Assessment of the efficacy and mode of action of benzo(1,2,3)-thiadiazole-7-carbiothioic acid S-methyl ester (BTH) and its derivatives in plant protection against viral diseases

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| Analyzed genes | Gene | Primer pair | Sequence (5'->3') | Size (bp) | % of primers efficiency | Tm | Access number |
|----------------|------|-------------|------------------|-----------|-------------------------|----|---------------|
| ET pathway marker genes | CTR | Forward | TACGACCCAGCGCTGAAAGG | 161 | 110 | 58°C | Nicotiana tabacum CTR mRNA, partial cds;  
GenBank: AF247567.1 |
| | | Reverse | CCTTCGACATGGAAACGAG | 182 | 100 | 64°C | Nicotiana tabacum ethylene receptor (LOC107784797), mRNA;  
NCBI Reference Sequence: NM_001325388.1 |
| JA pathway marker genes | Lox | Forward | CCTCATGATGCTGACCATACG | 150 | 97 | 53°C | Nicotiana tabacum LOX mRNA for lipoxygenase;  
GenBank: AB233415.1 |
| | | Reverse | CATGGGACTCTTCCGATGA | 166 | 120 | 53°C | Nicotiana tabacum jasmonic acid-amido synthetase JAR1-like (LOC107762553), mRNA;  
NCBI Reference Sequence: XM_016580920.1 |
| | | | | 180 | 100 | 56°C | N tabacum (Samsun NN) gene for proteinase inhibitor II;  
GenBank: Z29537.1 |
| SA pathway marker genes | gluB | Forward | GATCAGGAGGGGATCTGTA | 248 | 99 | 60°C | Nicotiana tabacum glucan endo-1,3-beta-glucosidase, basic vacuolar (LOC107823411), mRNA;  
NCBI Reference Sequence: XM_016650053.1 |
| | | Reverse | ATATTTGCTGCTGGTGGG | 175 | 98 | 64°C | Nicotiana tabacum NPR1 mRNA, completo cds;  
GenBank: K402167.1 |
| | PAL | Forward | ATGTCAGGAGGGGATCTGTA | 141 | 105 | 64°C | phenylalanine ammonia-lyase (LOC104230518), mRNA;  
NCBI Reference Sequence: XM_009783351.1 |
| | | Reverse | ATATTTGCTGCTGGTGGG | 213 | 97 | 58°C | pathogenesis-related protein 1b (PR1b);  
NCBI Reference Sequence: X53465.1 |
| Reference Gene | EF-1α | Forward | TGTATGTTTGTTCGGGTCTTTTAA | 180 | 100 | 60°C | elongation factor 1-alpha (LOC107620390), mRNA;  
NCBI Reference Sequence: NM_001326165.1 |
| Virus polimerase | Hel_ToMV | Forward | ATATCAGGAGGGGATCTGTA | 239 | 99 | 03°C | Tomato mosaic virus complete genome (helicase fragment);  
NCBI Reference Sequence: FN985165.1 |
Table S2. Statistical analysis of relative defence marker gene expression in *N. tabacum* cv. Samsun not infected with virus after BTH/derivative treatment (4 hours, 1 day, 5 days, and 9 days) between mock-treated and inducer-treated plants. A) SA marker genes, B) ET marker genes, C) JA marker genes. BTH, benzo(1,2,3)-thiadiazole-7-carbothioic acid S-methyl ester; [Chol][BTHCOO], cholinium benzo(1,2,3)-thiadiazole-7-carboxylate; BTHWA, amide derivative of benzo(1,2,3)-thiadiazole-7-carbothioic acid; [N444][BTHCOO], tetrabutylammonium benzo(1,2,3)-thiadiazole-7-carboxylate; [N1110][BTHCOO], didecyldimethylammonium benzo(1,2,3)-thiadiazole-7-carboxylate. The different colours in each column indicate the statistical significance of the results: red – no statistical significance; yellow - adjusted $P<0.05$; green - adjusted $P<0.001$, Student’s $t$-test.

