Table SI: Sequences of lipase-like proteins in *Schistocerca gregaria* grasshopper oral secretions. MS data evaluation was done by UniProt_TREMBL or UniProt_Swissprot, and MS-BLAST algorithm.

Lipase Q177T4 Aedes aegypti (Culex aegypti)	(S)LGAHVAGVAGN(R) (T)LALDPAAPLFGG(K) (S)DSDVSF(R)	Score = 60 (32.3 bits) Identities = 9/11 (81%) Positives = 11/11 (100%) Query: 75 SLGAHVAGVAG 85 SLGAH+AG+AG Sbjct: 523 SLGAHIAGIAG 533
		Score = 55 (29.8 bits) Identities = 8/8 (100%) Positives = 8/8 (100%) Query: 294 LDPAAPLF 301 LDPAAPLF Sbjct: 249 LDPAAPLF 256
		Score = 49 (26.7 bits) Identities = 7/8 (87%) Positives = 7/8 (87%) Query: 310 LDPAAPLF 317 LDPA PLF Sbjct: 546 LDPASPLF 553
		Score = 35 (19.6 bits) Identities = 5/5 (100%) Positives = 5/5 (100%) Query: 119 SDSDV 123 SDSDV Sbjct: 155 SDSDV 159
similar to lipase XM_001948948.1 Acyrthosiphon pisum	(S)LGAHVAGVAGN(R) (T)LALDPAAPLFGG(K) (V)DSSNASFVQVL(H) (L)TALNPAAPLFGG(K)	Score = 53 (28.8 bits) Identities = 9/13 (69%) Positives = 10/13 (76%) Query:75 SLGAHVAGVAGNR 87 S GAH+AG AG R Sbjct:175 SMGAHIAGYAGKR 187
		Score = 50 (27.2 bits) Identities = 8/14 (57%) Positives = 9/ 14 (64%) Query: 291 LTALDPAAPLFGGK 304 +T LDPA P F K Sbjct: 195 ITGLDPARPMFSSK 208
		Score = 38 (21.1 bits) Identities = 6/12 (50%) Positives = 7/12 (58%) Query: 482 DSSNASFVQVLH 493 D +A FV V H Sbjct: 215 DRTDAQFVDVVH 226
		Score = 34 (19.1 bits) Identities = 5/11 (45%) Positives = 8/11 (72%) Query: 323 LTALNPAAPLF 333 +T L+PA P + Sbjct: 448 ITGLDPAKPMY 458

Table SII: Primers used for qPCR.

gene	forward primer	reverse primer
eIF4A1 (AT3G13920)	5'ccagaaggcacacagtttgatgca3'	5'agactgagcctgttgaatcacatc3'
GST1 (AT1G02930)	5'ctctcaactggcaaggacatgg3'	5'ggactttggctagcttagcctc3'
OPR1 (AT1G76680)	5'acagagtgtacctcttctcactc3'	5'ctccagtggcttcagtgatgag3'

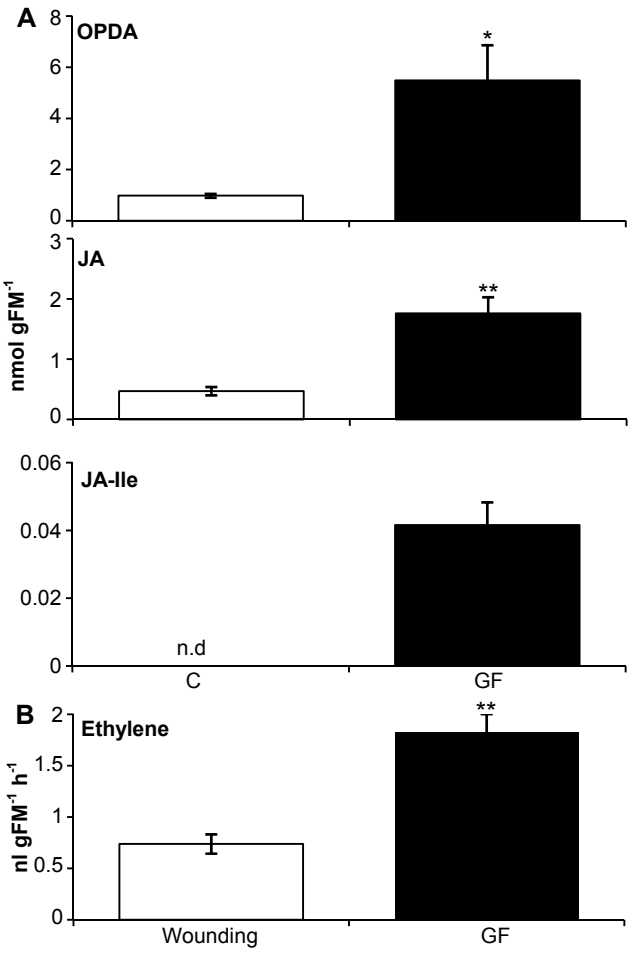

Figure S1: Feeding damage from *Schistocerca gregaria* induces changes in phytohormone levels of *Arabidopsis thaliana*.

