Supplementary Material

Enhanced degradation of naproxen by immobilization of *Bacillus thuringiensis* B1(2015b) on loofah sponge

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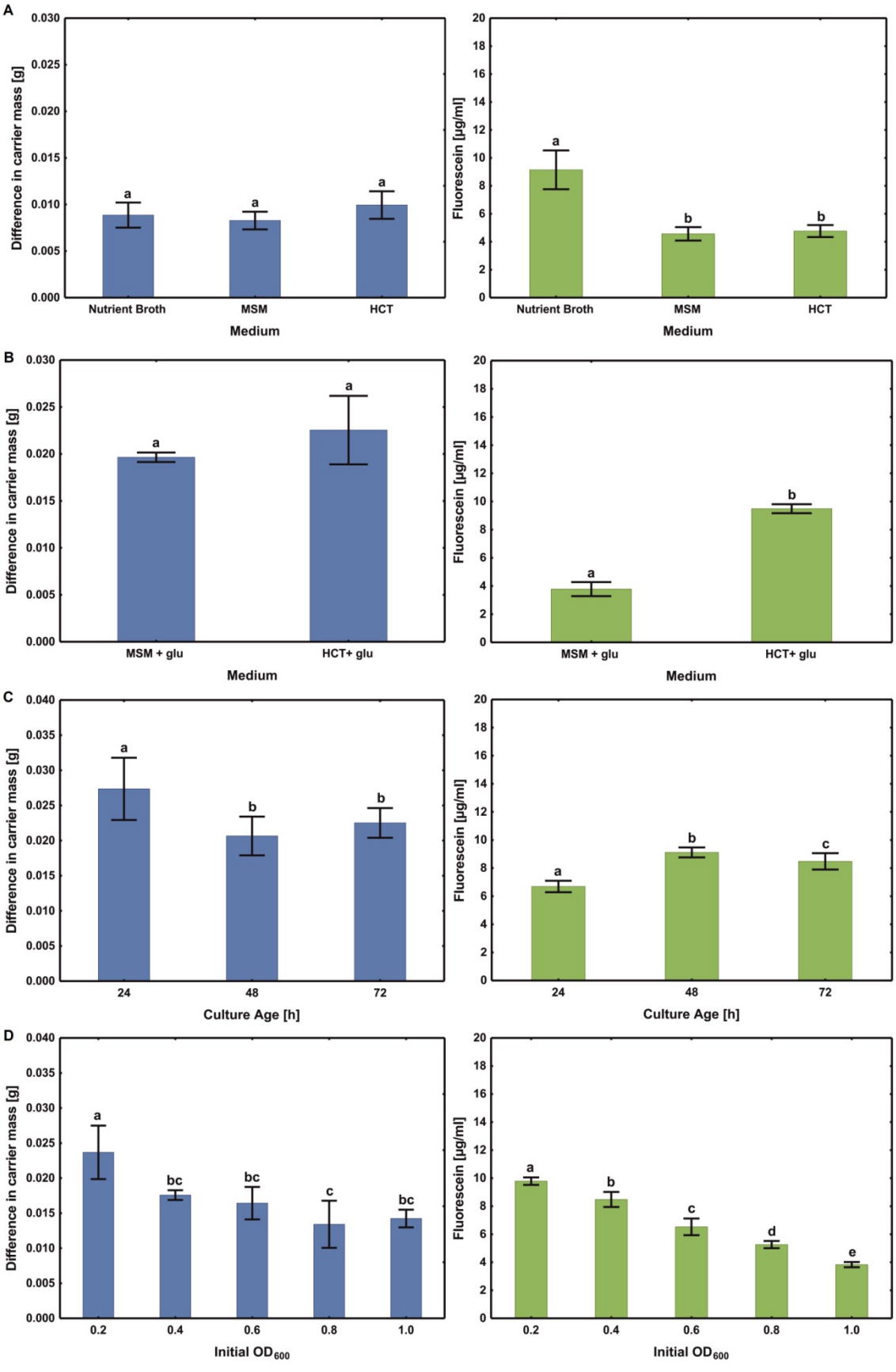
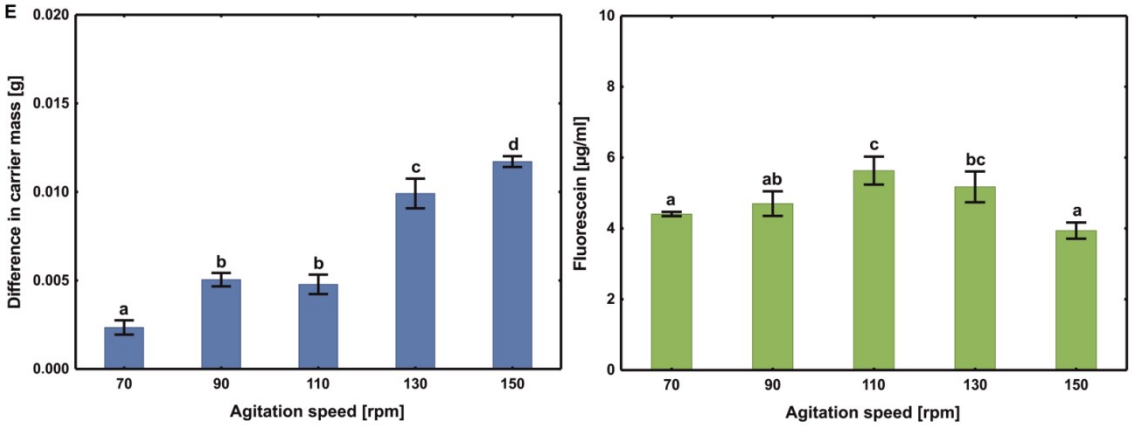