| Marker Gene Type | (BTH vs [Mock]) | CTR 4h | CTR 1dpi | CTR 5dpi | CTR 9dpi | ER 4h | ER 1dpi | ER 5dpi | ER 9dpi |
|-----------------|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|
| A) SA Marker Genes | P-Value | 0.3754 | 0.031542 | 0.026796 | 0.005152 | 0.0001512 | 0.0000012 | 0.0000001 | 0.0000001 |
| B) ET Marker Genes | P-Value | 0.000769 | 0.004919 | 0.002195 | 0.000521 | 0.0000214 | 0.0000012 | 0.0000001 | 0.0000001 |
| C) JA Marker Genes | P-Value | 0.019067 | 0.0060459 | 0.017983 | 0.000806 | 0.0000152 | 0.0000012 | 0.0000001 | 0.0000001 |
Table S3. Statistical analysis of relative defence marker gene expression in *N. tabacum* cv. Samsun infected with virus after BTH/derivative treatment (4 hours, 1 day, 5 days, and 9 days) between mock-treated and virus-inoculated inducer-treated plants. A) SA marker genes, B) ET marker genes, C) JA marker genes. ToMV, Virus-inoculated plants not treated with any resistance inducer; BTH, benzo(1,2,3)-thiadiazole-7-carbothioic acid S-methyl ester; [Chol][BTHCOO], cholinium benzo(1,2,3)-thiadiazole-7-carboxylate; BTHWA, amide derivative of benzo(1,2,3)-thiadiazole-7-carboxylic acid; [N4444][BTHCOO], tetrabutylammonium benzo(1,2,3)-thiadiazole-7-carboxylate; [N111010][BTHCOO], didecyldimethylammonium benzo(1,2,3)-thiadiazole-7-carboxylate. The different colours in each column indicate the statistical significance of the results: red – no statistical significance; yellow - adjusted \( P<0.05 \); green - adjusted \( P<0.001 \), Student’s t-test.

|                | (BTH) vs (Mock) | (Chol)[BTHCOO] vs (Mock) | (BTHWA) vs (Mock) | ([N4444][BTHCOO]) vs (Mock) | (ToMV) vs (Mock) |
|----------------|-----------------|--------------------------|-------------------|-----------------------------|------------------|
| **Gene**       | CTR 4h          | CTR 1dpi                 | CTR 5dpi          | CTR 9dpi                    | CTR 9dpi         |
| **P-Value**    | 0.82016         | 0.02332                  | 0.01882           | 0.0003122                   | 1.076-07         |
| **Gene**       | ER 4h           | ER 1dpi                  | ER 5dpi           | ER 9dpi                     | ER 9dpi          |
| **P-Value**    | 0.00092         | 0.000946                 | 1.00-08           | 1.00-08                     | 1.00-08          |
| **Gene**       | (N4444)[BTHCOO] vs (Mock) | (BTHWA) vs (Mock) | ([N4444][BTHCOO]) vs (Mock) | (ToMV) vs (Mock) |
| **P-Value**    | 0.52068         | 0.02332                  | 0.01882           | 0.0003122                   | 1.076-07         |
| **Gene**       | PI 4h           | PI 1dpi                  | PI 5dpi           | PI 9dpi                     | PI 9dpi          |
| **P-Value**    | 0.001446        | 0.001331                 | 0.000198          | 0.000172                    | 0.007564         |
Figure S1a. Relative expression changes in four SA marker genes (GluB - glucan endo-1,3-beta-glucanase; NPR1 – non-expressor of pathogenic-related genes 1; PAL - phenylalanine ammonia-lyase gene; PR-1b – pathogenesis-related 1b) between virus-inoculated water-treated (Plant set 7) and virus-inoculated inducer-treated plants (Plant sets 8-12). BTH, benzo(1,2,3)-thiadiazole-7-carboxylic acid S-methyl ester; [Chol][BTHCOO], cholinium benzo(1,2,3)-thiadiazole-7-carboxylate; BTHWA, amide derivative of benzo(1,2,3)-thiadiazole-7-carboxylic acid; [N4444][BTHCOO], tetrabutylammonium benzo(1,2,3)-thiadiazole-7-carboxylate; [N111010][BTHCOO], didecyldimethylammonium benzo(1,2,3)-thiadiazole-7-carboxylate. Each bar represents differential gene expression on the log2 scale at different time points: 4 hours post inoculation (hpi), 1 day post inoculation (dpi), 5 dpi and 9 dpi. The black asterisks above each data bar indicate the statistical significance of the results: * - adjusted P<0.05; ** - adjusted P<0.001, Student’s t-test (detailed results presented in Table S4).
Figure S1b. Relative changes in the expression of two ET-mediated pathway marker genes (CTR - serine/threonine-protein kinase and ER – ethylene receptor) and three JA-mediated pathway marker genes (LOX – lipoxygenase, JAR1 - jasmonic acid-amido synthetase 1 and PI II – proteinase inhibitor II) between virus-inoculated water-treated (Plant set 7) and virus-inoculated inducer-treated plants (Plant sets 8-12). BTH, benzo(1,2,3)-thiadiazole-7-carbothioic acid S-methyl ester; [Chol][BTHCOO], cholinium benzo(1,2,3)-thiadiazole-7-carboxylate; BTHWA, amide derivative of benzo(1,2,3)-thiadiazole-7-carbothioic acid; [N4444][BTHCOO], tetrabutylammonium benzo(1,2,3)-thiadiazole-7-carboxylate; [N111010][BTHCOO] didecyldimethylammonium benzo(1,2,3)-thiadiazole-7-carboxylate. Each bar represents differential gene expression on the log2 scale at different time points: 4 hours post inoculation (hpi), 1 day post inoculation (dpi), 5 dpi and 9 dpi. The black asterisks above each data bar indicate the statistical significance of the results: * - adjusted P<0.05; ** - adjusted P<0.001, Student’s t-test (detailed results presented in Table S4).
Table S4. Statistical analysis of relative defence marker gene expression between virus-inoculated water-treated (Plant set 7) and virus-inoculated inducer-treated plants (Plant sets 8-12). A) SA marker genes, B) ET marker genes, C) JA marker genes. BTH, benzo(1,2,3)-thiadiazole-7-carbothioic acid S-methyl ester; [Chol][BTHCOO], cholinium benzo(1,2,3)-thiadiazole-7-carboxylate; BTHWA, amide derivative of benzo(1,2,3)-thiadiazole-7-carboxylic acid; [N4444][BTHCOO], tetrabutylammonium benzo(1,2,3)-thiadiazole-7-carboxylate; ([N111010][BTHCOO], didecylmethylammonium benzo(1,2,3)-thiadiazole-7-carboxylate. The different colours in each column indicate the statistical significance of the results: red – no statistical significance; yellow - adjusted P<0.05; green - adjusted P<0.001, Student’s t-test.