A, Mean levels (±SE; N≥3) of OPDA, JA and JA-Ile. Either plants (L*er)* were exposed to *S. gregaria* feeding (GF) or kept untreated (C). Samples were harvested 24 h after feeding. B, Ethylene emission (±SE; N≥3). Col-0 plants were exposed to feeding *S. gregaria* (GF) or wounding by cork borers mimicking the damage of the GF. After 1.5 h the ethylene was collected for 5 h and levels subsequently determined. Asterisks indicate significant differences between the different treatments (independent-samples t-test; *=p< 0.05; **= p<0.01). FM, Fresh mass.

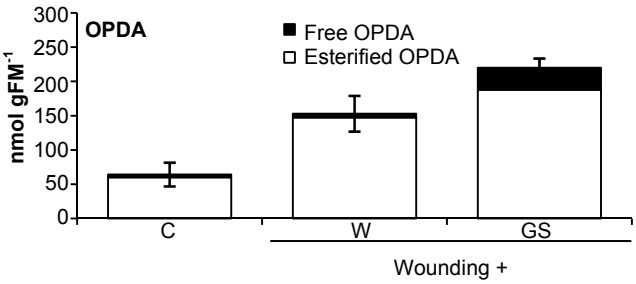

Figure S2: *Schistocerca gregaria* oral secretions (GS) induce changes in free and esterified OPDA levels.

Mean levels (±SE; N≥4) of free and esterified OPDA. Either leaves of *Arabidopsis thaliana* (Col-0) plants were wounded and water (W) or GS was applied, or leaves were kept untreated (C). Samples were harvested after 6.5 h. Esterified OPDA was released by KOH ester hydrolysis. FM, Fresh mass.

