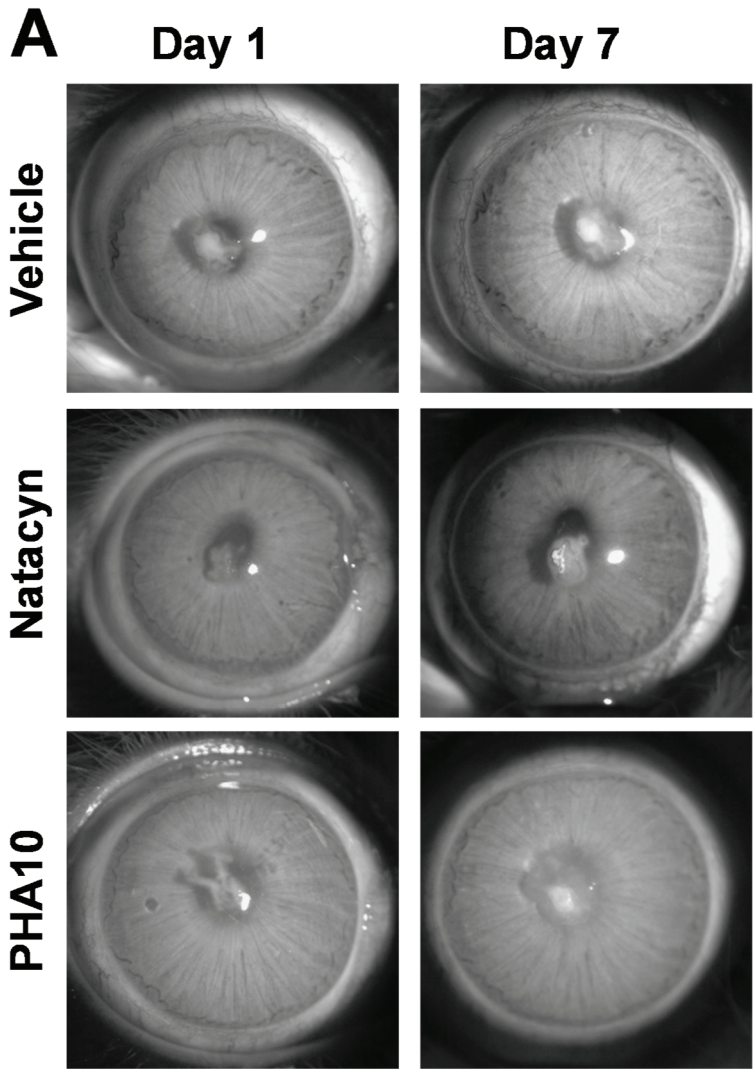

PHA10 MW 2,100
B
30.5 µM
PHA30 MW 6,200
C
10.3 µM
PHA50 MW 10,000
D
6.4 µM
PHA100 MW 21,000
E
6.10 µM
PHA250 MW 52,000
F
2.46 µM
PHA400 MW 83,000
G
1.54 µM
Natamycin
H
96 µM
Untreated control
I

[Fig. 7]