|       | (BTH) vs (ToMV) | CTR 4h | CTR 1d1p | CTR Sdpi | CTR 9dpi | ER 4h | ER 1d1p | ER Sdpi | ER 9dpi |
|-------|-----------------|-------|---------|---------|---------|------|--------|--------|--------|
| A     | **P**-Value     | 0.102| 0.019 | 0.569 | 0.000 | 1.214 | 0.572 | 3.848 | 1.000 |
|       | (Chol)[BTHCOO]  |       |         |         |         |      |        |        |        |
|       | **P**-Value     | 1.000 | 0.635 | 0.000 | 0.000 | 0.702 | 0.749 | 0.000 | 1.000 |
|       | (BTHWA) vs (ToMV)|      |         |         |         |      |        |        |        |
|       | **P**-Value     | > 0.05 | 0.726 | 0.031 | 0.555 | 1.000 | 0.509 | 0.057 | 1.000 |
|       | ([N4444][BTHCOO]) vs (ToMV)|   |         |         |         |      |        |        |        |
|       | **P**-Value     | 1.000 | 0.736 | 0.000 | 0.000 | 0.103 | 0.012 | 0.006 | 0.001 |
|       | ([N111010][BTHCOO]) vs (ToMV)| |         |         |         |      |        |        |        |
|       | **P**-Value     | 5.93E-6 | 7.32E-6 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

|       | (CTR) vs (ToMV) | Lox 4h | Lox 1d1p | Lox Sdpi | JAR 4h | JAR 1d1p | JAR Sdpi | PI II 4h | PI II 1d1p | PI II Sdpi |
|-------|-----------------|-------|---------|---------|------|--------|--------|--------|--------|--------|
| A     | **P**-Value     | 0.212 | 0.479 | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
|       | ([Chol][BTHCOO]) vs (ToMV)|   |         |         |         |      |        |        |        |
|       | **P**-Value     | 1.000 | 0.900 | 0.000 | 0.000 | 1.000 | 0.000 | 0.000 | 0.000 |
|       | (BTHWA) vs (ToMV)|      |         |         |         |      |        |        |        |
|       | **P**-Value     | 3.09E-6 | 3.13E-7 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
|       | ([N4444][BTHCOO]) vs (ToMV)|   |         |         |         |      |        |        |        |
|       | **P**-Value     | 1.000 | 0.028 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
|       | ([N111010][BTHCOO]) vs (ToMV)| |         |         |         |      |        |        |        |
|       | **P**-Value     | 3.03E-7 | 0.138 | 0.442 | 0.590 | 0.220 | 0.000 | 0.000 | 0.000 |

