**Supporting Information**

Taxonomic positions and secondary metabolite-biosynthetic gene clusters of akazaoxime- and levantilide-producers

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**Table S1.** Secondary metabolite-biosynthetic gene clusters, except for PKS and NRPS gene clusters, of *M. humidisoli* AKA109

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Region\*** | **Type of gene cluster** | **Predicted product** | **By antiSMASH\*** | | |
| **Most similar known cluster** | | **Similarity** |
| 5.1 | terpene a | unpredictable | tetrachlorizine | Polyketide | 13 % |
| 5.2 | thioamide | unpredictable | enteromycin | Polyketide+NRP | 8 % |
| 5.8 | lanthipeptide-class-iii b | SapB | SapB | RiPP:Lanthipeptide | 100 % |
| 5.9 | terpene | unpredictable | n/a | n/a | n/a |
| 5.10 | siderophore c | desferrioxamine | FW0622 | Other | 50 % |
| 5.14 | hybrid oligosaccharide/terpene d | unpredictable | lobosamides | Polyketide | 86 % |
| 5.16 | NAGGN e | NAGGN | n/a | n/a | n/a |
| 5.20 | terpene f | unpredictable | phosphonoglycans | Saccharide | 3 % |
| 5.21 | indole | unpredictable | fortimicin | Saccharide | 13 % |
| 5.22 | terpene g | unpredictable | isorenieratene | Terpene | 25 % |
| 5.23 | indole | unpredictable | gausemycins | NRP+Saccharide | 7 % |

\* Results of antiSMASH analysis. Different types of gene clusters are often searched as the ‘Most similar known cluster’ in antiSMASH (Komaki *et al*. *Hydrobiology* **2023**, 2, 151-161). a–g Conserved between *M. humidisoli* AKA109 and *Micromonospora* sp. AKA38. e NAGGN, *N*-acetylglutaminylglutamine amide.

**Table S2.** Secondary metabolite-biosynthetic gene clusters, except for PKS and NRPS gene clusters, of *Micromonospora* AKA38

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Region\*** | **Type of gene cluster** | **Predicted product** | **By antiSMASH\*** | | |
| **Most similar known cluster** | | **Similarity** |
| 1.1 | terpene g | unpredictable | isorenieratene | Terpene | 25 % |
| 3.1 | terpene a | unpredictable | tetrachlorizine | Polyketide | 13 % |
| 4.1 | terpene | unpredictable | Lymphostins | NRP+Polyketide | 25 % |
| 5.1 | lanthipeptide-class-ii | RiPPs\*\* | n/a | n/a | n/a |
| 5.5 | lanthipeptide-class-iii b | SapB | SapB | RiPP:Lanthipeptide | 100 % |
| 5.7 | terpene | unpredictable | Nocathiacin | RiPP:Thiopeptide | 4 % |
| 5.9 | siderophore c | desferrioxamine | FW0622 | Other | 50 % |
| 5.10 | hybrid of oligosaccharide/terpene d | unpredictable | lobosamides | Polyketide | 13 % |
| 7.1 | terpene f | unpredictable | phosphonoglycans | Saccharide | 3 % |
| 8.1 | terpene | unpredictable | lymphostins\*\*\* | NRP+Polyketide | 33 % |
| 10.1 | NAGGN e | NAGGN | n/a | n/a | n/a |

\* results of antiSMASH analysis; \*\* derived from AERAGSTARLSTIAIQFGQCGANVQLR, RAARLPQLHISTTLTELNGDC, and PPAGQLGYRSCTLAPH; \*\*\* lymphostin/neolymphostinol/lymphostinol/neolymphostin; a–g conserved between *Micromonospora* sp. AKA38 and *M. humidisoli* AKA109; e NAGGN, *N*-acetylglutaminylglutamine amide.