**Supplementary Materials**

Chemical profiling of diffusible and volatile secondary metabolites produced by *Beauveria bassiana* using GC-MS analysis: *In vitro* antimicrobial activity

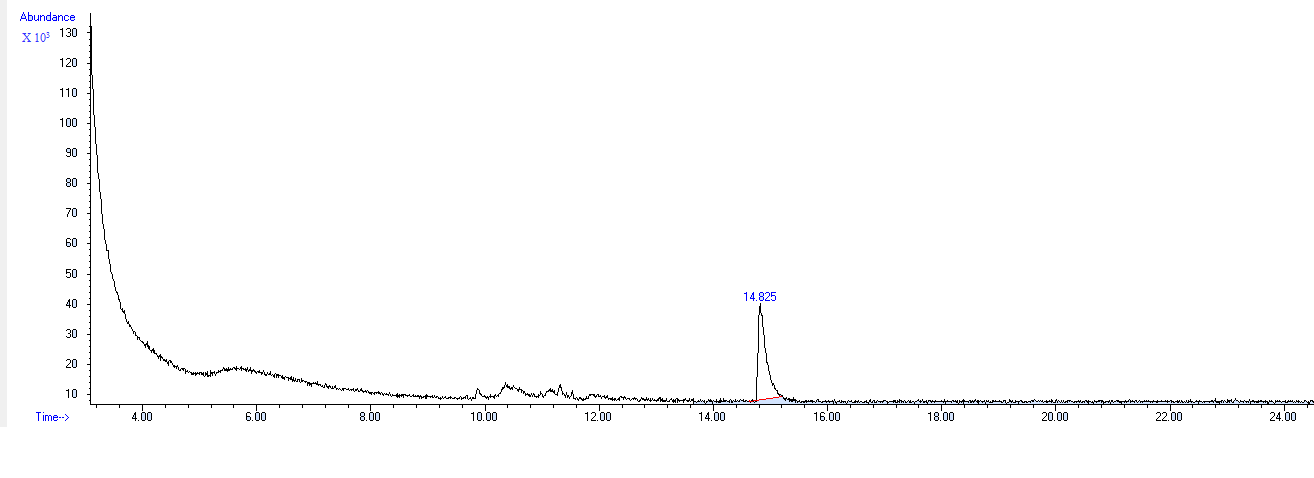
