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Published in:
RSC Advances

DOI:
10.1039/D0RA04025H

Published: 08/06/2020

Document Version
Publisher's PDF, also known as Version of record

Link to publication on the UWS Academic Portal

Citation for published version (APA):

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Download date: 10 Nov 2021
The genus *Micromonospora* as a model microorganism for bioactive natural products discovery

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nadine.ziemert@uni-tuebingen.de (NZ)
Figure S1: *Micromonospora* - Biosynthetic Gene Cluster Similarity Networks of “Others” BGCs.
Gene cluster similarity networks of PKS- BGCs generated with BiG-SCAPE from 87 *Micromonospora* genomes. Gene clusters were identified and classified using antiSMASH. Each node represents one sequenced gene cluster. Connected clusters likely encode for similar compounds. To identify already known and characterized BGCs, the dataset from the MIBiG database was added to the network analysis. MIBiG compounds are circled in red.
Figure S2: *Micromonospora* - Biosynthetic Gene Cluster Similarity Networks of “PKS I” BGCs

Gene cluster similarity networks of PKS-BGCs generated with BiG-SCAPE from 87 *Micromonospora* genomes. Gene clusters were identified and classified using antiSMASH. Each node represents one sequenced gene cluster. Connected clusters likely encode for similar compounds. To identify already known and characterized BGCs, the dataset from the MIBiG database was added to the network analysis. MIBiG compounds are circled in red.
Figure S3: *Micromonospora* - Biosynthetic Gene Cluster Similarity Networks of “Saccharides” BGCs

Gene cluster similarity networks of PKS- BGCs generated with BiG-SCAPE from 87 *Micromonospora* genomes. Gene clusters were identified and classified using antiSMASH. Each node represents one sequenced gene cluster. Connected clusters likely encode for similar compounds. To identify already known and characterized BGCs, the dataset from the MIBiG database was added to the network analysis. MIBiG compounds are circled in red.
Figure S4: Micromonospora - Biosynthetic Gene Cluster Similarity Networks of “other polyketides” BGCs

Gene cluster similarity networks of PKS- BGCs generated with BiG-SCAPE from 87 Micromonospora genomes. Gene clusters were identified and classified using antiSMASH. Each node represents one sequenced gene cluster. Connected clusters likely encode for similar compounds. To identify already known and characterized BGCs, the dataset from the MIBiG database was added to the network analysis. MIBiG compounds are circled in red.
Figure S5: *Micromonospora* - Biosynthetic Gene Cluster Similarity Networks of “PKS-NRPS Hybrids” BGCs

Gene cluster similarity networks of PKS-BGCs generated with BiG-SCAPE from 87 *Micromonospora* genomes. Gene clusters were identified and classified using antiSMASH. Each node represents one sequenced gene cluster. Connected clusters likely encode for similar compounds. To identify already known and characterized BGCs, the dataset from the MIBiG database was added to the network analysis. MIBiG compounds are circled in red.
Figure S6: *Micromonospora* - Biosynthetic Gene Cluster Similarity Networks of “NRPS” BGCs

Gene cluster similarity networks of PKS- BGCs generated with BiG-SCAPE from 87 *Micromonospora* genomes. Gene clusters were identified and classified using antiSMASH. Each node represents one sequenced gene cluster. Connected clusters likely encode for similar compounds. To identify already known and characterized BGCs, the dataset from the MIBiG database was added to the network analysis. MIBiG compounds are circled in red.
Figure S7: *Micromonospora* - Biosynthetic Gene Cluster Similarity Networks of “Terpene” BGCs

Gene cluster similarity networks of PKS- BGCs generated with BiG-SCAPE from 87 *Micromonospora* genomes. Gene clusters were identified and classified using antiSMASH. Each node represents one sequenced gene cluster. Connected clusters likely encode for similar compounds. To identify already known and characterized BGCs, the dataset from the MIBiG database was added to the network analysis. MIBiG compounds are circled in red.
Figure S8: *Micromonospora* - Biosynthetic Gene Cluster Similarity Networks of “RiPPs” BGCs