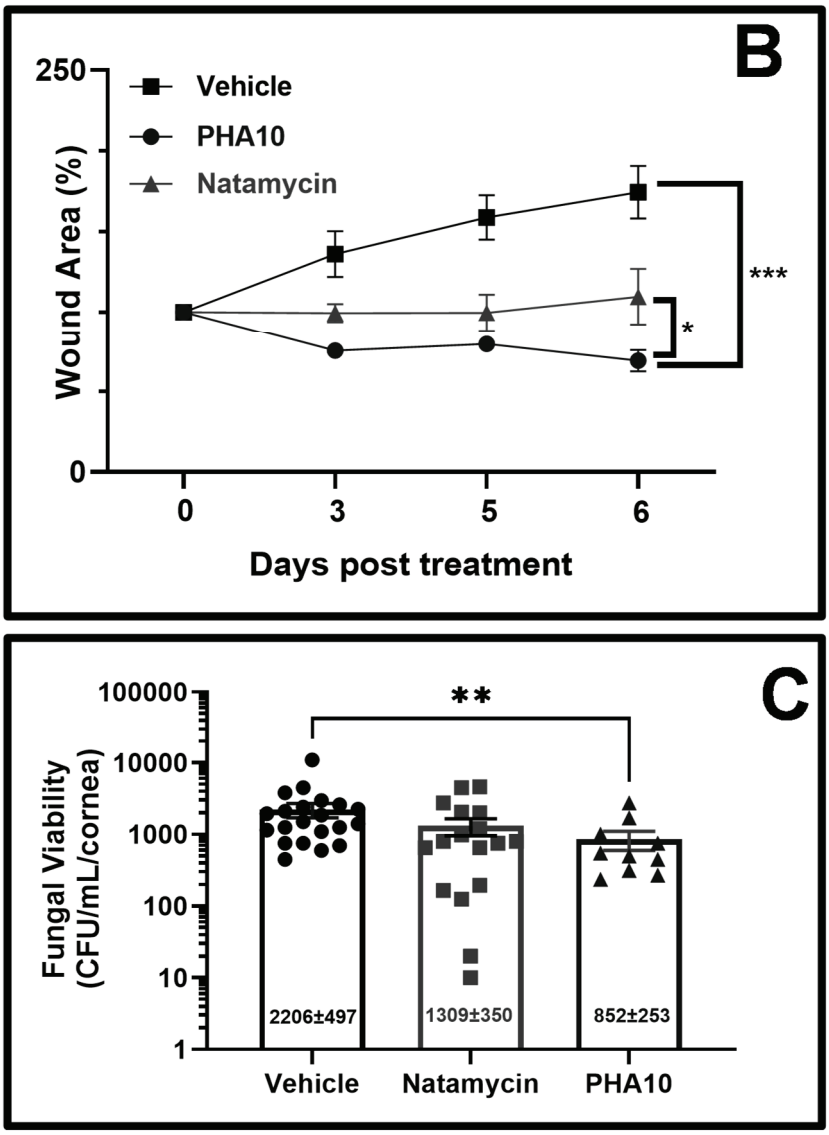

A
Day 0
Day 1
Day 2
Day 3
Vehicle
PHA10
(0.3%)
Natamycin
(5%)