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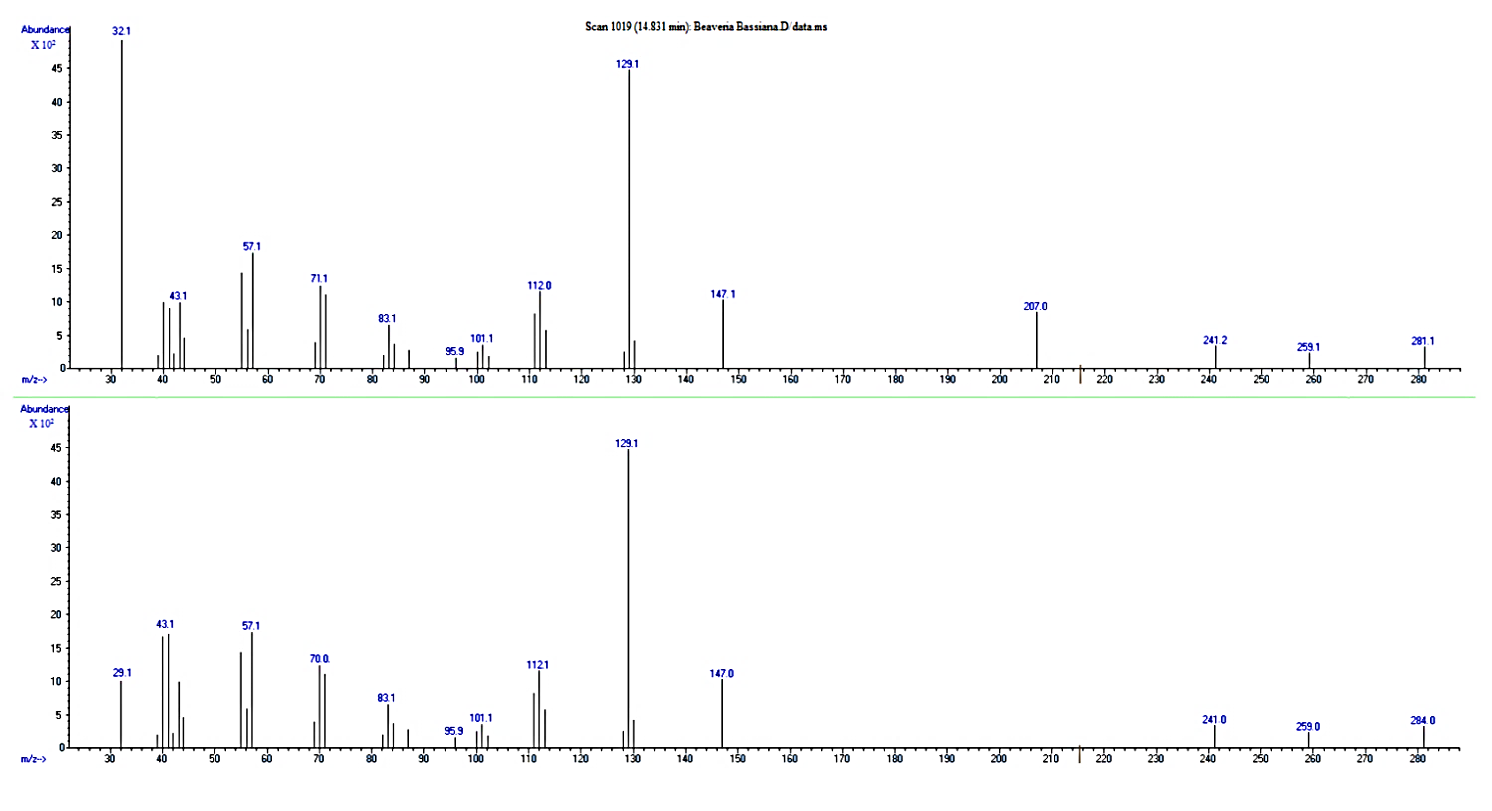
2 Department of Chemistry, Faculty of Science, University of Zagazig, Zagazig 44519, Egypt;   
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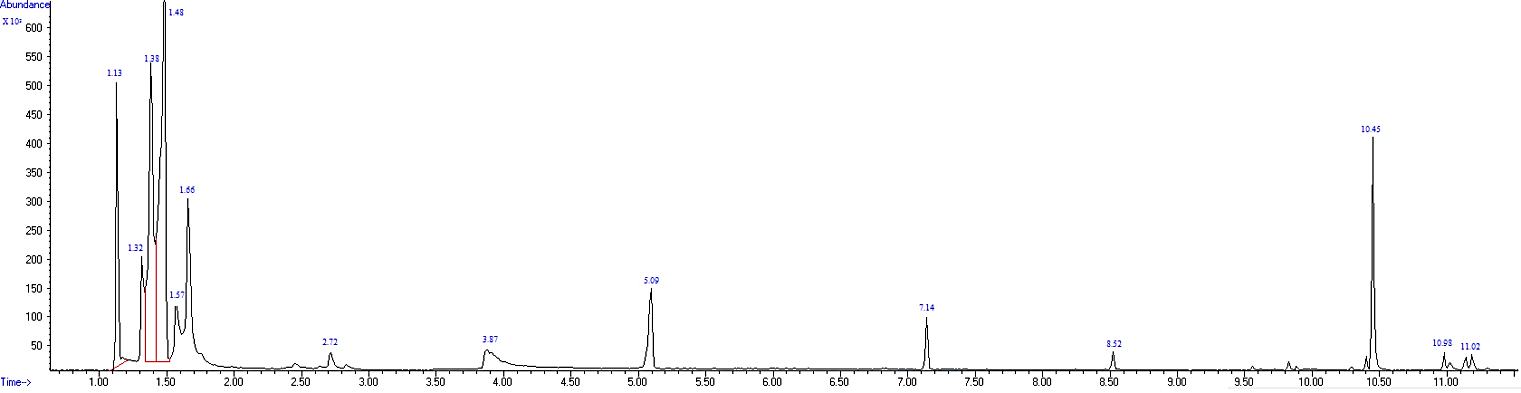