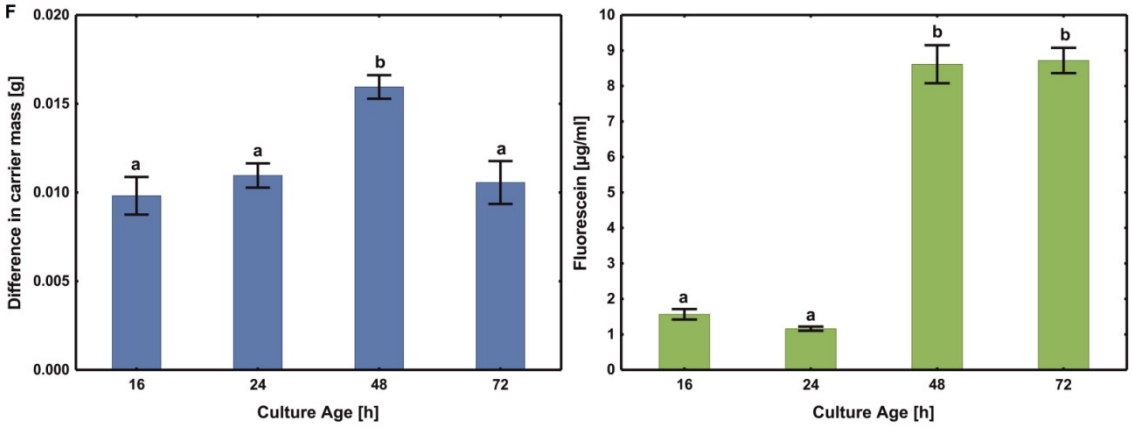
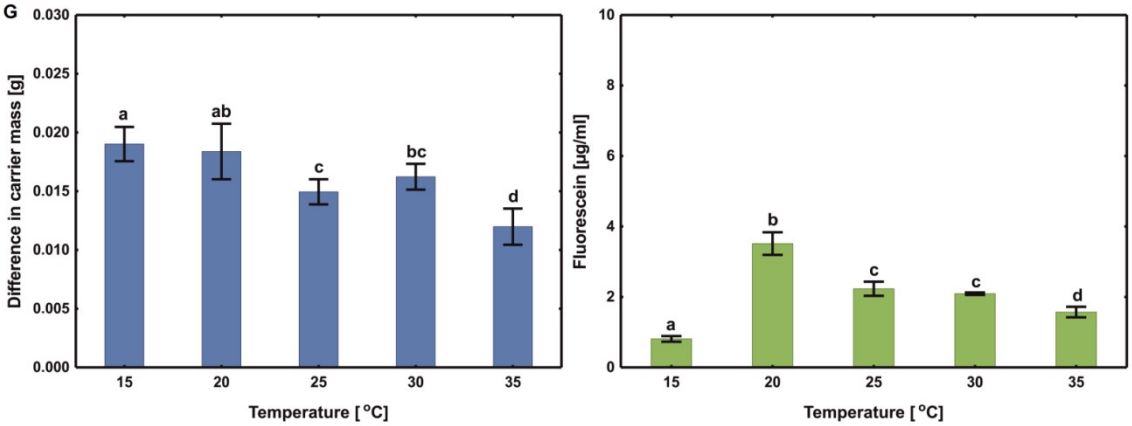
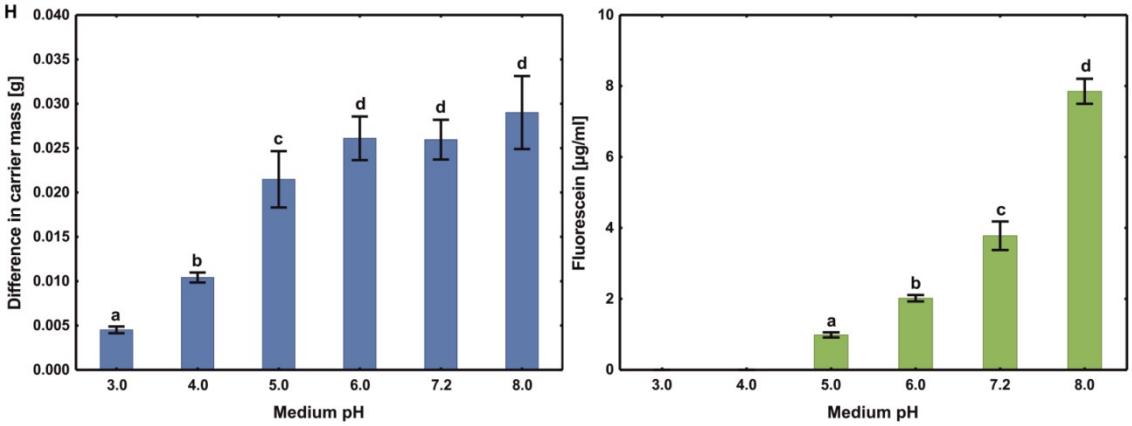
Figure S1: Influence of different variants of environmental and physiological factors on the immobilisation efficiency of *Bacillus thuringiensis* B1(2015b) cells on loofah sponges.