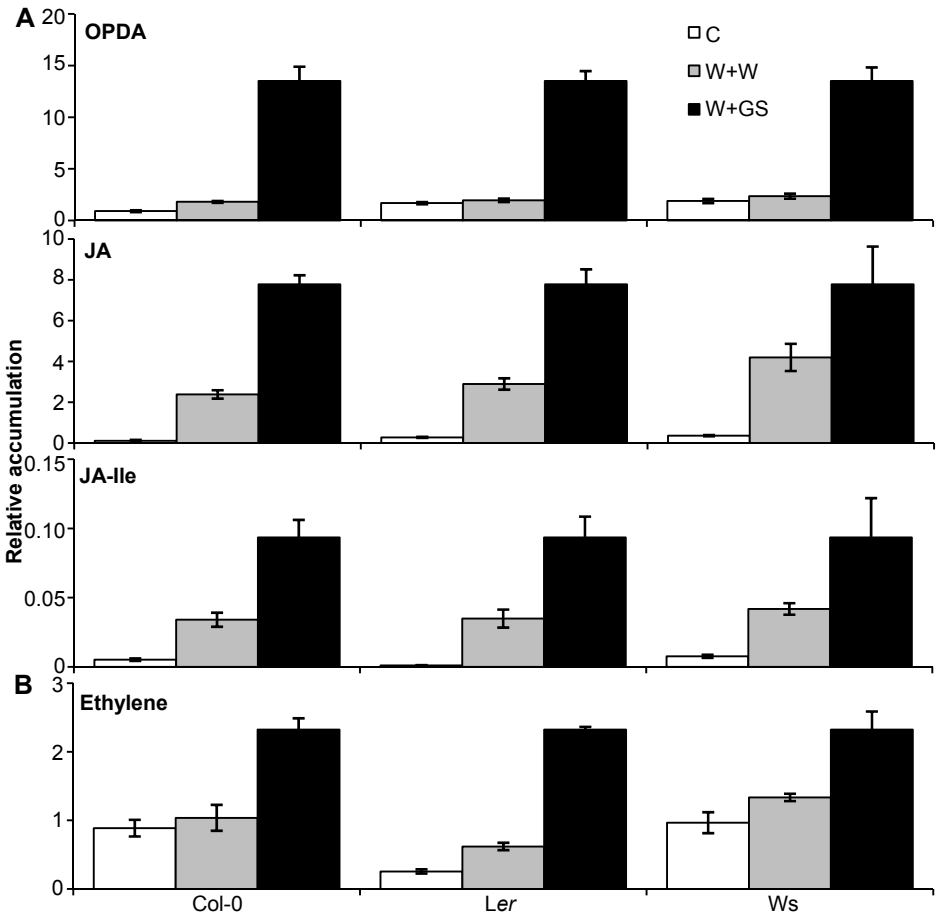

Figure S3: *Schistocerca gregaria* oral secretions (GS) induce phytohormone changes in different *Arabidopsis thaliana* accessions.

A, Relative levels (±SE; N≥4) of OPDA, JA and JA-Ile. Leaves of Col-0, L*er* and Ws plants were wounded and water (W+W) or GS (W+GS) was applied, or leaves remained untreated (C). Samples were harvested after 2 h. B, Relative ethylene emissions (±SE; N≥4). Leaves of Col-0, L*er* and Ws plants were treated with W+W, W+GS or kept untreated (C). After 5 h, the released ethylene was determined. Phytohormone levels were normalized to the W+GS levels.