Gene cluster similarity networks of PKS- BGCs generated with BiG-SCAPE from 87 *Micromonospora* genomes. Gene clusters were identified and classified using antiSMASH. Each node represents one sequenced gene cluster. Connected clusters likely encode for similar compounds. To identify already known and characterized BGCs, the dataset from the MIBiG database was added to the network analysis. MIBiG compounds are circled in red.
<table>
<thead>
<tr>
<th>Compounds</th>
<th>Class</th>
<th>Microbe</th>
<th>Source</th>
<th>Year</th>
<th>Activity</th>
<th>references</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paromamine (1)</td>
<td>Aminoglycoside</td>
<td>Minor component of the gentamicin</td>
<td>Soil</td>
<td>1959</td>
<td>Weakly active against Gram-positive</td>
<td>1</td>
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<tr>
<td></td>
<td></td>
<td>complex prod. by <em>Micromonospora</em></td>
<td></td>
<td></td>
<td>bacteria</td>
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</tr>
<tr>
<td></td>
<td></td>
<td><em>spp</em></td>
<td></td>
<td></td>
<td>Important intermed. for semisynthetic</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>aminoglycoside</td>
<td></td>
</tr>
<tr>
<td>Gentamicins (2)</td>
<td>Aminoglycoside</td>
<td><em>M. echinospora</em> NRRL 2953</td>
<td>Soil</td>
<td>1963</td>
<td>Antibacterial</td>
<td>2</td>
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<tr>
<td></td>
<td></td>
<td><em>M. echinospora</em> NRRL 2985</td>
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<tr>
<td>Antibiotic 460 (3)</td>
<td>Aminoglycoside</td>
<td><em>M. chalcea</em> subsp. flavida NRRL 3222</td>
<td>Soil</td>
<td>1969</td>
<td>Antibacterial</td>
<td>3</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>MIC (2.5-7.5 µg/ml) Gram positive</td>
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</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>bacteria</td>
<td></td>
</tr>
<tr>
<td>6640 (sisomicin) (4)</td>
<td>Aminoglycoside</td>
<td><em>M. inyoensis</em> NRRL 3292</td>
<td>Soil</td>
<td>1970</td>
<td>Antibacterial</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>activity.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>MIC values ranged from (0.01-7.5 µg/ml)</td>
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<td>Gentamine C₁ (5)</td>
<td>Aminoglycoside</td>
<td><em>M. purpurea-nigrescens</em></td>
<td>Soil</td>
<td>1971</td>
<td>Active mainly against Gram-positive</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bacteria</td>
<td></td>
</tr>
<tr>
<td>Neomycin B (6)</td>
<td>Aminoglycoside</td>
<td><em>M. chalcea</em> 69-683</td>
<td>----</td>
<td>1971</td>
<td>Antibacterial</td>
<td>6</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>activity</td>
<td></td>
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<tr>
<td>Antibiotic G-418 (7)</td>
<td>Aminoglycoside</td>
<td><em>M. echinospora</em> NRRL 5326</td>
<td>Soil</td>
<td>1974</td>
<td>Antibacterial</td>
<td>7</td>
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<tr>
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<td></td>
<td></td>
<td></td>
<td>with MIC values (16-64µg/ml)</td>
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<td></td>
<td>Antiparasitic activity</td>
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<tr>
<td>Mutamicins (8)</td>
<td>Aminoglycoside</td>
<td>M. inyoensis NRRL 3292</td>
<td>Soil</td>
<td>1974</td>
<td>Antibacterial activity MIC (0.08-3 µg/ml).</td>
<td></td>
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<tr>
<td>---</td>
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<tr>
<td>Sagamicin (9) (XK-62-2)</td>
<td>Aminoglycoside</td>
<td>M. sagamiensis subsp. nonreducans ATCC 21803, M. sagamiensis ATCC 21826</td>
<td>Soil</td>
<td>1974</td>
<td>Antibacterial activity MIC (0.001-8.3 µg/ml)</td>
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<tr>
<td>Verdamicin (10)</td>
<td>Aminoglycoside</td>
<td>M. grisea NRRL 3800</td>
<td>Soil</td>
<td>1974</td>
<td>Antibacterial activity. MIC (0.5-8 µg/ml)</td>
<td></td>
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<tr>
<td>Gentamicin 2b (11)</td>
<td>Aminoglycoside</td>
<td>M. sagamiensis</td>
<td>Soil</td>
<td>1975</td>
<td>Antibacterial less ototoxic and nephrotoxic than Gentamicin C complex</td>
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<tr>
<td>Antibiotic G-52 (12)</td>
<td>Aminoglycoside</td>
<td>M. zionensis NRRL 5466</td>
<td>Soil</td>
<td>1976</td>
<td>Antibacterial activity for gram positive and gram negative bacteria with IC₅₀ 0.01-17.5 µg/ml and 0.03-7.5 µg/ml respectively</td>
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<tr>
<td>Antibiotic 66-40B Sisomicin B (13)</td>
<td>Aminoglycoside</td>
<td>Minor prod. from M. inyoensis</td>
<td>Soil</td>
<td>1976</td>
<td>Antibacterial</td>
<td></td>
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<tr>
<td>Antibiotic 66-40D Sisomicin D (14)</td>
<td>Aminoglycoside</td>
<td>Minor prod. from M. inyoensis</td>
<td>Soil</td>
<td>1976</td>
<td>Antibacterial</td>
<td></td>
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<td>Destomycin B C₂₁H₂₁H₃</td>
<td>Aminoglycoside</td>
<td>M. cyaneogranulata</td>
<td>Soil</td>
<td>1976</td>
<td>Antibacterial</td>
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<tr>
<td>Compound</td>
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<td>Year</td>
<td>Activity</td>
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<tr>
<td>Gentamicin A (16)</td>
<td>Aminoglycoside</td>
<td>Micromonospora spp</td>
<td>1976</td>
<td>Antibacterial</td>
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<td>Gentamicin B,B1 (17,18)</td>
<td>Aminoglycoside</td>
<td>Micromonospora spp</td>
<td>1976</td>
<td>Antibacterial</td>
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<tr>
<td>Gentamicin C₁,C₁a (19,20)</td>
<td>Aminoglycoside</td>
<td>M. purpurea, M. echinospora, M. sagamiensis, M. scabitana, M. longisporoflavus</td>
<td>1976</td>
<td>Antibacterial</td>
<td></td>
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<td>Gentamicin C₂a (21)</td>
<td>Aminoglycoside</td>
<td>M. purpurea and M. sagamiensis</td>
<td>1976</td>
<td>NA</td>
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<td>Gentamicin X₂ (22)</td>
<td>Aminoglycoside</td>
<td>M. purpurea and M. echinospora</td>
<td>1976</td>
<td>NA</td>
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<tr>
<td>Gentoximicin B (23)</td>
<td>Aminoglycoside</td>
<td>M. purpurea</td>
<td>1976</td>
<td>NA</td>
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<tr>
<td>Fortimicins A and B (24,25)</td>
<td>Aminoglycoside</td>
<td>M. olivoasterospora ATCC 21819</td>
<td>1976</td>
<td>Antibacterial against gram positive with MIC (0.2-10µg/ml) and negative bacteria (0.08-5µg/ml) for fortimicin A.</td>
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<td>Antibiotic I1 (26)</td>
<td>Aminoglycoside</td>
<td>M. purpurea</td>
<td>1977</td>
<td>Antibacterial</td>
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<td>Antibiotic 66-40C (27)</td>
<td>Dimeric aminoglycoside antibiotic</td>
<td>M. inyoensis</td>
<td>1977</td>
<td>NA</td>
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<td>Antibiotic Y 02077H₀ 3'-N-</td>
<td>Aminoglycoside</td>
<td>M. purpurea and Micromonospora</td>
<td>1977</td>
<td>NA</td>
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<tr>
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<td>Source</td>
<td>Year</td>
<td>Activity</td>
<td>Location</td>
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<tr>
<td>Demethylgentamicin C₂</td>
<td>Aminoglycoside</td>
<td><em>Micromonospora</em> cultures. Component of Sisomicin.</td>
<td>1977</td>
<td>NA</td>
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<td>Garamine (29)</td>
<td>Aminoglycoside</td>
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<td>1977</td>
<td>Antibacterial</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gentamicin A₁,A₂,A₃,A₄</td>
<td>Aminoglycoside</td>
<td><em>M. purpurea-nigrescens</em></td>
<td>1977</td>
<td>Antibacterial</td>
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</tr>
<tr>
<td>Gentamine C₁</td>
<td>Aminoglycoside</td>
<td><em>M. purpurea-nigrescens</em></td>
<td>1977</td>
<td>Antibacterial</td>
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<tr>
<td>Gentamine C₁a</td>
<td>Aminoglycoside</td>
<td><em>M. purpurea-nigrescens</em></td>
<td>1977</td>
<td>Antibacterial</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gentamine C₂</td>
<td>Aminoglycoside</td>
<td><em>M. purpurea-nigrescens</em></td>
<td>1977</td>
<td>Antibacterial</td>
<td></td>
<td></td>
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<tr>
<td>4''-Demethylgentamicin C₂</td>
<td>Aminoglycoside</td>
<td><em>M. purpurea-nigrescens</em></td>
<td>1977</td>
<td>Antibacterial</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4''-Demethylgentamicin C₁a</td>
<td>Aminoglycoside</td>
<td><em>M. purpurea-nigrescens</em></td>
<td>1977</td>
<td>Antibacterial</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6''-Methylgentamicin A</td>
<td>Aminoglycoside</td>
<td><em>M. purpurea-nigrescens</em></td>
<td>1977</td>
<td>Antibacterial</td>
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<tr>
<td>6''-Methylgentamicin A₁</td>
<td>Aminoglycoside</td>
<td><em>M. purpurea-nigrescens</em></td>
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<td>Antibacterial</td>
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<tr>
<td>Antibiotic</td>
<td>Type</td>
<td>organism</td>
<td>source</td>
<td>year</td>
<td>Activity Details</td>
<td>literature</td>
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<td>3''-N-Demethylsisomicin Antibiotic 66-40G</td>
<td>Aminoglycoside</td>
<td><em>M. inyoensis</em> and <em>M. sagamiensis</em></td>
<td>Soil</td>
<td>1978</td>
<td>Antibacterial</td>
<td>(42)</td>
</tr>
<tr>
<td>Fortimicin D (44)</td>
<td>Aminoglycoside</td>
<td><em>M. olivoasterospora</em></td>
<td>Soil</td>
<td>1979</td>
<td>Antibacterial</td>
<td>(43)</td>
</tr>
<tr>
<td>Fortimicin KE</td>
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<td><em>M. olivoasterospora</em></td>
<td>Soil</td>
<td>1979</td>
<td>Weak antibacterial</td>
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<tr>
<td>Antibiotic X 14847(46)</td>
<td>Aminoglycoside</td>
<td><em>M. echinospora</em></td>
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<td>1980</td>
<td>Antibacterial Active against gram positive bacteria</td>
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<td><em>M. olivoasterospora</em></td>
<td>Soil</td>
<td>1980</td>
<td>Weak antibacterial</td>
<td>(44)</td>
</tr>
<tr>
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<td><em>M. olivoasterospora</em></td>
<td>Soil</td>
<td>1980</td>
<td>Antibacterial</td>
<td>(45)</td>
</tr>
<tr>
<td>Fortimicin AE</td>
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<td><em>M. olivoasterospora</em></td>
<td>Soil</td>
<td>1980</td>
<td>Antibacterial</td>
<td>(46)</td>
</tr>
<tr>
<td>Fortimicin AP(50)</td>
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<td><em>M. olivoasterospora</em></td>
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<td>1980</td>
<td>Antibacterial</td>
<td>(47)</td>
</tr>
<tr>
<td>Fortimicin AM(51)</td>
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<td><em>M. olivoasterospora</em></td>
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<td>1980</td>
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<td>(48-49)</td>
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<td>Soil</td>
<td>1980</td>
<td>Antibacterial</td>
<td>(49)</td>
</tr>
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<td><em>M. olivoasterospora</em></td>
<td>Soil</td>
<td>1980</td>
<td>Antibacterial</td>
<td>(50)</td>
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<td>Soil</td>
<td>1980</td>
<td>NA</td>
<td>(51)</td>
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<td>Fortimicin AO (55)</td>
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<td>Soil</td>
<td>1980</td>
<td>NA</td>
<td>(52,53)</td>
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<td><em>M. olivoasterospora</em></td>
<td>Soil</td>
<td>1980</td>
<td>NA</td>
<td>(54)</td>
</tr>
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<td>2'N-Glycylfortimicin KE</td>
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<td><em>M. olivoasterospora</em></td>
<td>soil</td>
<td>1981</td>
<td>NA</td>
<td>(55)</td>
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<td>Antibiotic SU1,SU2,SU3,SU4 (56-61)</td>
<td>Aminoglycoside</td>
<td><em>M. sagamiensis</em></td>
<td>Soil</td>
<td>1982</td>
<td>antibacterial against gentamicin resistant strains</td>
<td>(57)</td>
</tr>
<tr>
<td>2-Hydroxysagamicin (62)</td>
<td>Aminoglycoside</td>
<td><em>M. sagamiensis</em> and <em>M. purpurea</em></td>
<td>Soil</td>
<td>1982</td>
<td>Antibacterial</td>
<td>(58-61)</td>
</tr>
<tr>
<td>6'-N-Methylverdamicin (63)</td>
<td>Aminoglycoside</td>
<td>Prod. from Verdamicin by a Verdamicin</td>
<td>Soil</td>
<td>1982</td>
<td>Antibacterial</td>
<td>(62)</td>
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</table>