|       | (JAR) vs (ToMV) | Lox 4h | Lox 1d1p | Lox Sdpi | JAR 4h | JAR 1d1p | JAR Sdpi | PI II 4h | PI II 1d1p | PI II Sdpi |
|-------|-----------------|-------|---------|---------|------|--------|--------|--------|--------|--------|
| A     | **P**-Value     | 1.09E-5 | 0.838 | 0.042 | 0.716 | 0.000 | 0.000 | 0.000 | 0.000 |
|       | ([Chol][BTHCOO]) vs (ToMV)|   |         |         |         |      |        |        |        |
|       | **P**-Value     | 0.310 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
|       | (BTHWA) vs (ToMV)|      |         |         |         |      |        |        |        |
|       | **P**-Value     | 1.50E-8 | 1.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
|       | ([N4444][BTHCOO]) vs (ToMV)|   |         |         |         |      |        |        |        |
|       | **P**-Value     | 0.015 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
|       | ([N111010][BTHCOO]) vs (ToMV)| |         |         |         |      |        |        |        |
|       | **P**-Value     | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
Figure S2a. Relative expression changes in four SA marker genes (GluB - glucan endo-1,3-beta-glucanase; NPR1 – non-expressor of pathogenic-related genes 1; PAL - phenylalanine ammonia-lyase gene; PR-1b - pathogenesis-related 1b) between mock-inoculated inducer-treated (Plant sets 2-6) and virus-inoculated inducer-treated plants (Plant sets 8-12). BTH, benzo(1,2,3)-thiadiazole-7-carbothioic acid S-methyl ester; [Chol][BTHCOO], cholinium benzo(1,2,3)-thiadiazole-7-carboxylate; BTHWA, amide derivative of benzo(1,2,3)-thiadiazole-7-carbothioic acid; [N4444][BTHCOO], tetrabutylammonium benzo(1,2,3)-thiadiazole-7-carboxylate; [N111010][BTHCOO], didecyldimethylammonium benzo(1,2,3)-thiadiazole-7-carboxylate. Each bar represents differential gene expression on the log2 scale at different time points: 4 hours post inoculation (hpi), 1 day post inoculation (dpi), 5 dpi and 9 dpi. The black asterisks above each data bar indicate the statistical significance of the results: * - adjusted P<0.05; ** - adjusted P<0.001, Student’s t-test (detailed results presented in Table S5).
Figure S2b. Relative expression changes in two ET-mediated pathway marker genes (CTR - serine/threonine-protein kinase and ER - ethylene receptor) and three JA-mediated pathway marker genes (LOX - lipoxygenase, JAR1 - jasmonic acid-amido synthetase 1 and PI II - proteinase inhibitor II) between mock-inoculated inducer-treated (Plant sets 2-6) and virus-inoculated inducer-treated plants (Plant sets 8-12). BTH, benzo(1,2,3)-thiadiazole-7-carboxylic acid S-methyl ester; [Chol][BTHCOO], cholinium benzo(1,2,3)-thiadiazole-7-carboxylate; BTHWA, amide derivative of benzo(1,2,3)-thiadiazole-7-carboxylic acid; [N4444][BTHCOO], tetrabutylammonium benzo(1,2,3)-thiadiazole-7-carboxylate; [N111010][BTHCOO], didecyldimethylammonium benzo(1,2,3)-thiadiazole-7-carboxylate. Each bar represents differential gene expression on the log2 scale at different time points: 4 hours post inoculation (hpi), 1 day post inoculation (dpi), 5 dpi and 9 dpi. The black asterisks above each data bar indicate the statistical significance of the results: * - adjusted P<0.05; ** - adjusted P<0.001, Student’s t-test (detailed results presented in Table S5).
Table S5. Statistical analysis of relative defence marker gene expression between mock-inoculated inducer-treated (Plant sets 2-6) and virus-inoculated inducer-treated plants (Plant sets 8-12). A) SA marker genes, B) ET marker genes, C) JA marker genes. BTH, benzo(1,2,3)-thiadiazole-7-carbothioic acid S-methyl ester; [Chol][BTHCOO], cholinium benzo(1,2,3)-thiadiazole-7-carboxylate; BTHWA, amide derivative of benzo(1,2,3)-thiadiazole-7-carboxylic acid; [N4444][BTHCOO], tetrabutylammonium benzo(1,2,3)-thiadiazole-7-carboxylate; [N111010][BTHCOO], didecyldimethylammonium benzo(1,2,3)-thiadiazole-7-carboxylate. The different colours in each column indicate the statistical significance of the results: red – no statistical significance; yellow - adjusted P<0.05; green - adjusted P<0.001, Student’s t-test.