B
100
0
Wound Area (%)
Vehicle
PHA10
Natamycin
0
1
2
Days post injury

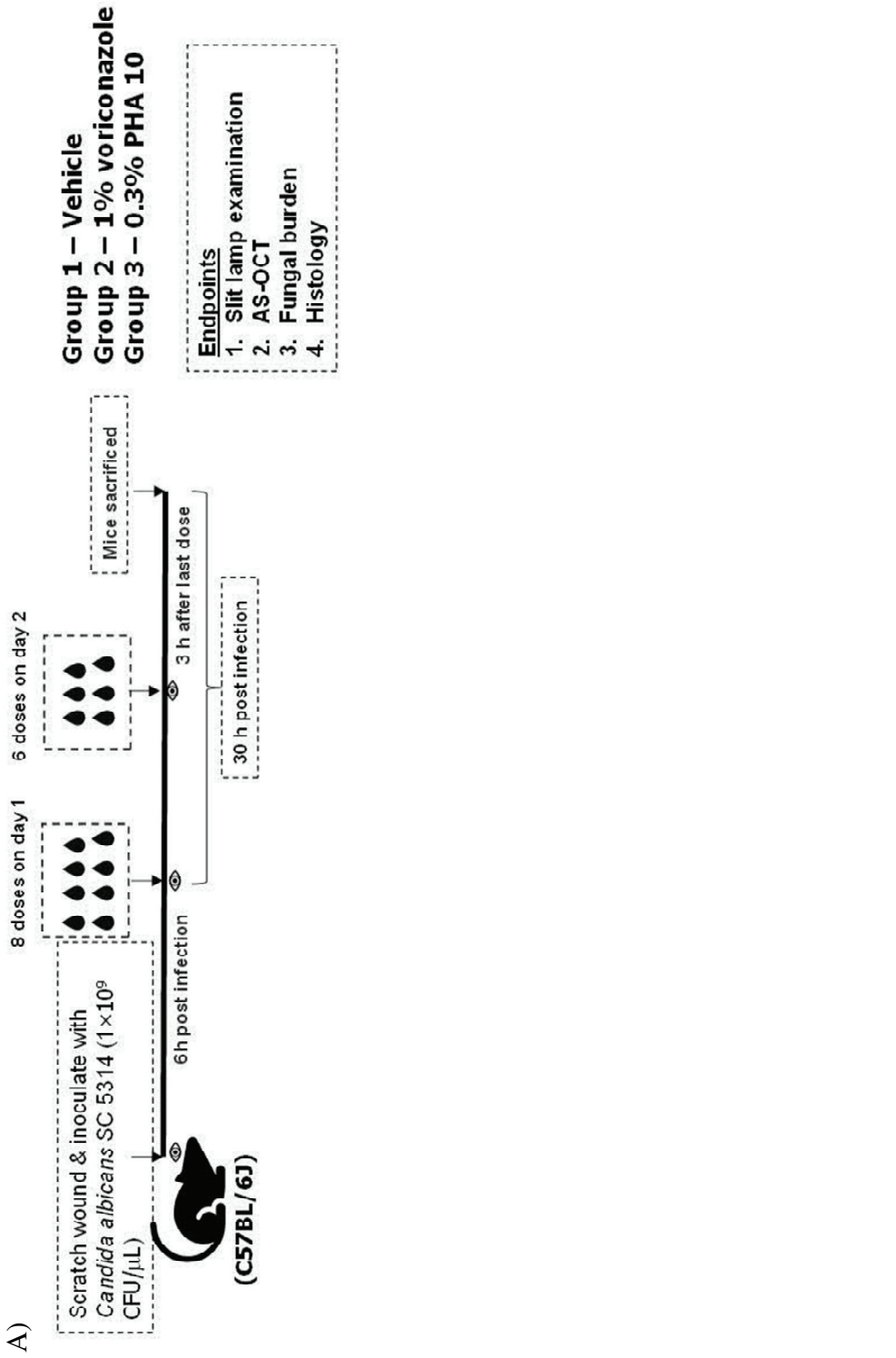
[Fig. 8]



[Fig. 8] cont.