<table>
<thead>
<tr>
<th>Antibiotic Name</th>
<th>Type</th>
<th>Producing Organism</th>
<th>Isolation Source</th>
<th>Year</th>
<th>Activity</th>
<th>Reference</th>
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<tbody>
<tr>
<td>5-Deoxygentamicin C_{2b}</td>
<td>Aminoglycoside</td>
<td><em>M. purpurea</em></td>
<td>Soil</td>
<td>1983</td>
<td>Antibacterial</td>
<td>US Pat., 1983, 412 068</td>
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<tr>
<td>Antibiotic FU 10</td>
<td>Aminoglycoside</td>
<td><em>M. olivoasterospora</em></td>
<td>Soil</td>
<td>1984</td>
<td>Weak antibacterial</td>
<td>30</td>
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<tr>
<td>Fortimicin KK</td>
<td>Aminoglycoside</td>
<td>Micromonospora olivoasterospora</td>
<td>Soil</td>
<td>1984</td>
<td>Antibacterial</td>
<td>31</td>
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<tr>
<td>Fortimicin KL1</td>
<td>Aminoglycoside</td>
<td>Micromonospora olivoasterospora</td>
<td>Soil</td>
<td>1984</td>
<td>Antibacterial</td>
<td>31</td>
</tr>
<tr>
<td>Vertilmicin</td>
<td>Aminoglycoside</td>
<td>Semisynthetic, prod. by <em>Micromonospora sp</em></td>
<td>Soil</td>
<td>1987</td>
<td>Antibacterial</td>
<td>32</td>
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<tr>
<td>Calicheamicins</td>
<td>Aminoglycosidic antibiotic complex.</td>
<td>*M. echinospora ssp. calichensis NRRL 15839</td>
<td>Soil</td>
<td>1989</td>
<td>Antineoplastic agent</td>
<td>33</td>
</tr>
<tr>
<td>Antibiotic Sch 58777</td>
<td>Aminoglycoside</td>
<td><em>M. carbonacea var. africana</em></td>
<td>Soil</td>
<td>1997</td>
<td>Antibacterial</td>
<td>34</td>
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<tr>
<td>Orthosomycin J</td>
<td>Aminoglycoside</td>
<td><em>Micromonospora olivoasterospora</em></td>
<td>Sponge</td>
<td>2010</td>
<td>Antibacterial</td>
<td>35</td>
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<tr>
<td>Primycin, Debrycin, Ebrimycin</td>
<td>Macrolide complex</td>
<td><em>M. galeriensis</em></td>
<td>Soil</td>
<td>1954</td>
<td>Potent ionophore. Active against Gram-positive bacteria and mycobacteria. Antifungal agent</td>
<td>36</td>
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<tr>
<td>Antibiotic</td>
<td>Antimicrobial Activity</td>
<td>MIC Range</td>
<td>Strain/Source</td>
<td>Year</td>
<td>Remarks</td>
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</table>
| Megalomicins A,B,C
(75-78) | Antibacterial  | A (0.075 -1.2 µg/ml)
B ((0.005-5 µg/m).)
C1 (0.003-1.2µg/ml).
C2 ((0.0005-0.6 µg/ml).)
Antiviral C1
Antiparasite (IC$_{50}$ 0.2, 1, 2, 3, and 8 µg/mL) A1. | M. megalomicea subsp. megalomicea NRRL 3274
M. megalomicea subsp. nigra NRRL 3275 | 1969 | |
| Rosamicin (79) | Antibacterial | Gram positive with MIC 0.03-3 µg/ml and Gram negative bacteria with MIC ranged from (0.3-7.5 µg/ml). | M. rosaria | 1972 | |
| Antibiotic XK 41B2
(80) | Antibacterial | NA | M. inositola | 1974 | |
| Juvenimicins A$_2$A$_3$A$_4$B$_1$B$_3$
(81-85) | Antibacterial | Gram +ve MIC (0.01- 100µg/ml)
Gram –ve MIC (5->100 µg/ml) | M.chalcea var. izumensis | 1976 | |
| Antibiotic M 4365G1
(86) | Antibacterial | Active against gram positive bacteria | M. capillata | 1977 | |
<table>
<thead>
<tr>
<th><strong>Repromicin</strong>&lt;br&gt;Antibiotic M 4365G2&lt;br&gt;(87)</th>
<th>Macrolide</th>
<th><em>M. capillata</em> and <em>M. rosari</em></th>
<th>Soil</th>
<th>1978</th>
<th>Antibacterial&lt;br&gt;Active against gram positive bacteria</th>
<th>43</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Antlermicin B</strong>&lt;br&gt;(88,89)</td>
<td>Macrolide</td>
<td><em>M. chalcea-kazunoensis</em> sp. T-90.</td>
<td>Soil</td>
<td>1980</td>
<td>Antibacterial&lt;br&gt;Antitumor</td>
<td>44</td>
</tr>
<tr>
<td><strong>Antlermicin C</strong>&lt;br&gt;(88,89)</td>
<td>Macrolide</td>
<td><em>M. griseorubida A11725</em></td>
<td>Soil</td>
<td>1980</td>
<td>Active against gram positive bacteria,&lt;br&gt;Haemophilus influenzae and mycoplasmas&lt;br&gt;(MIC 0.1 – 3.12 µg/mL)</td>
<td>45</td>
</tr>
<tr>
<td><strong>Mycinamycin I,II,III,IV,V</strong>&lt;br&gt;(90-94)</td>
<td>Macrolide</td>
<td><em>M. rosaria</em></td>
<td>Soil</td>
<td>1980</td>
<td>Biosynth. precursor to Tylonolide.</td>
<td>46</td>
</tr>
<tr>
<td><strong>Protylonolide</strong>&lt;br&gt;(95)</td>
<td>Macrolide</td>
<td><em>M. rosaria</em></td>
<td>Soil</td>
<td>1980</td>
<td>Prob. intermed. in biosynth. of Rosamicin</td>
<td>47</td>
</tr>
<tr>
<td><strong>20-Deoxorosaranolide</strong>&lt;br&gt;(96)</td>
<td>Macrolide</td>
<td><em>M. rosaria</em></td>
<td>Soil</td>
<td>1982</td>
<td>Antibacterial</td>
<td>48</td>
</tr>
<tr>
<td><strong>Lipiarmycin A₃</strong>&lt;br&gt;(97)</td>
<td>Macrolide</td>
<td><em>M. echinospora ssp. armeniaca</em></td>
<td>Soil</td>
<td>1983</td>
<td></td>
<td>48</td>
</tr>
<tr>
<td><strong>23-Hydroxyprotylonolide</strong>&lt;br&gt;(98)</td>
<td>Macrolide</td>
<td><em>Micromonospora sp. YS-02930K</em></td>
<td>Soil</td>
<td>1983</td>
<td>NA</td>
<td>49</td>
</tr>
<tr>
<td><strong>19,23-Dihydroxyprotylonolide</strong>&lt;br&gt;(99)</td>
<td>Macrolide</td>
<td><em>Micromonospora sp. YS-02930K</em></td>
<td>Soil</td>
<td>1983</td>
<td>NA</td>
<td>49</td>
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<tr>
<td><strong>Neorustmicin A</strong>&lt;br&gt;(100)</td>
<td>Macrolide</td>
<td><em>M. chalcea 1302-AV</em></td>
<td>Soil</td>
<td>1985</td>
<td>Antifungal, MIC (0.2-0.4µg/ml).</td>
<td>50</td>
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<tr>
<td>Compound</td>
<td>Type</td>
<td>Species</td>
<td>Source</td>
<td>Year</td>
<td>Activity</td>
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<tr>
<td>Rustmicin</td>
<td>Macrolide</td>
<td><em>M. narashinoensis</em> 980-MC.</td>
<td>Soil</td>
<td>1985</td>
<td>Antifungal MIC (0.8-1µg/ml).</td>
<td></td>
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<tr>
<td>Galbonolide A</td>
<td>Macrolide</td>
<td><em>M. narashinoensis</em> and <em>M. chalcea</em></td>
<td>Soil</td>
<td>1985</td>
<td>Antifungal</td>
<td></td>
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<tr>
<td>Clostomicins A, B₁, B₂, C, D</td>
<td>Macrolide</td>
<td><em>M. echinospora</em> subsp. <em>armeniaca</em> KMR-593</td>
<td>Soil</td>
<td>1986</td>
<td>Antibacterial Diameter of inhibition zone (mm) (10.2 – 36.8).</td>
<td></td>
</tr>
<tr>
<td>Neorustmicin B,C,D</td>
<td>Macrolide</td>