**\*** Correspondence: hazem.elshafie@unibas.it; Tel.: 0039 0971205498; Fax: 0039 0971205503 (H.S.E.)

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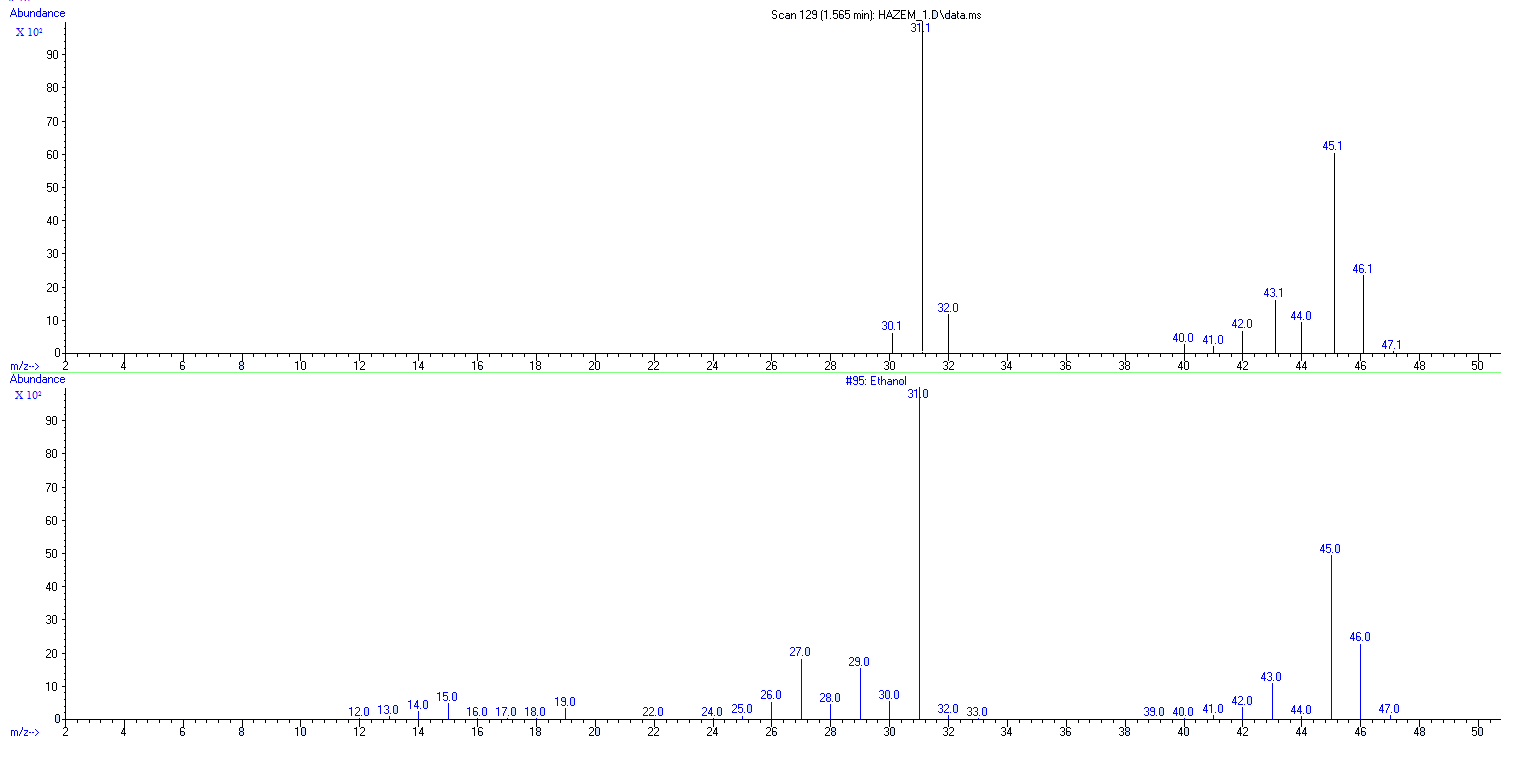
**Fig. S1.** Chromatogram of the purified diffusible metabolites of *B. bassiana* UniB2439-3

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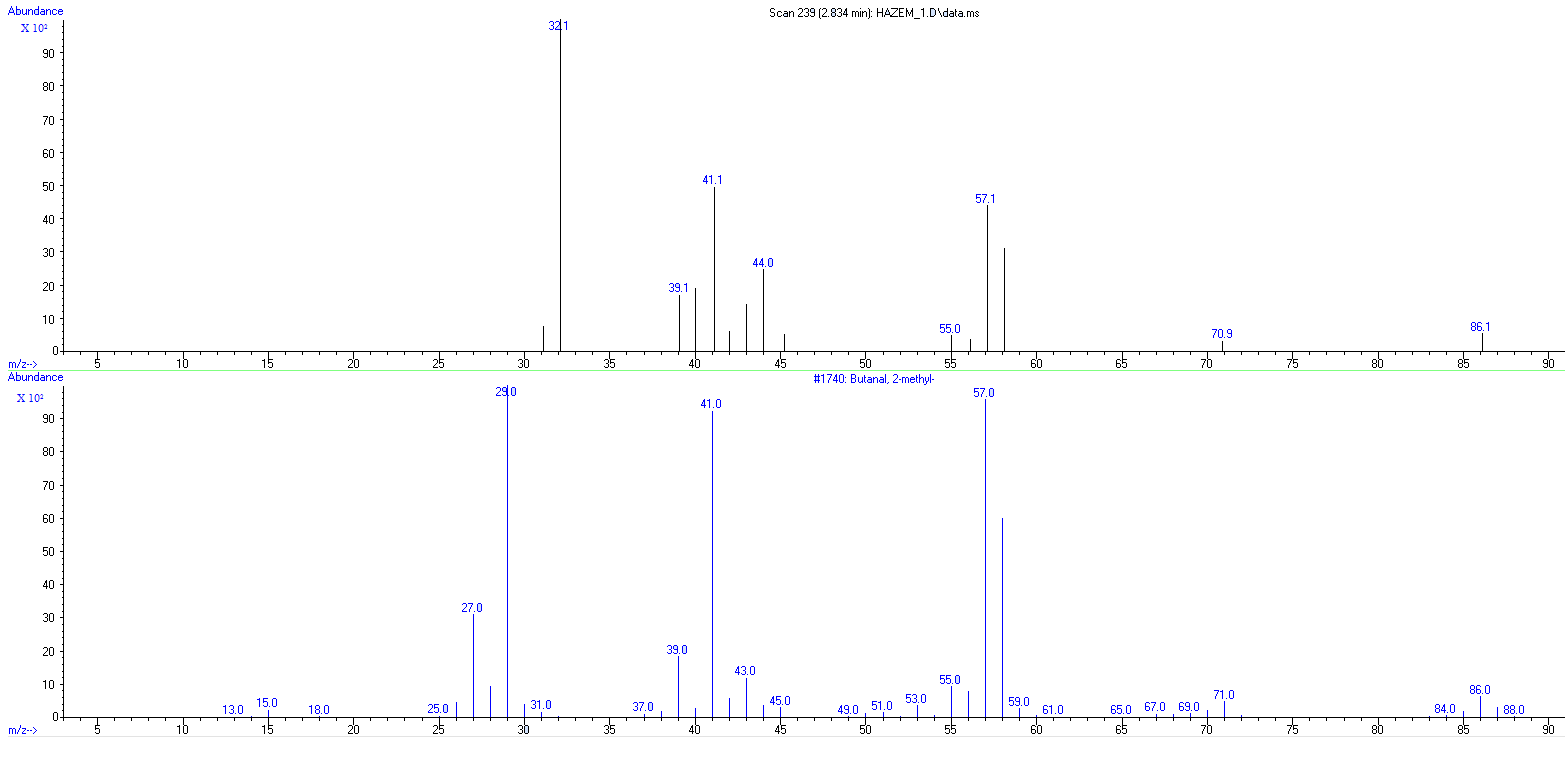
**Fig. S2.** Mass spectra of Hexanedioic acid, bis(2-ethylhexyl) ester



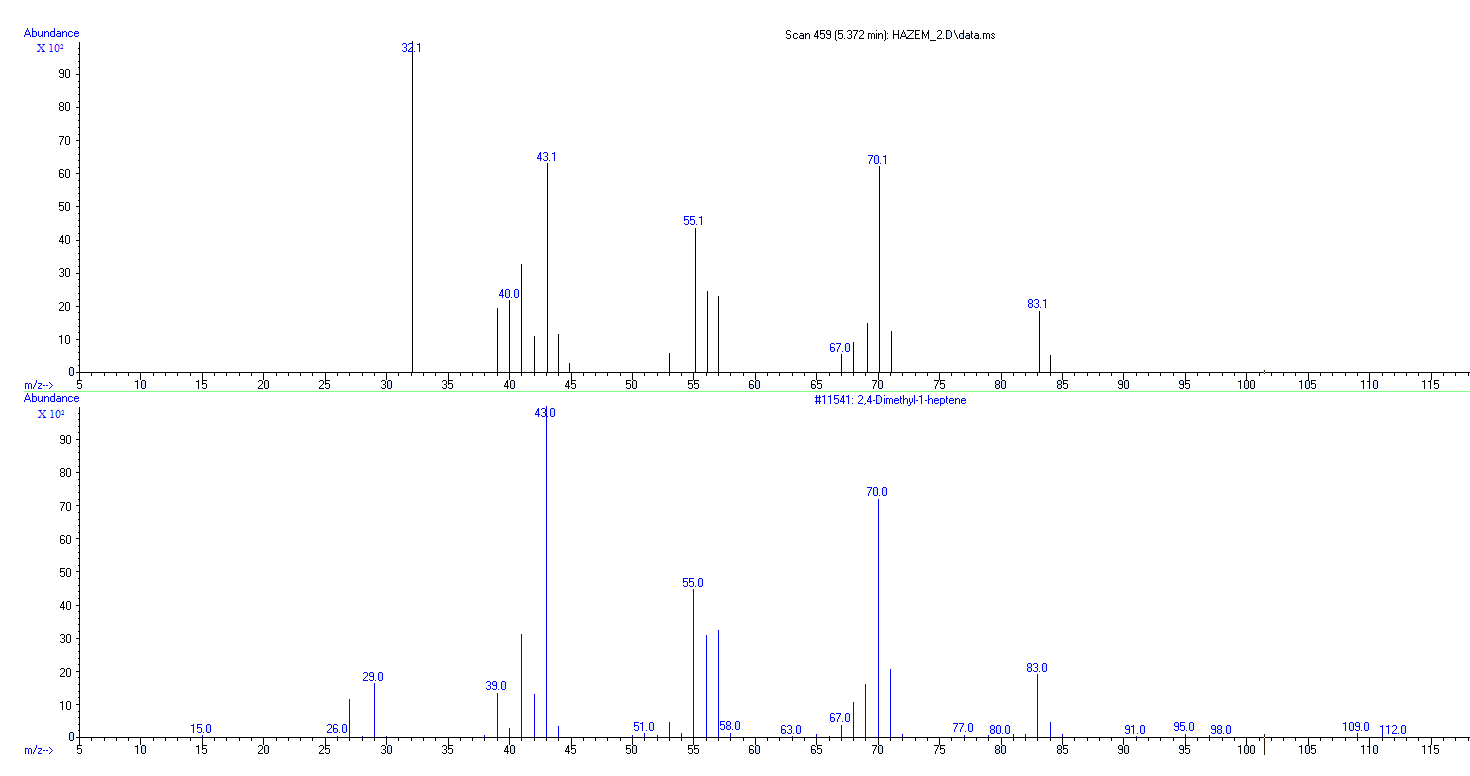
**Fig. S3.** Chromatogram of VOCs extracted from *B. bassiana* UniB2439-3



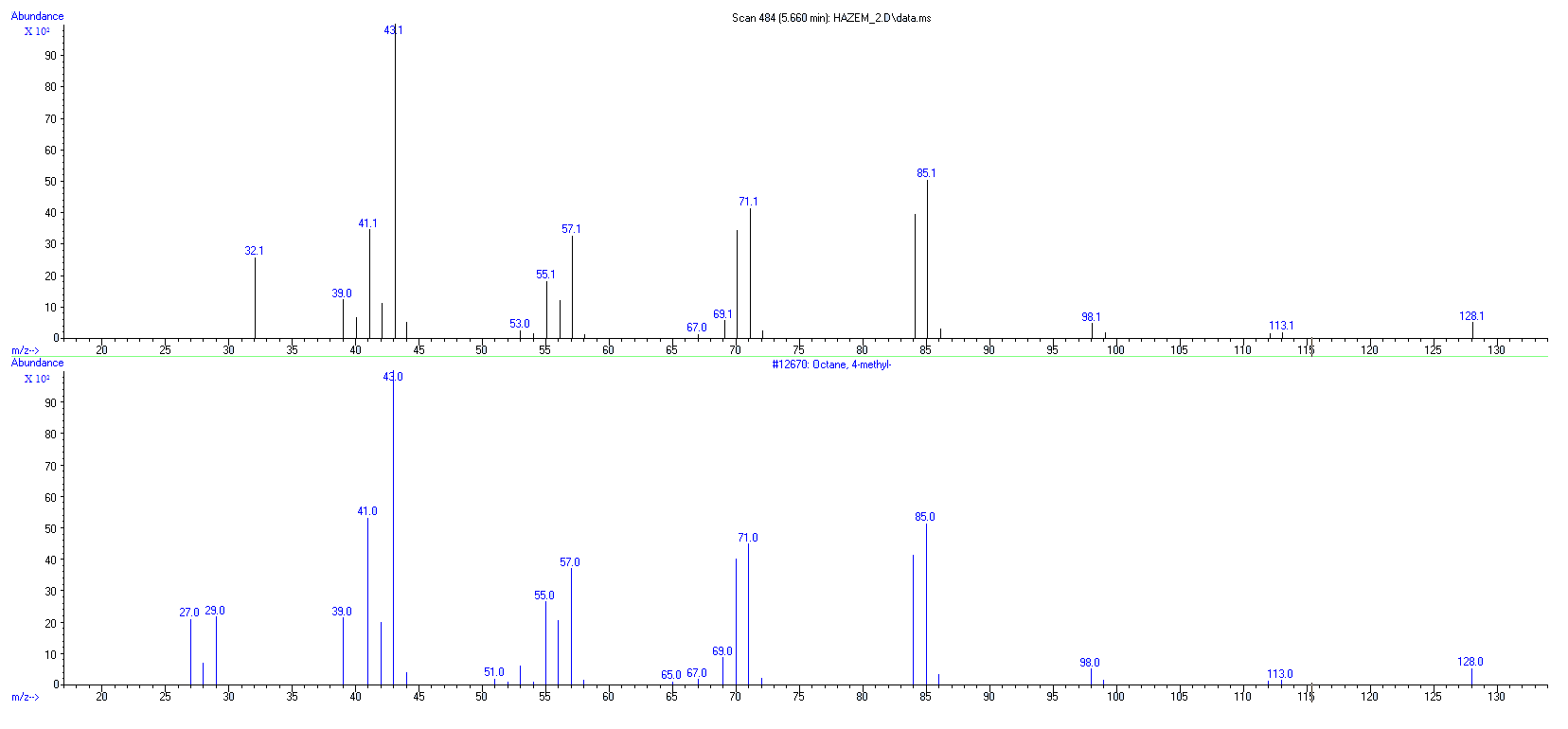
**Fig. S4.** Mass spectra of ethanol



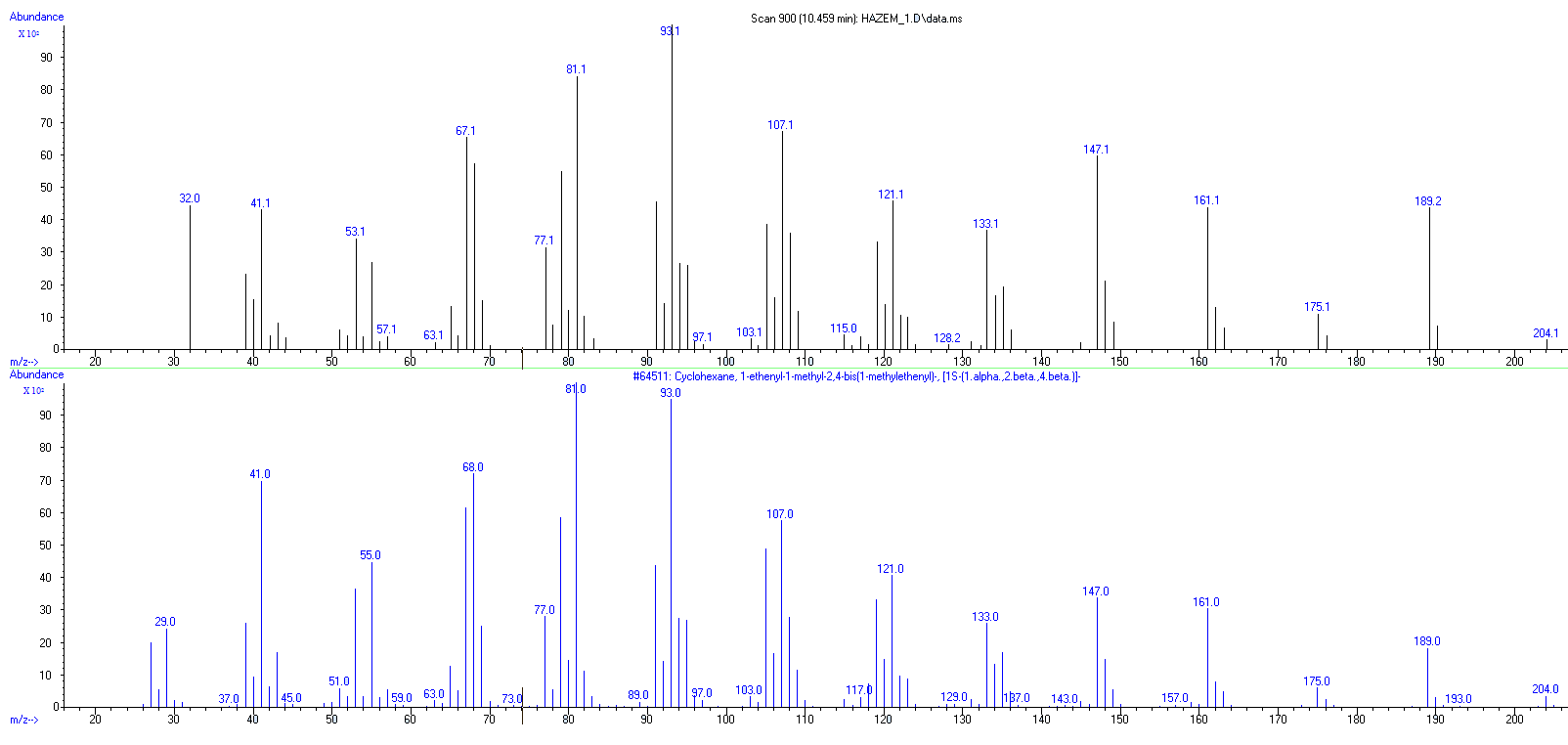
**Fig. S5.** Mass spectra of Butanal, 2-methyl

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**Fig. S6.** Mass spectra of 2,4-Dimethyl-1-heptene



**Fig. S7.** Mass spectra of Octane, 4-methyl



**Fig. S8.** Mass spectra of β-elemene

**Table S1.** The whole list of GC-MS analysis of VOCs extracted from *B. bassiana* UniB2439-3

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| RT1  (min) | Area  (%) | Name | M.Wt2  (g/mol) | Formula | CAS3 | Probability of identification  (%) |