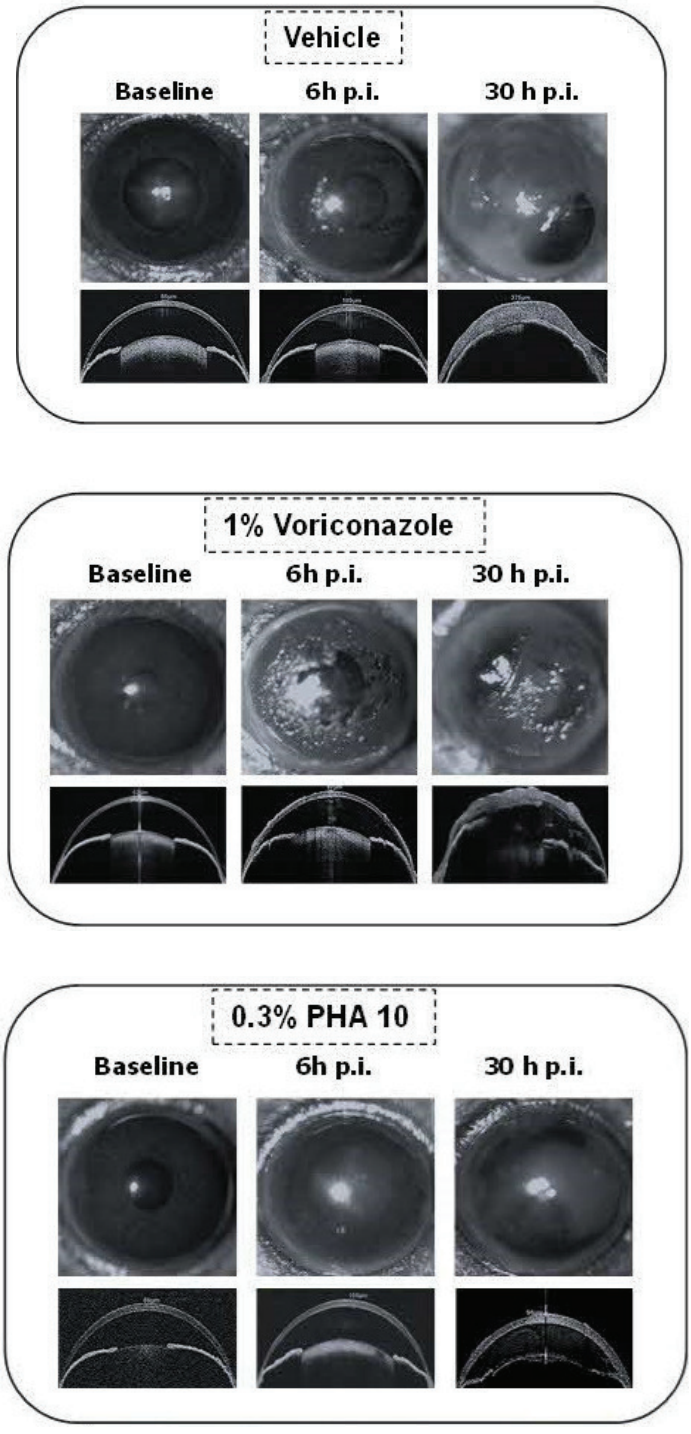

B
250
0
Wound Area (%)
Vehicle
PHA10
Natamycin
***
*
0
3
5
6
Days post treatment
C
100000
10000
1000
100
10
1
Fungal Viability
(CFU/mL/cornea)
**
2206±497
1309±350
852±253
Vehicle
Natamycin
PHA10

[Fig. 9]


A)
Scratch wound & inoculate with Candida albicans SC 5314 (1×10⁹ CFU/μL)
8 doses on day 1
6 doses on day 2
Mice sacrificed
6h post infection
3 h after last dose
30 h post infection
(C57BL/6J)
Group 1 – Vehicle
Group 2 – 1% voriconazole
Group 3 – 0.3% PHA 10
Endpoints
1. Slit lamp examination
2. AS-OCT
3. Fungal burden
4. Histology

[Fig. 9] cont.

B)

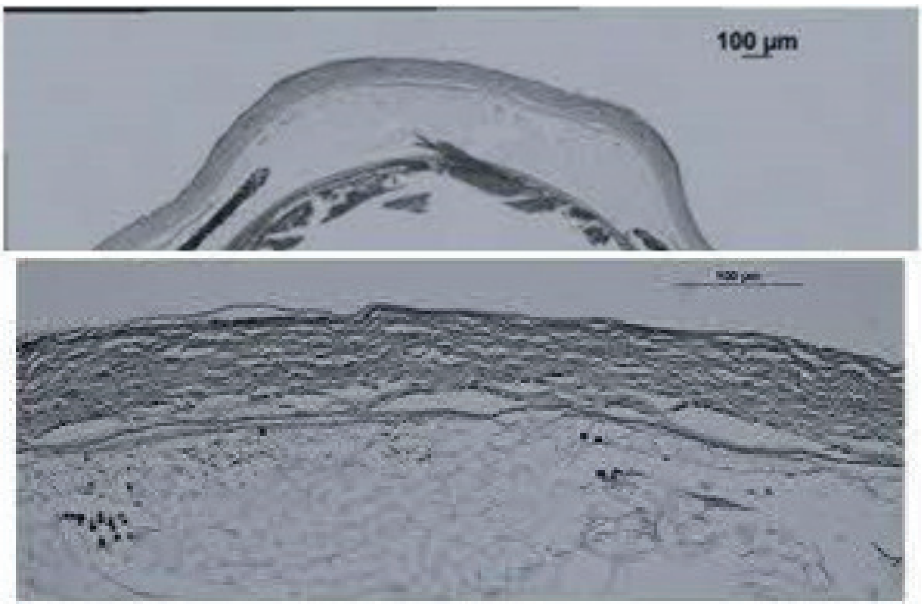

Vehicle
Baseline
6h p.i.
30 h p.i.
1% Voriconazole
Baseline
6h p.i.
30 h p.i.
0.3% PHA 10
Baseline
6h p.i.
30 h p.i.