<td><em>M. chalcea</em> 1302-AV</td>
<td>Soil</td>
<td>1986</td>
<td>Neorustmicin B 1.0 µg/ml While, neorustmicins C and D 4 and 5 µg/ml, respectively</td>
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<tr>
<td>Lipiarmycin B₃</td>
<td>Macrolide</td>
<td><em>M. echinospora</em></td>
<td>Soil</td>
<td>1988</td>
<td>Antibacterial Active against gram positive bacteria</td>
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</tr>
<tr>
<td>Izenamicin B₂</td>
<td>Macrolide</td>
<td><em>Micromonas pora</em> sp</td>
<td>Soil</td>
<td>1989</td>
<td>Antibacterial</td>
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<tr>
<td>Antibiotic 6108A₁</td>
<td>Macrolide</td>
<td><em>M. fastidiosus</em></td>
<td>Soil</td>
<td>1990</td>
<td>Antibacterial</td>
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<td>(116)</td>
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<tr>
<th>Antibiotic 6108 A₁, B (117,118)</th>
<th>Macrolide</th>
<th>Micromonospora strain BA06108</th>
<th>Soil</th>
<th>1990</th>
<th>Antibacterial</th>
</tr>
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<table>
<thead>
<tr>
<th>Antibiotic 6108C (119)</th>
<th>Macrolide antibiotic (unusual Tylosin-type)</th>
<th><em>M. Pora fastidiosa</em></th>
<th>Soil</th>
<th>1990</th>
<th>Antibacterial</th>
</tr>
</thead>
<tbody>
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<table>
<thead>
<tr>
<th>Antibiotic 6108D (120)</th>
<th>Macrolide antibiotic (unusual Tylosin-type)</th>
<th><em>M. Pora fastidiosa</em></th>
<th>Soil</th>
<th>1990</th>
<th>Antibacterial</th>
</tr>
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<table>
<thead>
<tr>
<th>Rosamicin; 6-Hydroxy (121)</th>
<th>Macrolide</th>
<th><em>M. rosaria</em></th>
<th>Soil</th>
<th>1990</th>
<th>NA</th>
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<table>
<thead>
<tr>
<th>Mycinamycin X, XI (122,123)</th>
<th>Macrolide</th>
<th><em>M. griseorubida</em></th>
<th>Soil</th>
<th>1991</th>
<th>Antibacterial</th>
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<tr>
<th>Mycinamycin IX, XII, XIII, XIV, XV, XVI, XVII, XVIII (124-131)</th>
<th>Macrolide</th>
<th><em>M. griseorubida</em></th>
<th>Soil</th>
<th>1991</th>
<th>Antibacterial</th>
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<tr>
<th>AC6H (132)</th>
<th>Macrolide</th>
<th><em>M. carbonacea</em> subsp. carbonacea K55-AC6</th>
<th>Soil</th>
<th>1993</th>
<th>Anticancer IC 50 (6.25-25 µg/ml)</th>
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<tbody>
<tr>
<td></td>
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<td>Spirotetronate glycoside.</td>
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<tr>
<th>Quinolidomicins A₁, A₂, and B₁ (133-135)</th>
<th>Polyene macrolides</th>
<th><em>Micromonospora</em> sp. JY16 - FERM BP-3940</th>
<th>Soil</th>
<th>1993</th>
<th>Antitumor IC₅₀ 327nM/ml.</th>
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<td>Name</td>
<td>Type</td>
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<td>19-Decarbonyltylonolide</td>
<td>Macrolide</td>
<td>Micromonospora sp. YS 02930k</td>
<td>1994</td>
<td>NA</td>
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<td>16-Hydroxyprotylonolide</td>
<td>Macrolide</td>
<td>Micromonospora sp. YS-02930K</td>
<td>1994</td>
<td>NA</td>
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<tr>
<td>19-Hydroxyprotylonolide</td>
<td>Macrolide</td>
<td>Micromonospora sp. YS-02930K</td>
<td>1994</td>
<td>NA</td>
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<td>Royamicin A</td>
<td>Macrolide</td>
<td>M. roseopurpurea M90</td>
<td>1994</td>
<td>Antibacterial</td>
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<tr>
<td>Pyrrolosporin A</td>
<td>Macrolide</td>
<td>Micromonospora sp. ATCC 53791</td>
<td>1996</td>
<td>Antibacterial</td>
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<td>Gram positive MIC (0.5 - 4 µg/ml)</td>
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<td>Gram negative MIC (63-125µg/ml)</td>
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<td>Antitumor</td>
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<tr>
<td>Galbonolide B, 21-hydroxy</td>
<td>Macrolide</td>
<td>Micromonospora sp. culture MA</td>
<td>1998</td>
<td>Moderate antifungal activity</td>
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<tr>
<td>Rustmicin, 21-hydroxy</td>
<td>Macrolide</td>
<td>Micromonospora sp. culture MA</td>
<td>1998</td>
<td>Antifungal activity less than rustamicin</td>
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<tr>
<td>Antibiotic IB 96212</td>
<td>Macrolide</td>
<td>Micromonospora sp.</td>
<td>2000</td>
<td>Cytotoxic</td>
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<tr>
<td>Sch 351448</td>
<td>Macrolide</td>
<td>Micromonospora sp</td>
<td>2000</td>
<td>A novel ionophoric compound and is a weak activator of low density</td>
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<tr>
<td>Compound</td>
<td>Type</td>
<td>Source</td>
<td>Year</td>
<td>Description</td>
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<tr>
<td>Bafilomycin R 176502</td>
<td>Antibiotic R 176502 (148)</td>
<td>Micromonospora sp.</td>
<td>2003</td>
<td>Cytotoxic</td>
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<tr>
<td>Micromonosporin A (149)</td>
<td>Macrolide</td>
<td>Micromonospora sp. (strain TT1-11).</td>
<td>2004</td>
<td>NA</td>
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<tr>
<td>IZI (150)</td>
<td>Macrolide</td>
<td>M. rosara</td>
<td>2009</td>
<td>NA</td>
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<tr>
<td>IZII,IZIII (151,152)</td>
<td>Macrolides</td>
<td>M. rosara</td>
<td>2010</td>
<td>NA</td>
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<tr>
<td>levantilide A and B (153,154)</td>
<td>Macrolides</td>
<td>Micromonospora strain M71-A77</td>
<td>2011</td>
<td>Anticancer against gastric tumor cells GXF 251L (IC$<em>{50}$ 40.9 µM), lung tumor cells LXFL 529L (IC$</em>{50}$ 39.4 µM), mammary tumor cells MAXF 401NL (IC$_{50}$ 28.3 µM)</td>
<td></td>
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<tr>
<td>Name</td>
<td>Type</td>
<td>Strain</td>
<td>Source</td>
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<tr>
<td>Levantilide C (156)</td>
<td>Macrolide</td>
<td><em>Micromonospora sp. FIM07-0019</em></td>
<td>Marine</td>
<td>2013</td>
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</tbody>
</table>