| 1,11 | 2,75 | Carbon dioxide | 44,01 | CO2 | 000124-38-9 | 80 |
| 1,21 | 1,24 | Benzaldehyde, 2-nitro-, diaminomethylidenhydrazone | 207.19 | [C8H9N5O2](https://pubchem.ncbi.nlm.nih.gov/#query=C8H9N5O2) | 102632-31-5 | 43 |
| 1.4840 | 27.5713 | Nitrous oxide | 44.013 | [N2O](https://pubchem.ncbi.nlm.nih.gov/#query=N2O) | 010024-97-2 | 65 |
| 1,68 | 0,66 | Silanol, trimethyl- | 90.2 | [C3H10OSi](https://pubchem.ncbi.nlm.nih.gov/#query=C3H10OSi) | 001066-40-6 | 74 |
| 1,77 | 0,72 | Acetone | 58.08 | [C3H6O](https://pubchem.ncbi.nlm.nih.gov/#query=C3H6O) | 000067-64-1 | 79 |
| 2,03 | 0,61 | Formamide, N-methylthio | 75.14 | [C2H5NS](https://pubchem.ncbi.nlm.nih.gov/#query=C2H5NS) | 018952-41-5 | 63 |
| 2.7184 | 1.3273 | Butanal, 3-methyl- | 86.13 | [C5H10O](https://pubchem.ncbi.nlm.nih.gov/#query=C5H10O) | 000590-86-3 | 81 |
| 2.8337 | 0.4432 | Butanal, 2-methyl- | 86.13 | [C5H10O](https://pubchem.ncbi.nlm.nih.gov/#query=C5H10O) | 000096-17-3 | 90 |
| 3.8835 | 3.7267 | 1-Butanol, 3-methyl- | 88.15 | [C5H12O](https://pubchem.ncbi.nlm.nih.gov/#query=C5H12O) | 000123-51-3 | 83 |