[Fig. 9] cont.

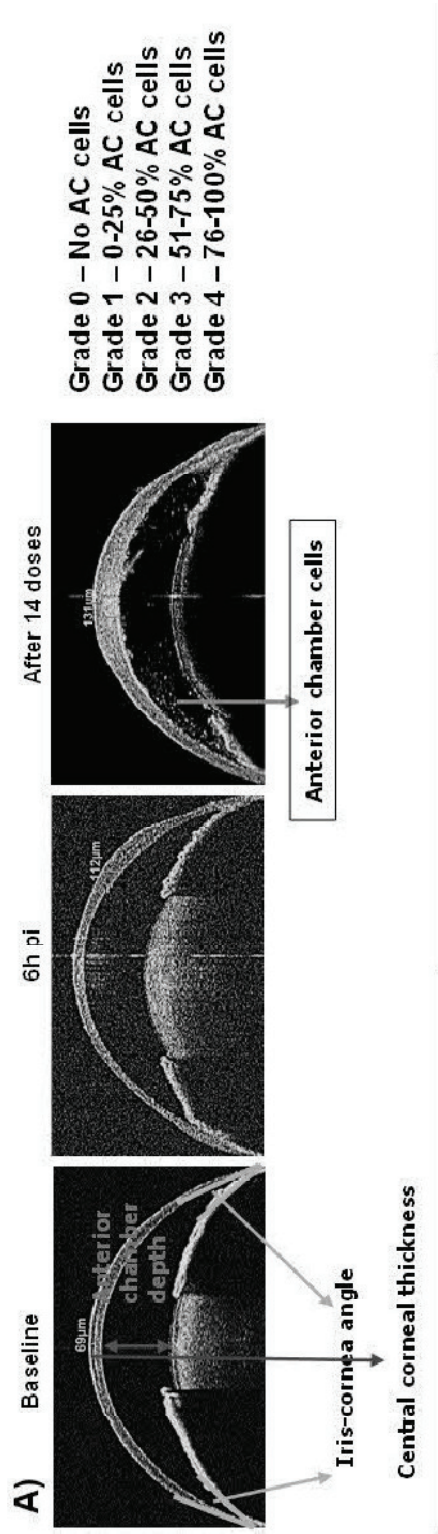
C)