A
Difference in carrier mass [g]
0.030
0.025
0.020
0.015
0.010
0.005
0.000
a
a
a
Nutrient Broth
MSM
HCT
Medium
Fluorescein [µg/ml]
20
18
16
14
12
10
8
6
4
2
0
a
b
b
Nutrient Broth
MSM
HCT
Medium
B
Difference in carrier mass [g]
a
a
MSM + glu
HCT+ glu
Medium
Fluorescein [µg/ml]
a
b
MSM + glu
HCT+ glu
Medium
C
Difference in carrier mass [g]
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
a
b
b
24
48
72
Culture Age [h]
Fluorescein [µg/ml]
a
b
c
24
48
72
Culture Age [h]
D
Difference in carrier mass [g]
a
bc
bc
c
bc
0.2
0.4
0.6
0.8
1.0
Initial OD600
Fluorescein [µg/ml]
a
b
c
d
e
0.2
0.4
0.6
0.8
1.0
Initial OD600


E
Difference in carrier mass [g]
0.020
0.015
0.010
0.005
0.000
a
b
b
c
d
70
90
110
130
150
Agitation speed [rpm]
Fluorescein [µg/ml]
10
8
6
4
2
0
a
ab
c
bc
a
70
90
110
130
150
Agitation speed [rpm]


F
Difference in carrier mass [g]
0.020
0.015
0.010
0.005
0.000
a
a
b
a
16
24
48
72
Culture Age [h]
Fluorescein [µg/ml]
10
9
8
7
6
5
4
3
2
1
0
a
a
b
b
16
24
48
72
Culture Age [h]


G
Difference in carrier mass [g]
0.030
0.025
0.020
0.015
0.010
0.005
0.000
a
ab
c
bc
d
15
20
25
30
35
Temperature [°C]
Fluorescein [µg/ml]
10
8
6
4
2
0
a
b
c
c
d
15
20
25
30
35
Temperature [°C]


H
Difference in carrier mass [g]
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
a
b
c
d
d
d
3.0
4.0
5.0
6.0
7.2
8.0
Medium pH
Fluorescein [µg/ml]
10
8
6
4
2
0
a
b
c
d
3.0
4.0
5.0
6.0
7.2
8.0
Medium pH