| 4,98 | 1,68 | Arsenous acid, tris(trimethylsilyl) ester | 342.49 | [C9H27AsO3Si3](https://pubchem.ncbi.nlm.nih.gov/#query=C9H27AsO3Si3) | 055429-29-3 | 70 |
| 5,37 | 0,63 | 2,4-Dimethyl-1-heptene | 126.24 | [C9H18](https://pubchem.ncbi.nlm.nih.gov/#query=C9H18) | 019549-87-2 | 90 |
| 5,56 | 0,76 | Heptane, 2,3-dimethyl- | 128.25 | [C9H20](https://pubchem.ncbi.nlm.nih.gov/#query=C9H20) | 003074-71-3 | 87 |
| 5,66 | 1,99 | Octane, 4-methyl- | 128.25 | [C9H20](https://pubchem.ncbi.nlm.nih.gov/#query=C9H20) | 002216-34-4 | 93 |
| 7,30 | 0,19 | Octane, 2,3,6,7-tetramethyl- | 170.33 | [C12H26](https://pubchem.ncbi.nlm.nih.gov/#query=C12H26) | 052670-34-5 | 63 |
| 7,33 | 0,21 | Oxalic acid, 2-ethylhexyl nonyl ester | 328.5 | [C19H36O4](https://pubchem.ncbi.nlm.nih.gov/#query=C19H36O4) | 1000309-39-2 | 74 |
| 7,70 | 0,49 | Dodecane, 2,6,11-trimethyl- | 212.41 | [C15H32](https://pubchem.ncbi.nlm.nih.gov/#query=C15H32) | 031295-56-4 | 69 |
| 7,76 | 5,47 | Decane, 3,6-dimethyl- | 170.33 | [C12H26](https://pubchem.ncbi.nlm.nih.gov/#query=C12H26) | 017312-53-7 | 72 |