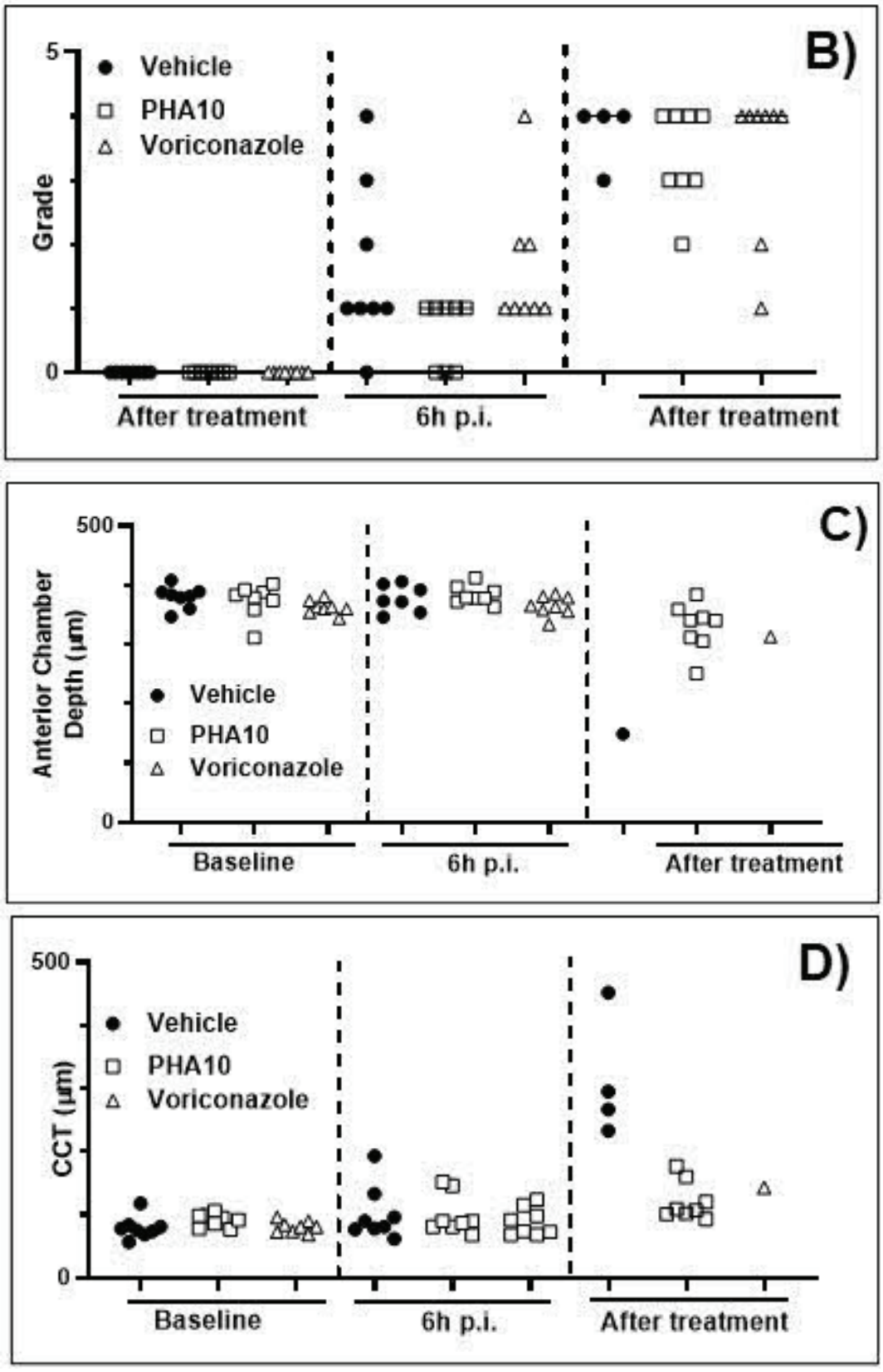
D)



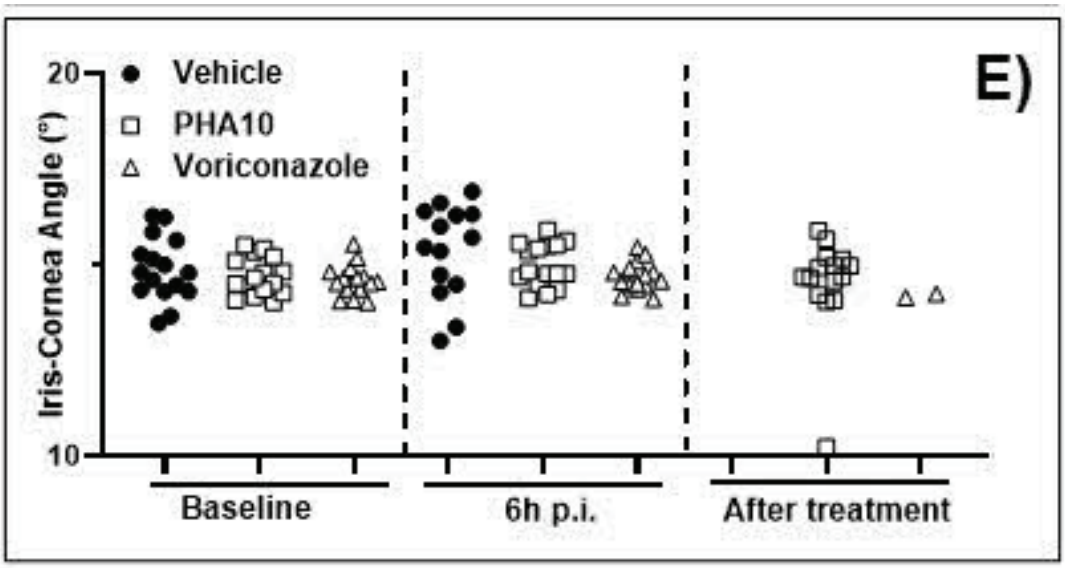
[Fig. 10]