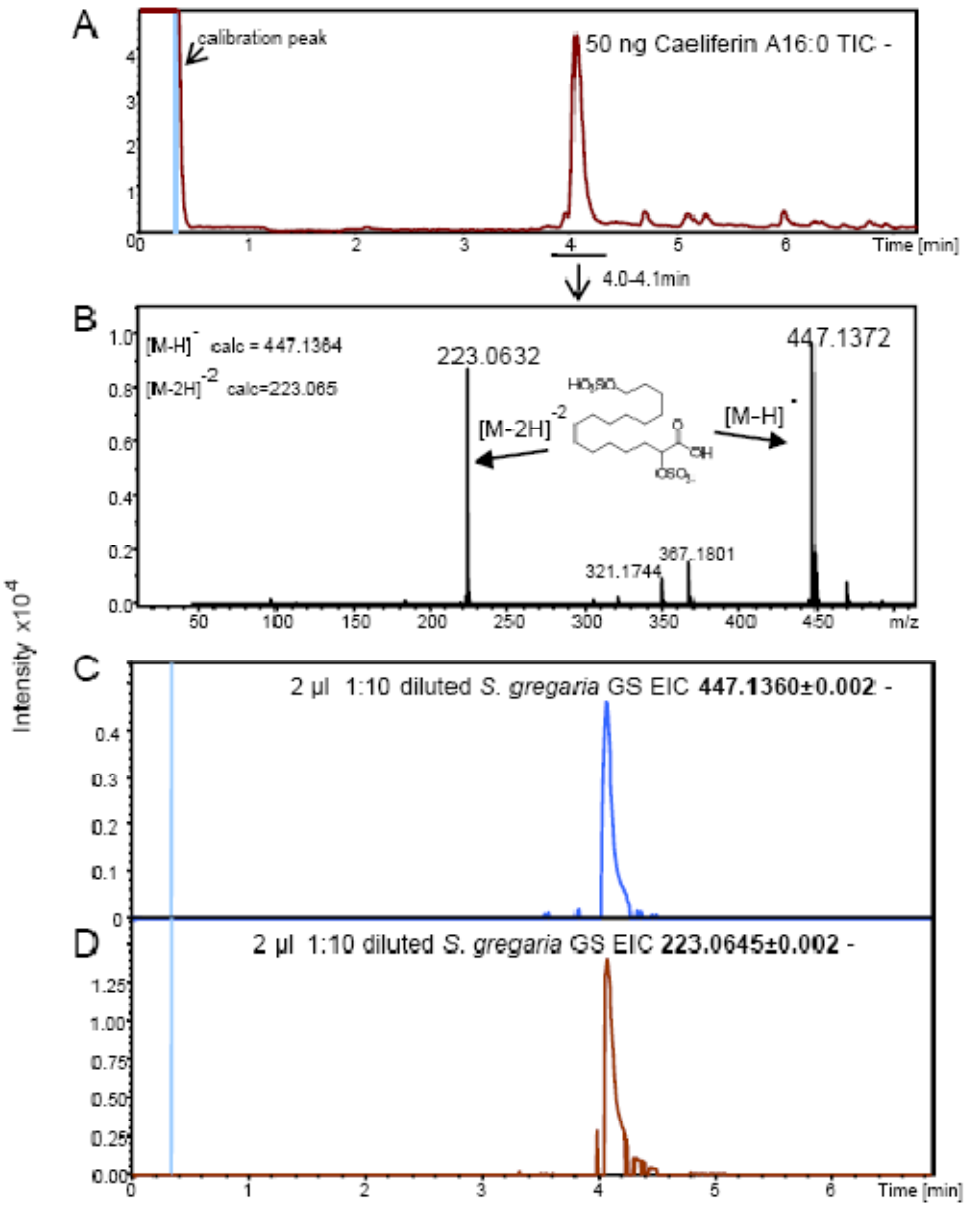

Figure S4: Mass spectrometry analysis of caeliferin A16:0.

A, B, Analysis of synthetic caeliferin A16:0 by mass spectrometry. C, D, Verification of the presence of caeliferin A16:0 in *Schistocerca gregaria* oral secretions (GS). GS was centrifuged at 10.000g for 5 min and supernatant was 1:10 diluted in 70% methanol. MS Data were obtained with a MicroTOF instrument (Bruker Daltonics, Bremen, Germany) using a Dionex Acclaim 2.2µm 120A 2.1x150 mm column (Dionex, Sunnyvale, CA, USA) with solvent A (0.1% ammoniumformiate) and solvent B (0.05% formic acid in acetonitrile) at 0.5 min isocratic 10% B followed by 6 minutes linear gradient to 80% B and 1.5 min at 80% B.

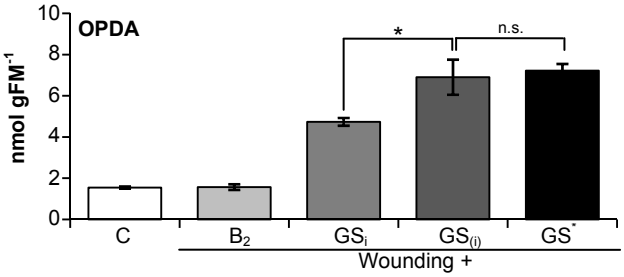

Figure S5: Lipase-dependent oxylipin accumulation in *Arabidopsis thaliana* (Col-0). Mean levels (±SE; N≥4) of free OPDA. Leaves were wounded and either 2.5% (v/v) ethanol (B_2), with 1 mM orlistat treated *Schistocerca gregaria* oral secretions (GS_i), *S. gregaria* oral secretions (GS) with 1 mM orlistat but without preincubation ($GS_{(i)}$) or with 2.5% (v/v) ethanol incubated GS (GS*) was applied, or leaves remained untreated (C). Samples were harvested 2 h after treatment. Asterisks indicate significant differences between indicated treatments (independent-samples t-test; n.s.= no significant difference, $p > 0.05$; *=$p < 0.05$). FM, Fresh mass.

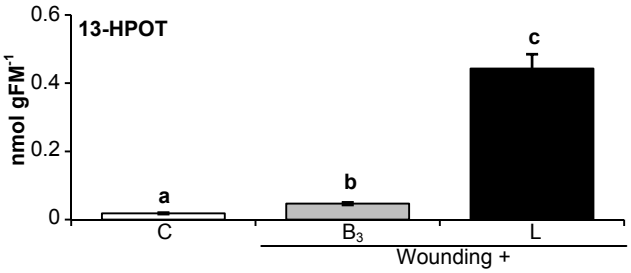

Figure S6: Lipase activity induces accumulation of 13-HPOT levels in *Arabidopsis thaliana* (Col-0) leaves.

Mean levels (±SE; N=5) of 13-HPOT. Either leaves were wounded and 0.1 mM Tris-HCl pH7.5 (B_3) or fungal lipase solution (L) was applied, or leaves were kept untreated (C). Samples were harvested after 2 h. Different letters indicate significant differences among treatments (ANOVA; $p<0.05$, Tukey´s HSD test). FM, Fresh mass.