| 7,81 | 2,37 | Heptane, 2,4-dimethyl- | 128.25 | [C9H20](https://pubchem.ncbi.nlm.nih.gov/#query=C9H20) | 002213-23-2 | 79 |
| 7,97 | 1,02 | 2-Undecene, 4-methyl- | 168.32 | [C12H24](https://pubchem.ncbi.nlm.nih.gov/#query=C12H24) | 091695-32-8 | 63 |
| 8,09 | 0,54 | Oxalic acid, isohexyl neopentyl ester | 244.33 | [C13H24O4](https://pubchem.ncbi.nlm.nih.gov/#query=C13H24O4) | 1000309-73-0 | 64 |
| 8,15 | 2,37 | Decane, 3,7-dimethyl- | 170.33 | [C12H26](https://pubchem.ncbi.nlm.nih.gov/#query=C12H26) | 017312-54-8 | 87 |
| 8,27 | 0,65 | Sulfurous acid, hexyl 2-pentyl ester | 236.37 | [C11H24O3S](https://pubchem.ncbi.nlm.nih.gov/#query=C11H24O3S) | 1000309-15-6 | 69 |
| 9,56 | 0,68 | Decane, 2,3,5-trimethyl- | 184.36 | [C13H28](https://pubchem.ncbi.nlm.nih.gov/#query=C13H28) | 062238-11-3 | 80 |
| 9,62 | 0,14 | Dodecane, 2,6,10-trimethyl- | 212.41 | [C15H32](https://pubchem.ncbi.nlm.nih.gov/#query=C15H32) | 003891-98-3 | 72 |
| 9,66 | 0,18 | Hexadecane | 226.44 | [C16H34](https://pubchem.ncbi.nlm.nih.gov/#query=C16H34) | 000544-76-3 | 78 |