### A) SA marker genes

|                | BTH ToMV vs BTH | P-Value |
|----------------|-----------------|---------|
| glu 4h        | 0.008154        | 1.006-8 |
| glu 1dpi      | 0.008762        | 1.006-8 |
| glu 5dpi      | 0.027503        | 1.006-8 |
| NPRI 1dpi     | 0.002750        | 1.006-8 |
| NPRI 5dpi     | 0.000102        | 1.006-8 |
| PAL 4h        | 0.001766        | 1.006-8 |
| PAL 1dpi      | 0.001766        | 1.006-8 |
| PAL 5dpi      | 1.000-8         | 1.006-8 |
| PR 1b 4h      | 1.000-8         | 1.006-8 |
| PR 1b 1dpi    | 1.000-8         | 1.006-8 |
| PR 1b 5dpi    | 1.000-8         | 1.006-8 |

### B) ET marker genes

|                | BTH ToMV vs BTH | P-Value |
|----------------|-----------------|---------|
| CTR 4h         | 0.000000        | 1.000-8 |
| CTR 1dpi      | 0.000000        | 1.000-8 |
| CTR 5dpi      | 0.000000        | 1.000-8 |
| CR 4h          | 0.000000        | 1.000-8 |
| CR 1dpi       | 0.000000        | 1.000-8 |
| CR 5dpi       | 0.000000        | 1.000-8 |
| ER 4h          | 0.000000        | 1.000-8 |
| ER 1dpi       | 0.000000        | 1.000-8 |
| ER 5dpi       | 0.000000        | 1.000-8 |
| P-Value        | 1.000-8         | 1.000-8 |

### C) JA marker genes

|                | BTH ToMV vs BTH | P-Value |
|----------------|-----------------|---------|
| Lox 4h         | 0.000101        | 1.000-8 |
| Lox 1dpi      | 0.000101        | 1.000-8 |
| Lox 5dpi      | 0.000101        | 1.000-8 |
| JAR1 4h        | 0.000004        | 1.000-8 |
| JAR1 1dpi     | 0.000004        | 1.000-8 |
| JAR1 5dpi     | 0.000004        | 1.000-8 |
| PL 4h          | 0.000004        | 1.000-8 |
| PL 1dpi       | 0.000004        | 1.000-8 |
| PL 5dpi       | 0.000004        | 1.000-8 |

### Additional notes

- For [Chol][BTHCOO], cholinium benzo(1,2,3)-thiadiazole-7-carboxylate; BTHWA, amide derivative of benzo(1,2,3)-thiadiazole-7-carboxylic acid; [N4444][BTHCOO], tetrabutylammonium benzo(1,2,3)-thiadiazole-7-carboxylate; [N111010][BTHCOO], didecyldimethylammonium benzo(1,2,3)-thiadiazole-7-carboxylate.
Table S6. Results of gene expression analysis considering two independent variables (viral infection and inducer treatment) using a two-way ANOVA test. Red scores represent statistically significant results.