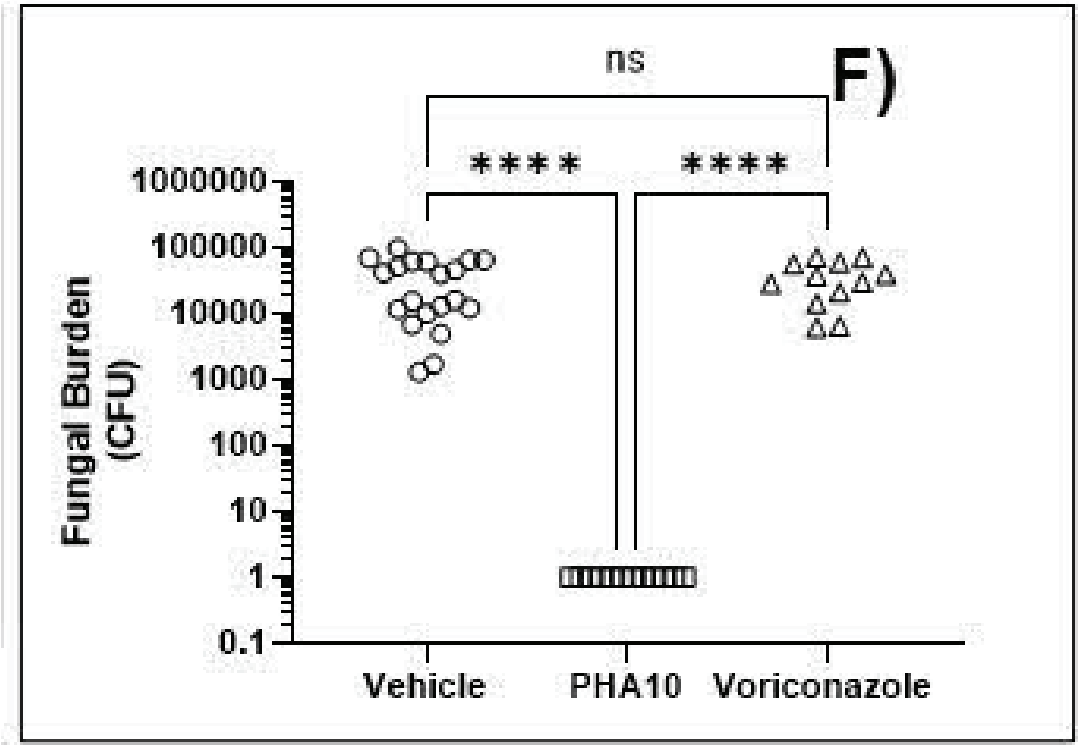

A)
Baseline
6h pi
After 14 doses
Grade 0 – No AC cells
Grade 1 – 0-25% AC cells
Grade 2 – 26-50% AC cells
Grade 3 – 51-75% AC cells
Grade 4 – 76-100% AC cells
Anterior chamber cells
Iris-cornea angle
Central corneal thickness

[Fig. 10] cont.