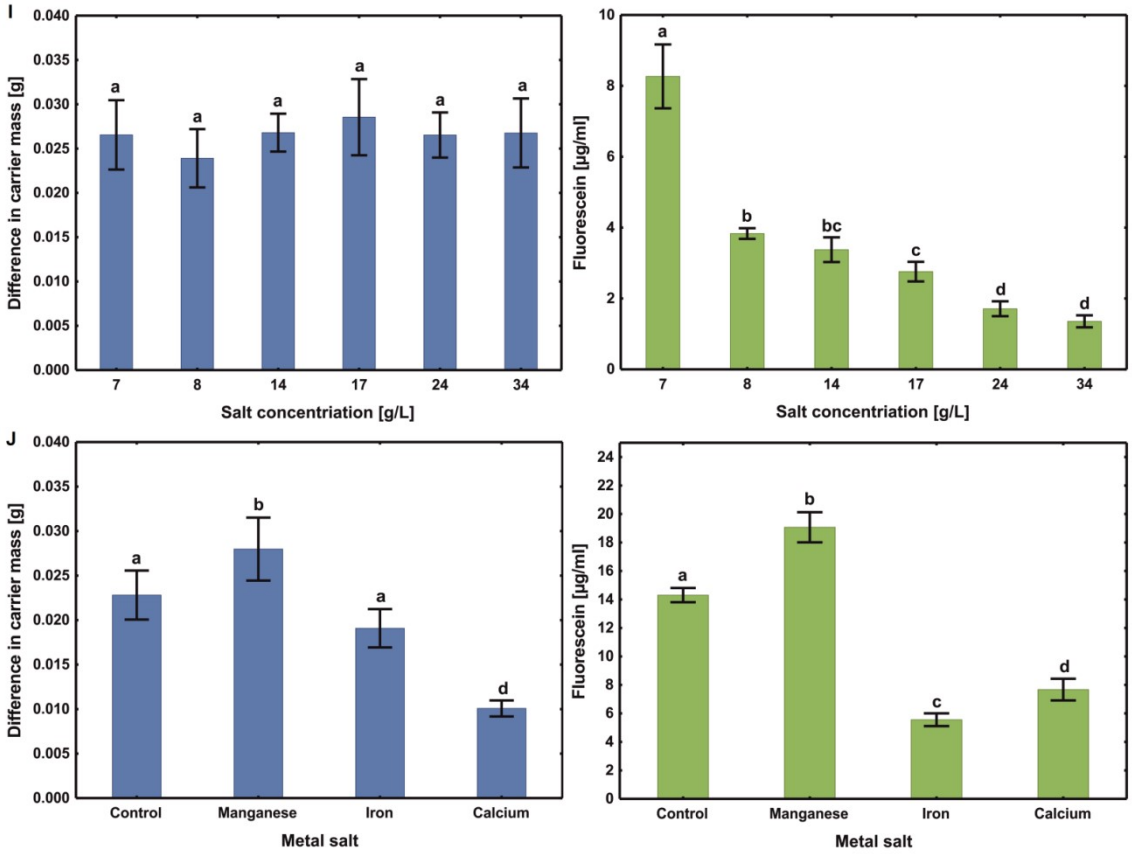


Figure S1: Influence of environmental and physiological factors on the immobilisation efficiency of *Bacillus thuringingiensis* B1(2015b) cells on loofah sponges:

(**a**) Immobilisation medium (Nutrient Broth, Mineral Salts Medium or HCT (medium rich in both carbon and ion sources));
(**b**) Additional carbon source (Mineral Salts Medium + 0.5 g/L glucose or HTC + 0.5 g/L glucose);
(**c**) Age of the culture that was harvested for immobilisation (24, 48 or 72 h);
(**d**) Initial culture Optical Density (0.2, 0.4, 0.6, 0.8, or 1.0);
(**e**) Agitation speed (70, 90, 110, 130 or 150 rpm);
(**f**) Incubation time of the bacterial culture with a carrier (16, 24, 48 or 72 h);
(**g**) Temperature (15, 20, 25, 30, or 35^{o}C);
(**h**) Immobilisation medium pH (3, 4, 5, 6, 7.2 or 8);
(**i**) Salt concentration in the immobilisation medium (7, 8, 14, 17, 24 or 34 g/L);
(**j**) Additional metal ions (manganese, iron or calcium).
All experiments were performed in at least five replicates. The values of the efficiency of immobilisation and enzyme activities were analyzed using a one-way ANOVA ($p \geq 0.05$) using STATISTICA 10 PL software package. A post-hoc test or T-test was applied to assess the differences between the treatments (differences are marked with successive letters a, b, c, d or e).