µM, melanoma tumor cells MEXF 462NL (IC$_{50}$ 48.6 µM), pancreas tumor cells PAXF 1657L (IC$_{50}$ 20.7 µM) and renal tumor cells RXF 486L (IC$_{50}$ 52.4 µM).

Antioxidant enhanced QR1 enzyme activity and glutathione levels by two-fold with CD values of 10.1 and 27.7 µM, respectively.

QR1 (quinon reductase 1)

Anticancer

Against HL-60 (IC$_{50}$ 32.5 µM), MDA-MB-231 (IC$_{50}$ 26.8 µM), SW620 (IC$_{50}$ 16.4 µM), SMMC7721 (IC$_{50}$ 39.9 µM)
<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Source</th>
<th>Year</th>
<th>Activity</th>
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<tbody>
<tr>
<td>Micromonolactam (157)</td>
<td>Macrolide</td>
<td>Micromonospora sp</td>
<td>2013</td>
<td>NA</td>
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<tr>
<td>Neaumycin B (158)</td>
<td>Macrolide</td>
<td>Micromonospora sp (strain CNY-010)</td>
<td>2018</td>
<td>Potent Inhibitor of Glioblastoma IC₅₀ (1µM).</td>
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<tr>
<td>Tetrocarcin A</td>
<td>Tetrocarcin</td>
<td>M. chalcea subsp. kazunoensis</td>
<td>1980</td>
<td>Antibacterial MIC (0.015 µg/ml)</td>
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<td>Antlermicin A (159,160)</td>
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<td>Antitumor</td>
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<tr>
<td>Tetrocarcin complex A, B, C (161-163)</td>
<td>Tetrocarcin Spirotetronate glycosides</td>
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<td>Antitumor</td>
</tr>
<tr>
<td>Tetrocarcin G,H,K,L (164-167)</td>
<td>Tetrocarcin Spirotetronate glycoside</td>
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<td>Antibacterial</td>
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<td>Tetronolide</td>
<td>Aglycon of tetrocarcin A</td>
<td>M. chalcea</td>
<td>1980</td>
<td>Antibacterial</td>
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<td>Antibiotic F2 (168)</td>
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<td>Antitumor</td>
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<tr>
<td>Tetrocarcin E1 (A)</td>
<td>Spirotetronate glycoside</td>
<td>M. chalcea</td>
<td>1982</td>
<td>Antibacterial MIC (3-150µg/ml).</td>
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<td>Compound</td>
<td>Source</td>
<td>Sample Type</td>
<td>Year</td>
<td>Activity</td>
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<tr>
<td>Tetrocarcin F (A)</td>
<td></td>
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<tr>
<td>Tetrocarcin C (A)</td>
<td></td>
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<tr>
<td>Tetrocarcin D (A)</td>
<td></td>
<td></td>
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<tr>
<td>Tetrocarcin L</td>
<td></td>
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<tr>
<td>Tetrocarcin K</td>
<td></td>
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<tr>
<td>Tetrocarcin B (169-180)</td>
<td></td>
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<tr>
<td>Arisostatin A&amp;B (181,182)</td>
<td>New analogs of tetrocarcin A</td>
<td><em>Micromonospora</em> sp. TP-A0316</td>
<td>2000</td>
<td>Antibacterial MIC (0.39-25µM. Antitumor IC50 (0.059-0.26 µM)</td>
</tr>
<tr>
<td>Tetrocarcin P (183)</td>
<td>Tetrocarcin</td>
<td><em>M. harpali</em> SCSIO GJ089.</td>
<td>2017</td>
<td>Antibacterial MIC (1 -2µg/ml)</td>
</tr>
<tr>
<td>22-dehydroxymethyl-kijanolide (184)</td>
<td>Spirotetronate glycoside.</td>
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<tr>
<td>8-hydroxy-22-dehydroxymethyl-kijanolide (185)</td>
<td>Spirotetronate glycoside.</td>
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<tr>
<td>Microsporanates A-F (186-191)</td>
<td>Spirotetronate glycoside.</td>
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</tr>
<tr>
<td>Tetrocarcin N, H, Q (192-194)</td>
<td>Tetrocarcin</td>
<td><em>M. carbonacea</em> LS276</td>
<td>2018</td>
<td>Antibacterial activity against <em>Bacillus subtilis</em> (MIC) value of 12.5 µM.</td>
</tr>
<tr>
<td>Name</td>
<td>Type</td>
<td>Microorganism</td>
<td>Source</td>
<td>Year</td>
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<tr>
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<tr>
<td>Actinomycins</td>
<td>Polypeptide</td>
<td>Micromonospora sp.</td>
<td>Soil</td>
<td>1951</td>
</tr>
<tr>
<td>Microcins A and B</td>
<td>Peptides</td>
<td>M. fuscus</td>
<td>Soil</td>
<td>1952</td>
</tr>
<tr>
<td>Bottromycin</td>
<td>Cyclic peptide</td>
<td>M. chalcea</td>
<td>Soil</td>
<td>1966</td>
</tr>
<tr>
<td>Antibiotic SF 1919</td>
<td>Peptide</td>
<td>Micromonospora sp.</td>
<td>Soil</td>
<td>1977</td>
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<tr>
<td>Antibiotic 68-1147</td>
<td>Thiazole-peptide</td>
<td>M. arboresis</td>
<td>Soil</td>
<td>1978</td>
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<tr>
<td>Sch 18640</td>
<td>Peptide</td>
<td>M. arboresis</td>
<td>Soil</td>
<td>1978</td>
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<tr>
<td>Epideoxyneagamycin</td>
<td>Peptide</td>
<td>Micromonospora sp.</td>
<td>Soil</td>
<td>1979</td>
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<tr>
<td>Antibiotic PA 4046-I</td>
<td>Peptide</td>
<td>M. miyakonensis</td>
<td>Soil</td>
<td>1981</td>
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<tr>
<td>Antibiotic PA 3534J</td>
<td>Dipeptide</td>
<td>M. chalcea PA-3534</td>
<td>Soil</td>
<td>1981</td>
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<tr>
<td>Antibiotic M 9026</td>
<td>Peptide antibiotic complex</td>
<td>Micromonospora sp.</td>
<td>Soil</td>
<td>1987</td>
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<tr>
<td>Antibiotic S 54832A</td>
<td>Depsipeptide antibiotics</td>
<td>M. globosa</td>
<td>Soil</td>
<td>1984</td>
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<tr>
<td>Antibiotic S 54832A-I</td>
<td>Depsipeptide antibiotics</td>
<td>M. auratinigra</td>
<td>Soil</td>
<td>1984</td>
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<tr>
<td>Chloropolysporin B</td>
<td>Glyco peptide</td>
<td>Micromonospora sp.</td>
<td>Soil</td>
<td>1987</td>
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<tr>