| 9,72 | 0,30 | Dodecane, 2,6,10-trimethyl- | 212.41 | [C15H32](https://pubchem.ncbi.nlm.nih.gov/#query=C15H32) | 003891-98-3 | 64 |
| 9,89 | 0,40 | Heptadecane | 240.5 | [C17H36](https://pubchem.ncbi.nlm.nih.gov/#query=C17H36) | 000629-78-7 | 72 |
| 10,30 | 0,37 | 7-Chloro-2,3-dihydro-3-(4-N,N-dimethylaminobenzylidene)-5-phenyl-1H-1,4-benzodiazepin-2-one | 401.9 | [C24H20ClN3O](https://pubchem.ncbi.nlm.nih.gov/#query=C24H20ClN3O) | 055056-35-4 | 46 |
| 10,39 | 0,20 | 3,6-Dioxa-2,4,5,7-tetrasilaoctane, 2,2,4,4,5,5,7,7-octamethyl- | 294.68 | [C10H30O2Si4](https://pubchem.ncbi.nlm.nih.gov/#query=C10H30O2Si4) | 004342-25-0 | 65 |
| 10,46 | 0,93 | Cyclohexane, 1-ethenyl-1-methyl-2,4-bis(1-methylethenyl)-, [1S-(1.alpha.,2.beta.,4.beta.)]- | 204.35 | [C15H24](https://pubchem.ncbi.nlm.nih.gov/#query=C15H24) | 000515-13-9 | 91 |
| 11,19 | 0,40 | 3-Hydroxybromoazepam, bis(trimethylsilyl)- deriv | 476.5 | [C20H26BrN3O2Si2](https://pubchem.ncbi.nlm.nih.gov/#query=C20H26BrN3O2Si2) | 1000079-50-7 | 72 |
| 11,42 | 0,22 | 2-Amino-2-oxo-acetic acid, N-[3,4-dimethylphenyl]-, ethyl ester | 221.25 | [C12H15NO3](https://pubchem.ncbi.nlm.nih.gov/#query=C12H15NO3) | 024451-17-0 | 77 |