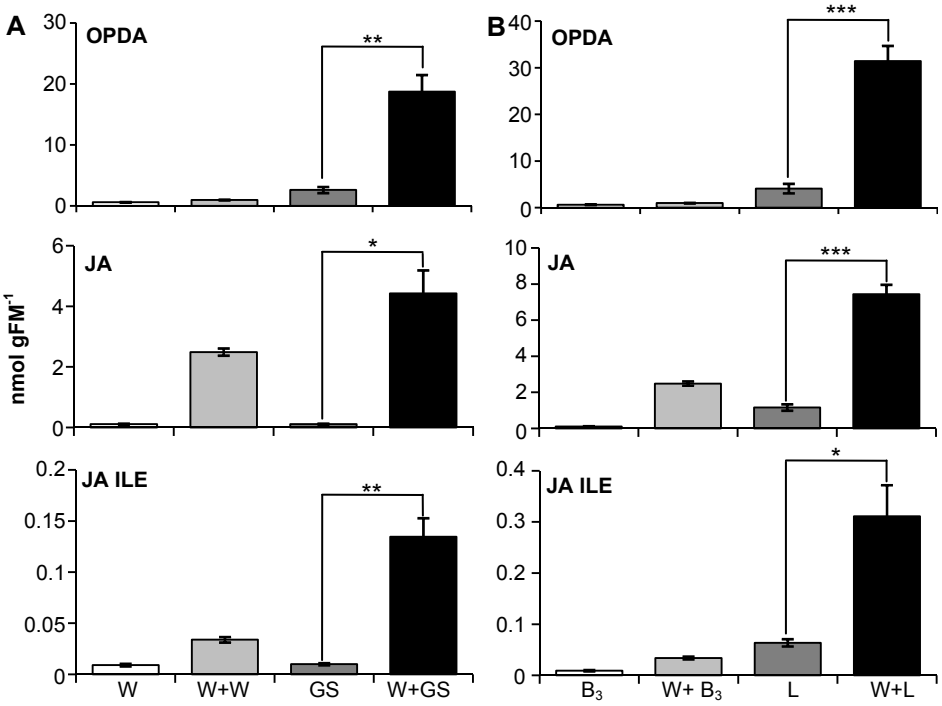

Figure S7: *Schistocerca gregaria* oral secretions (GS) and fungal lipase solution (L) induced oxylipin levels in *Arabidopsis thaliana* (Col-0).

A, Mean levels (±SE; N=4) of free OPDA. Water (W) or GS were applied to unwounded leaves or leaves were wounded and W (W+W) or GS (W+GS) were applied. Samples were harvested 2 h after treatment. B, Mean levels (±SE; N=4) of free OPDA. Buffer (B_3) or L were applied to unwounded leaves or leaves were wounded and B_3 (W+B_3) or L (W+L) were applied. Samples were harvested 2 h after treatment. Asterisks indicate significant differences between indicated treatments (independent-samples t-test; *=p< 0.05; **= p<0.01; ***= p<0.001). FM, Fresh mass.

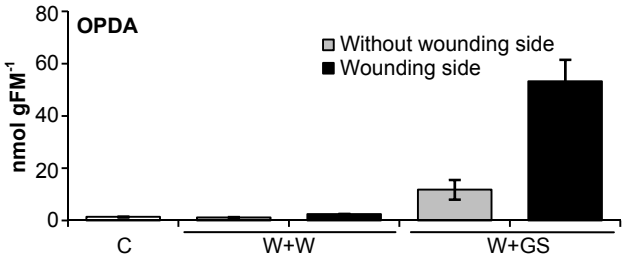

Figure S8: OPDA accumulates in close proximity to the wounded side.
Mean levels (±SE; N≥2) of OPDA. Either leaves of *Arabidopsis thaliana* (Col-0) plants were wounded longitudinally with a razor blade and water (W+W) or *Schistocerca gregaria* oral secretions (W+GS) was applyed only to the wound, or leaves were kept untreated (C). “Wounding side” indicates the area 1.5 mm around the cut and “Without wounding side” indicates the remaining leave area. Samples were harvested after 2 h. Before harvesting, the wounded sites were removed and analyzed separately. FM, Fresh mass.

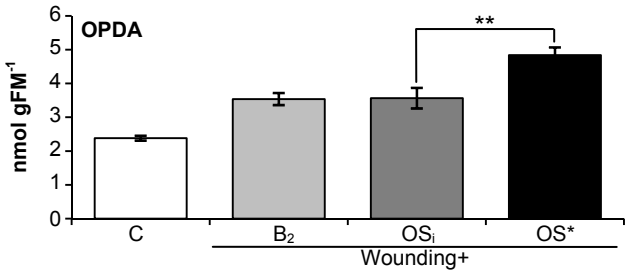

Figure S9: *Manduca sexta* oral secretions (OS) induce lipase-dependent OPDA accumulation in *Arabidopsis thaliana* (Col-0).