<td>Chloropolysporin C</td>
<td></td>
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<tr>
<td>(209,210)</td>
<td>Sch 37137</td>
<td>Dipeptides</td>
<td>Micromonospora sp. SCC 1792</td>
<td>Soil</td>
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<td>------------</td>
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<td>(211)</td>
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<td>Korkormicins</td>
<td>Depsipeptide</td>
<td>Micromonospora sp. C39500</td>
<td>Soil</td>
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<tr>
<td>(212 – 218)</td>
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<td>(219)</td>
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<tr>
<td></td>
<td>Rakicidin B</td>
<td>Cyclic lipopeptide</td>
<td>M. chalcea and a Micromonospora sp.</td>
<td>Marine</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<tr>
<td>(221)</td>
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<td></td>
<td>Antibiotic Sch 40832</td>
<td>Peptide</td>
<td>M. carbonaceae var. africana</td>
<td>Soil</td>
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<tr>
<td>(222)</td>
<td></td>
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<td>Antibiotic Sch 49088</td>
<td>Oligosaccharide</td>
<td>M. carbonaceae</td>
<td>Soil</td>
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<td>(223)</td>
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<td></td>
<td>Actinomycin Z1-Z5</td>
<td>Chromopeptide</td>
<td>M. floridensis</td>
<td>Soil</td>
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<td>Compound</td>
<td>Type</td>
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<td>Telomycin</td>
<td>Macrocyclic peptide lactone</td>
<td>M. schwarzwaldensis</td>
<td>Soil</td>
<td>Antibacterial activity</td>
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<tr>
<td>Cyclo-(Pro-Trp) Peptide</td>
<td>Micromonospora sp. (strain G044)</td>
<td>sponge Tethya aurantium</td>
<td>2017</td>
<td>Antibacterial against E-coli</td>
</tr>
<tr>
<td>Cyclo-(Pro-Met) Peptide</td>
<td>Micromonospora sp. (strain G044)</td>
<td>sponge Tethya aurantium</td>
<td>2017</td>
<td>NA</td>
</tr>
<tr>
<td>Cyclo-(Pro-Val) Peptide</td>
<td>Micromonospora sp. (strain G044)</td>
<td>sponge Tethya aurantium</td>
<td>2017</td>
<td>NA</td>
</tr>
<tr>
<td>Uridine</td>
<td>Peptide</td>
<td>Micromonospora sp. (strain G044)</td>
<td>sponge Tethya aurantium</td>
<td>NA</td>
</tr>
<tr>
<td>Rakicidins G, H, I Cyclic depsipeptides</td>
<td>M. chalcea FIM 02-523</td>
<td>Marine</td>
<td>2018</td>
<td>Cytotoxic</td>
</tr>
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<tr>
<td>Rakicidin E Cyclic depsipeptide</td>
<td>M. chalcea FIM 02-523</td>
<td>Marine</td>
<td>2018</td>
<td>Cytotoxic</td>
</tr>
<tr>
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<tr>
<td>Izumenolide Lactone</td>
<td>M. chalcea subsp. izumensis</td>
<td>Soil</td>
<td>1980</td>
<td>Antibacterial</td>
</tr>
<tr>
<td>Name</td>
<td>Type</td>
<td>Source</td>
<td>Year</td>
<td>Description</td>
</tr>
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<tr>
<td>Dotriacolide</td>
<td>Lactone</td>
<td>SC 11133</td>
<td>Soil</td>
<td>1981, Antibacterial</td>
</tr>
<tr>
<td>3, 4-Dihydrodotriacolide</td>
<td>Lactone</td>
<td>MG299-IF35</td>
<td>Soil</td>
<td>1981, NA</td>
</tr>
<tr>
<td>Antascomicins A,B,C,D,E</td>
<td>Macrocyclic lactones</td>
<td>Micromonospora sp. DSM</td>
<td>Soil</td>
<td>1996, Antagonize the immunosuppressiv e activity of FK506 and rapamycin (FKBP12 binding molecules) (IC$_{50}$ 0.7 nM)</td>
</tr>
<tr>
<td>Cymbimicin A and B</td>
<td>Lactone</td>
<td>Micromonospora sp. DSM</td>
<td>Soil</td>
<td>1997, Immuno-suppressive.</td>
</tr>
<tr>
<td>Crisamicin A</td>
<td>Naphthoquinone</td>
<td>M. purpureochromogenes subsp. halotolerans RV-79-9-101</td>
<td>Soil</td>
<td>1986, Antibacterial activity MIC (0.2-10µg/ml). Anticancer activity</td>
</tr>
<tr>
<td>Crisamicin C</td>
<td>Naphthoquinone</td>
<td>M. purpureochromogenes</td>
<td>Soil</td>
<td>1988, Antibacterial activity MIC (0.125-0.25µg/ml).</td>
</tr>
<tr>
<td>Compound Name</td>
<td>Type</td>
<td>Genus, Species</td>
<td>Source</td>
<td>Year</td>
</tr>
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<tr>
<td>Crisamicin C</td>
<td>Naphthoquinone</td>
<td><em>M. purpureochromogenes</em></td>
<td>Soil</td>
<td>1988</td>
</tr>
<tr>
<td>Antibiotic A</td>
<td>Naphthoquinone</td>
<td><em>Micromonospora</em> sp. SANK 6039</td>
<td>Soil</td>
<td>1995</td>
</tr>
<tr>
<td>Antibiotic A</td>
<td>Naphthoquinone</td>
<td><em>Micromonospora</em> sp. SANK 6039</td>
<td>Soil</td>
<td>1995</td>
</tr>
<tr>
<td>Antibiotic A</td>
<td>Naphthoquinone</td>
<td><em>Micromonospora</em> sp. SA246</td>
<td>Soil</td>
<td>1997</td>
</tr>
<tr>
<td>1-Hydroxycrisamicin A</td>
<td>Naphthoquinone</td>
<td><em>Micromonospora</em> sp. SA246</td>
<td>Soil</td>
<td>1997</td>
</tr>
<tr>
<td>7-Methoxy-2-propyl-5,12-naphthacenedione</td>
<td>Naphthoquinone</td>
<td><em>Micromonospora</em> sp. JN79761</td>
<td>Marine</td>
<td>2012</td>
</tr>
<tr>
<td>1,2,3,4-Tetrahydro-2-hydroxy-7-methoxy-2-propyl-5,12-naphthacenedione</td>
<td>Naphthoquinone</td>
<td><em>Micromonospora</em> sp. JN79761</td>
<td>Marine</td>
<td>2012</td>
</tr>
<tr>
<td>Citreamicin ξ</td>
<td>Quinone</td>
<td><em>M. citrea</em></td>
<td>Soil</td>
<td>1990</td>
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<tr>
<td>Antibiotic</td>
<td>Class</td>
<td>Source</td>
<td>Year</td>
<td>Activity</td>
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<tr>
<td>Antibiotic GTRI-BB (crysamicin analog) (271)</td>
<td>Quinone</td>
<td>Micromonospora sp. SA-24</td>
<td>2002</td>
<td>Cytotoxic GI&lt;sub&gt;50&lt;/sub&gt; (0.08-0.31µg/ml).</td>
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<tr>
<td>Streptonigrin 7-(1-methyl-2 oxopropyl)streptonigrin (272)</td>
<td>Quinone</td>
<td>Micromonospora sp. IM 2670</td>
<td>2002</td>
<td>Cytotoxic activity</td>
</tr>
<tr>
<td>Kosinostatin (273)</td>
<td>Quinocycline</td>
<td>Micromonospora sp. TPA0468</td>
<td>2002</td>
<td>NA</td>
</tr>
<tr>
<td>Fluostatins C-F (274-277)</td>
<td>Quinone</td>
<td>M. rosaria SCSIO N160</td>
<td>2012</td>
<td>NA</td>