| 11.8436 | 0.6504 | Diethyl Phthalate | 222.24 | [C12H14O4](https://pubchem.ncbi.nlm.nih.gov/#query=C12H14O4) | 000084-66-2 | 90 |
| 12,01 | 9,06 | Silane, [[4-[1,2-bis[(trimethylsilyl)oxy]ethyl]-1,2-phenylene]bis(oxy)]bis[trimethyl- | 458.9 | [C20H42O4Si4](https://pubchem.ncbi.nlm.nih.gov/#query=C20H42O4Si4) | 056114-62-6 | 70 |

1. RT: retention time is the amount of time a compound spends on the column after it has been injected.
2. M.Wt: molecular weight, also called molecular mass, is a measure of the sum of the [atomic weight](https://www.thoughtco.com/definition-of-atomic-weight-604378) values of the [atoms](https://www.thoughtco.com/definition-of-atom-and-examples-604373) in a [molecule](https://www.thoughtco.com/what-is-a-molecule-definition-examples-608506).
3. CAS: is a registry number, is a unique numerical [identifier](https://en.wikipedia.org/wiki/Identifier) assigned by the [Chemical Abstracts Service](https://en.wikipedia.org/wiki/Chemical_Abstracts_Service) (CAS), US to every [chemical substance](https://en.wikipedia.org/wiki/Chemical_substance) described in the open scientific literature.