Mean levels (±SE; N=4) of free OPDA. Leaves were wounded and 2.5% (v/v) ethanol (B_2), with 1mM orlistat treated *M. sexta* OS (OS_i) or with 2.5% (v/v) ethanol incubated *M. sexta* OS (OS*) was applied, or leaves were kept untreated (C). Samples were harvested 2 h after treatment. Asterisks indicate significant differences between indicated treatments (independent-samples t-test; **= $p<0.01$). FM, Fresh mass.

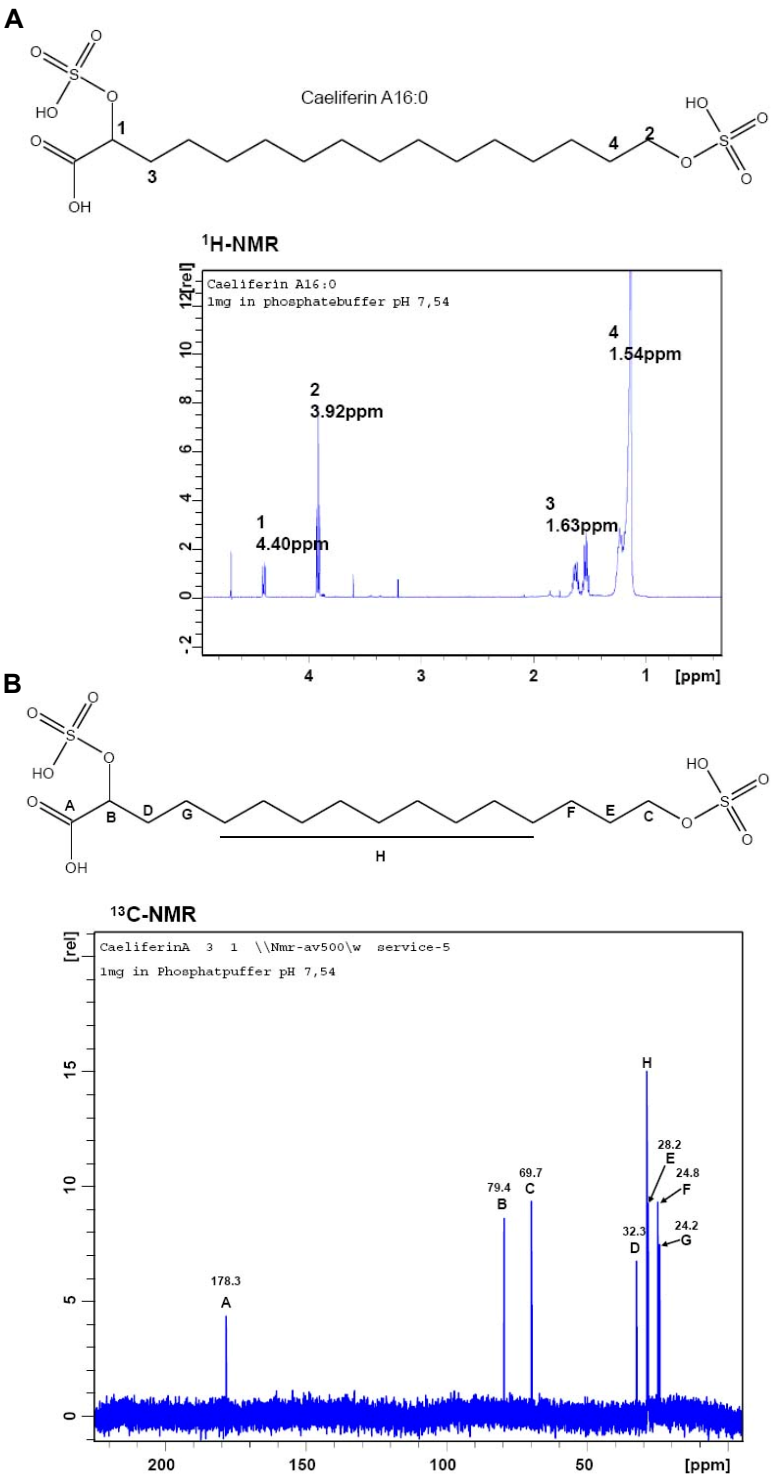

Figure S10: NMR analysis of synthetic caeliferin A16:0.

For structure verification, the synthetic caeliferin A16:0 was analysed by A, ^{1}H NMR and B, ^{13}C NMR. NMR data were measure with an AV500 instrument (Bruker Daltonics, Bremen, Germany) using 100 MHz for ^{1}H and 125 MHz for ^{13}C spectra.