| Variable | CTR | ER | G1.S | JAR | Lox | NIPR | PAL | PI | PR | db | up |
|----------|-----|----|------|-----|-----|------|-----|----|---|----|----|
| B7H      | CTR | 1.22 | 1.49 | 26.29 | 251.75 | 2.27 | 1.95 | 74.59 | 5.12 | 23.62 | 85.98 | 0.022 |
| P        | 0.329 | 0.59 | 0.42 | 16.52 | 15.09 | 1.32 | 1.03 | 74.59 | 5.12 | 23.62 | 85.98 | 0.022 |
| [Chol][ET]COO | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 |
| B7H-Wa   | CTR | 0.21 | 0.29 | 21.01 | 209.04 | 2.67 | 1.33 | 40.33 | 4.38 | 11.27 | 83.70 | 4.47 |
| P        | 0.0001 | 0.001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| [H444][ET]COO | 7.063 | 8.061 | 4.26 | 70.38 | 74.86 | 7.06 | 7.06 | 74.86 | 7.06 | 7.06 | 74.86 | 7.06 |
| B7H-Co    | CTR | 0.05 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 |
| P        | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| [N1110][ET]COO | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| Variable | CTR | ER | G1.S | JAR | Lox | NIPR | PAL | PI | PR | db | up |
|----------|-----|----|------|-----|-----|------|-----|----|---|----|----|
| B7H      | CTR | 1.22 | 1.49 | 26.29 | 251.75 | 2.27 | 1.95 | 74.59 | 5.12 | 23.62 | 85.98 | 0.022 |
| P        | 0.329 | 0.59 | 0.42 | 16.52 | 15.09 | 1.32 | 1.03 | 74.59 | 5.12 | 23.62 | 85.98 | 0.022 |
| [Chol][ET]COO | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 |
| B7H-Wa   | CTR | 0.21 | 0.29 | 21.01 | 209.04 | 2.67 | 1.33 | 40.33 | 4.38 | 11.27 | 83.70 | 4.47 |
| P        | 0.0001 | 0.001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| [H444][ET]COO | 7.063 | 8.061 | 4.26 | 70.38 | 74.86 | 7.06 | 7.06 | 74.86 | 7.06 | 7.06 | 74.86 | 7.06 |
| B7H-Co    | CTR | 0.05 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 |
| P        | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
Table S7. Results of gene expression analysis considering three independent variables (viral infection, inducer treatment and time of harvest) using multivariate ANOVA. Red scores represent statistically significant interactions.

**A)**

| BTH Wa ET pathway | CTR | ER  |
|-------------------|-----|-----|
| MS                | 6,885 | 8,410 |
| p                 | 0,000000 | 0,000005 |

| Virus*Inducer*Time | F    | 15,811 | 9,376 |
|--------------------|------|--------|------|
| p                  | 0,000000 | 0,000000 |      |

| BTH-Wa SA-pathway | GluB | NPR1 | PAL | PR-1b |
|-------------------|------|------|-----|-------|
| MS                | 20,08 | 5,026 | 19,700 | 14,42 |
| p                 | 0,000000 | 0,000000 | 0,000000 | 0,000000 |

| Virus*Inducer*Time | F    | 19,08 | 6,984 | 17,336 | 19,71 |
|--------------------|------|-------|-------|-------|------|
| p                  | 0,000000 | 0,000000 | 0,000000 | 0,000000 |

| BTH-Wa JA-pathway | JAR1 | Lox | PI II |
|-------------------|------|-----|-------|
| MS                | 119,86 | 18,260 | 129,73 |
| p                 | 0,000000 | 0,000000 | 0,000000 |

| Virus*Inducer*Time | F    | 126,03 | 11,853 | 185,76 |
|--------------------|------|-------|-------|-------|
| p                  | 0,000000 | 0,000000 | 0,000000 |

**B)**

| [Chol][BTHCOO] ET pathway | CTR | ER  |
|---------------------------|-----|-----|
| MS                        | 10,360 | 3,407 |
| p                         | 0,000000 | 0,012686 |

| Virus*Inducer*Time | F    | 16,875 | 3,650 |
|--------------------|------|-------|------|
| p                  | 0,000000 | 0,000000 |      |

| [Chol][BTHCOO] SA-pathway | GluB | NPR1 | PAL | PR-1b |
|---------------------------|------|------|-----|-------|
| MG                        | 69,579 | 4,016 | 40,067 | 10,02 |
| p                         | 0,000000 | 0,000309 | 0,000000 | 0,000000 |

| Virus*Inducer*Time | F    | 77,32 | 6,231 | 34,483 | 19,34 |
|--------------------|------|-------|-------|-------|------|
| p                  | 0,000000 | 0,000000 | 0,000000 | 0,000000 |

| [Chol][BTHCOO] JA-pathway | JAR1 | Lox | PI II |
|---------------------------|------|-----|-------|
| MS                        | 126,276 | 6,216 | 31,56 |
| p                         | 0,000000 | 0,014362 | 0,000000 |

| Virus*Inducer*Time | F    | 87,238 | 3,966 | 40,49 |
|--------------------|------|-------|-------|------|
| p                  | 0,000000 | 0,000000 | 0,000000 |