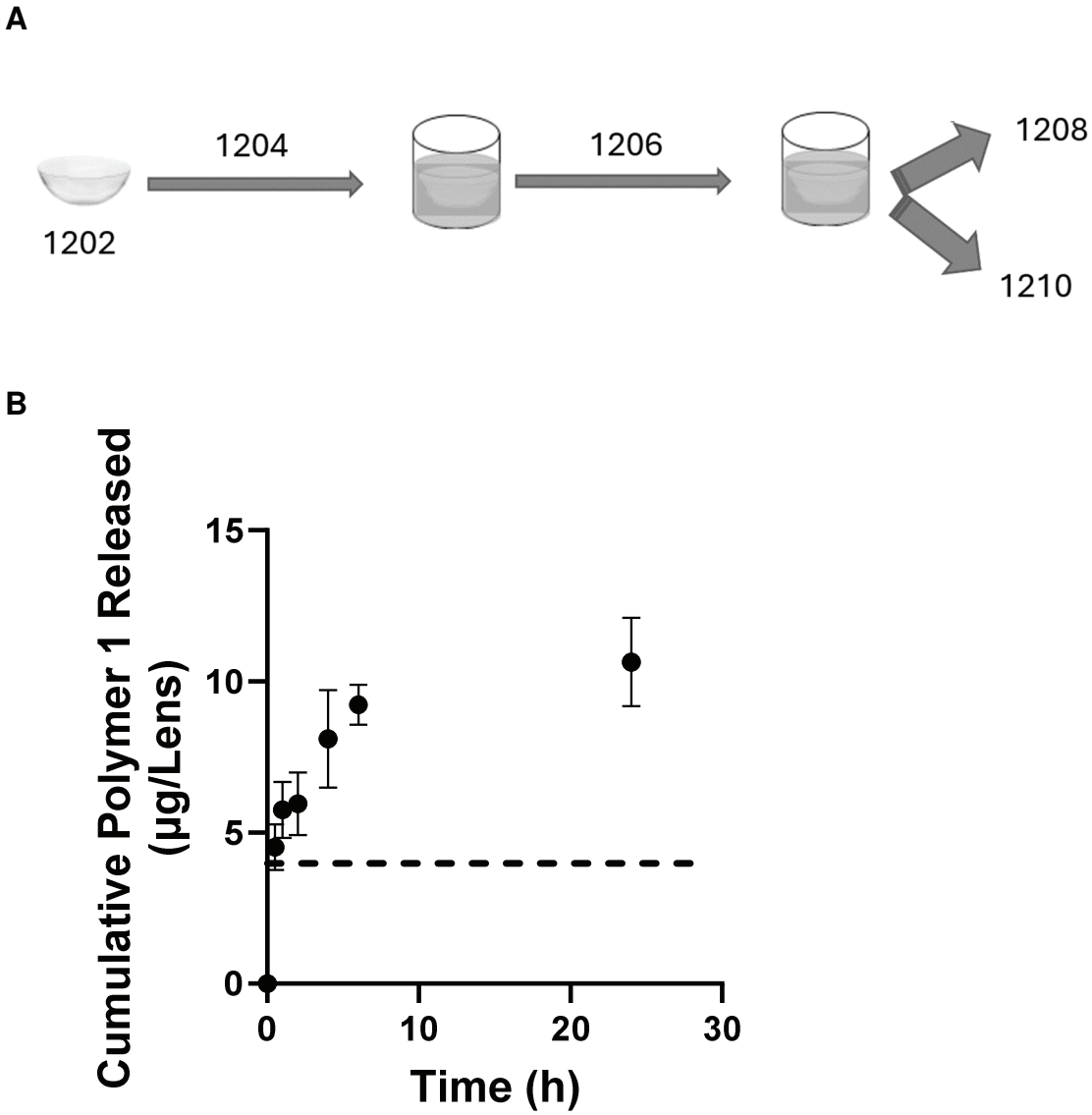

B)
5
0
Grade
Vehicle
PHA10
Voriconazole
After treatment
6h p.i.
After treatment
C)
500
0
Anterior Chamber Depth (μm)
Vehicle
PHA10
Voriconazole
Baseline
6h p.i.
After treatment
D)
500
0
CCT (μm)
Vehicle
PHA10
Voriconazole
Baseline
6h p.i.
After treatment

[Fig. 10] cont.


E)
20
10
Iris-Cornea Angle (°)
Vehicle
PHA10
Voriconazole
Baseline
6h p.i.
After treatment


F)
ns
****
****
1000000
100000
10000
1000
100
10
1
0.1
Fungal Burden (CFU)
Vehicle
PHA10
Voriconazole

[Fig. 11]


A
1202
1204
1206
1208
1210
B
Cumulative Polymer 1 Released (µg/Lens)
15
10
5
0
0
10
20
30
Time (h)