</tr>
<tr>
<td>Fluostatins I–K (278-280)</td>
<td>Quinone</td>
<td>M. rosaria SCSIO N160</td>
<td>2012</td>
<td>NA</td>
</tr>
<tr>
<td>Phenanthroviridone (281)</td>
<td>Quinone</td>
<td>M. rosaria SCSIO N160</td>
<td>2012</td>
<td>Antibacterial Staphylococcus aureus MIC 1.0 µg/mL Antitumor IC&lt;sub&gt;50&lt;/sub&gt; (0.09 ± 0.04 - 2.18 ± 0.01µM)</td>
</tr>
<tr>
<td>Lagumycin B (282), Dehydrorabelomycin (283), WS-5995 A (284)</td>
<td>Angucycline</td>
<td>Micromonospora sp.</td>
<td>2015</td>
<td>Cytotoxic</td>
</tr>
<tr>
<td>Cervinomycin A&lt;sub&gt;1&lt;/sub&gt; (285)</td>
<td>Xanthone</td>
<td>Micromonospora sp. M39</td>
<td>2004</td>
<td>Antibacterial</td>
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<tr>
<td>Dynemicin A (286)</td>
<td>Anthraquinone</td>
<td>M. chersina ATCC 53710</td>
<td>1989</td>
<td>Antibacterial activity</td>
</tr>
<tr>
<td>Deoxydynemicin A (287)</td>
<td>Anthraquinone</td>
<td>M. globosa FERM P-10651</td>
<td>1990</td>
<td>Antibacterial activity</td>
</tr>
<tr>
<td>Compounds</td>
<td>Type</td>
<td>Source</td>
<td>Year</td>
<td>Activity</td>
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<tr>
<td>Dynemicins L, M, and N</td>
<td>Anthraquinones</td>
<td><em>M. chersina</em> M 965-1</td>
<td>1991</td>
<td>Antibacterial, cytotoxic less than dynemicin A</td>
</tr>
<tr>
<td>Dynemicins O, P, and Q</td>
<td>Anthraquinones</td>
<td><em>M. chersina</em> M 965-1</td>
<td>1991</td>
<td>Antibacterial cytotoxic</td>
</tr>
<tr>
<td>Lupinacidins A, B</td>
<td>Anthraquinone</td>
<td><em>M. lupine</em> Lupac 08</td>
<td>2007</td>
<td>Anticancer</td>
</tr>
<tr>
<td>2-Ethyl-1,8-dihydroxy-3-</td>
<td>Anthraquinone</td>
<td><em>M. rhodorangea</em></td>
<td>2009</td>
<td>NA</td>
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<tr>
<td>Methylothraquinone</td>
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<td>3,8-Dihydroxy-1-</td>
<td>Anthraquinone</td>
<td><em>M. rhodorange</em></td>
<td>2009</td>
<td>NA</td>
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<td>propylanthraquinone</td>
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<td>3,8-Dihydroxy-1-</td>
<td>Anthraquinone</td>
<td><em>M. rhodorange</em></td>
<td>2009</td>
<td>NA</td>
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<td>propylanthraquinone-2-</td>
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<tr>
<td>carboxylic acid; 3-Me ether</td>
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<td>Lupinacidin C</td>
<td>Anthraquinone</td>
<td><em>M. lupini Lupac 08</em></td>
<td>2011</td>
<td>Anticancer</td>
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<tr>
<td>Compound</td>
<td>Type</td>
<td>Species/Strain</td>
<td>Source</td>
<td>Year</td>
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<td>Homo-ε-rhodomycinone</td>
<td>Anthraquinone</td>
<td><em>Micromonospora sp.</em> JN797618</td>
<td>Marine</td>
<td>2012</td>
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<td>Rabelomycin</td>
<td>Anthraquinone</td>
<td><em>M. rosaria</em> SCSIO N160</td>
<td>Marine</td>
<td>2012</td>
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<tr>
<td>Nocardorubin</td>
<td>Anthracycline</td>
<td><em>M. narashino</em></td>
<td>Soil</td>
<td>1954</td>
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<tr>
<td>Doxorubicin, 11-deoxy</td>
<td>Anthracycline</td>
<td><em>Micromonospora spp</em></td>
<td>Soil</td>
<td>1980</td>
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<tr>
<td>Daunorubicin, 11-deoxy-13-dihydro</td>
<td>Anthracycline glycosides</td>
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<tr>
<td>Daunorubicin, 11-deoxy-13-deoxo</td>
<td>Anthracycline glycosides</td>
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<td>(305)</td>
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<td>(306-308)</td>
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<td>Micromonosporin C</td>
<td>Anthracycline</td>
<td>*Micromonospora sp. ATCC 10026</td>
<td>Soil</td>
<td>1987</td>
</tr>
<tr>
<td>Micromonosporin B</td>
<td>Anthracycline</td>
<td>*Micromonospora sp. ATCC 10026</td>
<td>Soil</td>
<td>1987</td>
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<td>(309,310)</td>
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<tr>
<td>Spartanamicins A and B</td>
<td>Anthracycline</td>
<td>*Micromonospora sp. ATCC 53803</td>
<td>Soil</td>
<td>1992</td>
</tr>
<tr>
<td>(311,312)</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Cororubicin (313)</td>
<td>Anthracycline</td>
<td>*Micromonospora sp. JY16</td>
<td>Soil</td>
<td>1994</td>
</tr>
<tr>
<td>Bravomicin A, B, C, D, E and F</td>
<td>Anthracycline</td>
<td><em>M. polytrota</em> ATCC 202091</td>
<td>Soil</td>
<td>1999</td>
</tr>
<tr>
<td>(314-319)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Type</td>
<td>Source</td>
<td>Year</td>
<td>Activity</td>
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<tr>
<td>Kosinostatin (320)</td>
<td>Anthraclcline</td>
<td>Micromonospora sp. TP-A0468</td>
<td>2002</td>
<td>NA</td>
</tr>
<tr>
<td>Micromonomycin (321)</td>
<td>Anthraclcline</td>
<td>Micromonospora sp.</td>
<td>2004</td>
<td>Antibacterial activity</td>
</tr>
<tr>
<td>Keyicin (322)</td>
<td>Anthraclcline</td>
<td>Micromonospora sp.</td>
<td>2017</td>
<td>Antibacterial</td>
</tr>
<tr>
<td>Galtamycin B (323)</td>
<td>Anthraclcline</td>
<td>Micromonospora sp. 6368</td>
<td>2005</td>
<td>Cytostatic activity &lt; 1µg/ml.</td>
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<tr>
<td>Anthraeyclinones (324)</td>
<td>Anthraclcline</td>
<td>Micromonospora sp.</td>
<td>2012</td>
<td>NA</td>
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<tr>
<td>Echinosporamicin (325)</td>
<td>Echinosporamicin</td>
<td>M. echinospora subsp. echinospora LL-P17</td>
<td>2004</td>
<td>Antibacterial</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Soil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TLN-05220</td>
<td>Echinosporamicin-type antibiotics</td>
<td>M. echinospora subsp. challisensis NRRL 12255</td>
<td>2009</td>
<td>Antitumour antimicrobial</td>
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<td>TLN-05223</td>
<td></td>
<td>Soil</td>
<td></td>
<td></td>
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<tr>
<td>Everninomicins (328)</td>
<td>Oligosaccharides</td>
<td>M. carbonacea NRRL 2972</td>
<td>1964</td>
<td>Antibacterial</td>
</tr>
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<td></td>
<td></td>
<td>Soil</td>
<td></td>
<td></td>
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<tr>
<td>Name</td>
<td>Type</td>
<td>Source</td>
<td>Year</td>
<td>Activity</td>
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<td>SCH-27899 (Ziracin) (332)</td>
<td>Oligosaccharide</td>
<td><em>M. carbonacea</em></td>
<td>1999</td>
<td>Antibacterial activity</td>
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<td>Antibiotic Sch 58761 Orthosomycin A (333)</td>
<td>Oligosaccharide</td>
<td><em>Micromonospora carbonaceae</em></td>
<td>2000</td>
<td>Active against multidrug-resistant bacteria</td>
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<tr>
<td>Antibiotic Sch 58773 Orthosomycin G (334)</td>
<td>Oligosaccharide</td>
<td><em>M. carbonacea var. africana</em></td>
<td>2002</td>
<td>NA</td>
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<tr>
<td>Antibiotic Sch 58771 Orthosomycin F (335)</td>
<td>Oligosaccharide</td>
<td><em>M. carbonacea var. africana</em></td>
<td>2002</td>
<td>Active against <em>S. aureus</em></td>
</tr>
<tr>
<td>Antibiotic Sch 58769 (336)</td>
<td>Oligosaccharide</td>
<td><em>M. carbonacea var. africana</em></td>
<td>2002</td>
<td>Active against <em>S. aureus</em></td>
</tr>
<tr>
<td>Garosamine (L-form) (337)</td>
<td>Sugar</td>
<td>Sugar component of Gentamicin C1a and Gentamicin C1, antibiotic complexes from fermentations of <em>Micromonospora</em>.</td>
<td>1977</td>
<td>NA</td>
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<tr>
<td>Trehazolin (338)</td>
<td>Pseudosaccharide</td>
<td><em>Micromonospora sp. SANK</em></td>
<td>1991</td>
<td>Trehalase glycosidase inhibitor</td>
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<tr>
<td>Sibanomicin (339)</td>
<td>Pyrrole benzodiazepines</td>
<td><em>Micromonospora sp. SF2364</em></td>
<td>1988</td>
<td>Anticancer Antibacterial Gram + ve (MICs 12.5-100 µg/ml) Gram –ve (50 -</td>
</tr>
<tr>
<td>Compound</td>
<td>Type</td>
<td>Source</td>
<td>Year</td>
<td>Activity</td>
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<tr>
<td>BU-4664L</td>
<td>Dibenzoazepines</td>
<td><em>Micromonospora</em> sp. ATCC 55378</td>
<td>1996</td>
<td>Anti-inflammation 142</td>
</tr>
<tr>
<td>Neihumicin</td>
<td>Pyrazines</td>
<td>M. neihuenis NH3-1 Wu</td>
<td>1988</td>
<td>Cytotoxic activity 143</td>
</tr>
<tr>
<td>LL-E19085 alpha</td>
<td>Oxazole</td>
<td><em>M. citrea</em> NRRL 18351</td>
<td>1989</td>
<td>Antibacterial activity 144</td>
</tr>
<tr>
<td>Citreamicin α</td>
<td>Oxazole</td>
<td><em>M. citrea</em> NRRL 18351</td>
<td>1989</td>
<td>Antifungal activity. IC 50 (0.49 µg/ml)</td>
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<tr>
<td>Citreamicins</td>
<td>Oxazole</td>
<td><em>M. citrea</em> NRRL 18351</td>
<td>1990</td>
<td>Antibacterial activity</td>
</tr>
<tr>
<td>Trehalamine</td>
<td>Oxazoles</td>
<td><em>Micromonospora</em> sp. SANK 62390</td>
<td>1993</td>
<td>Anti-intestinal sucrase</td>
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<tr>
<td>5-Chloro-6-methoxy-1-methylisatin</td>
<td>Indole</td>
<td>Metab. of <em>M. carbonaceae</em></td>
<td>1967</td>
<td>NA</td>
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<tr>
<td>5'-hydroxystaurosporine</td>
<td>Indol carbazole alkaloid</td>
<td><em>Micromonospora</em> sp. L-31-CLCO-002</td>
<td>2000</td>
<td>Cytotoxic activity 147</td>
</tr>
<tr>
<td>4'-N-methyl-5'-hydroxystaurosporine</td>
<td>Indol carbazole alkaloid</td>
<td><em>Micromonospora</em> sp. L-31-CLCO-002</td>
<td>2000</td>
<td>Cytotoxic activity 147</td>
</tr>
<tr>
<td>Skatole-2-carboxylic acid</td>
<td>Indole</td>
<td><em>Micromonospora</em> sp. P1068.</td>
<td>2005</td>
<td>NA</td>
</tr>
<tr>
<td>3-Methyl-1H-indole-2-carboxylic acid</td>
<td>Indole</td>
<td><em>Micromonospora</em> sp. P1068.</td>
<td>2005</td>
<td>NA</td>
</tr>
<tr>
<td>5-Chloro-1H-indole-3-carboxylic acid</td>
<td>Indole</td>
<td><em>Micromonospora</em> sp. P1068.</td>
<td>2005</td>
<td>NA</td>
</tr>
<tr>
<td>Compound</td>
<td>Type</td>
<td>Microorganism</td>
<td>Source</td>
<td>Year</td>
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<tr>
<td>Carboxylic acid</td>
<td>(349)</td>
<td>sp. FIM07-0019</td>
<td>Marine</td>
<td>2011</td>
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<tr>
<td>3-Hydroxymethyl-β-carboline</td>
<td>(350)</td>
<td>Micromonospora sp. M2DG17</td>
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<tr>
<td>3-Methyl-β-carboline</td>
<td>(351)</td>
<td></td>
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<td></td>
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<tr>
<td>β-Carboline</td>
<td>(352)</td>
<td></td>
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<tr>
<td>Antibiotic MS 444</td>
<td>Furan</td>
<td>Micromonospora ssp</td>
<td></td>
<td>1995</td>
</tr>
<tr>
<td>Antibiotic BE 34776 (353)</td>
<td>Furan</td>
<td>Micromonospora sp. NCIMB</td>
<td>Soil</td>
<td>2000</td>
</tr>
<tr>
<td>Antibiotic SB 219383 (354)</td>
<td>Furan</td>
<td>Micromonospora sp</td>
<td>Soil</td>
<td>2000</td>
</tr>
<tr>
<td>3-(4-Hydroxyphenyl)-N-methylpropanamide</td>
<td>Amide</td>
<td>Micromonospora sp. P1068</td>
<td></td>
<td>2005</td>
</tr>
<tr>
<td>Lomaiviticins A and B</td>
<td>Dimeric</td>
<td>M. lomaivitiensis LL-371366</td>
<td>Ascidian</td>
<td>2001</td>
</tr>
<tr>
<td>(356,357)</td>
<td>Diazobenzofluorene glycosides</td>
<td></td>
<td>Polysyncratolonithostrrotum</td>
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<tr>
<td>Sch 725418 (358)</td>
<td>Diketopiperazine</td>
<td>Micromonospora sp.</td>
<td></td>
<td>2004</td>
</tr>
<tr>
<td>Diazepinomicin</td>
<td>Natural</td>
<td>Micromonospora sp. DPJ12</td>
<td>Ascidian</td>
<td>2004</td>
</tr>
<tr>
<td>(359)</td>
<td>Dibenzodiazepine</td>
<td></td>
<td>Didemnum Proliferum</td>
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<td>Micromonospora sp. RV115</td>
<td>Sponge</td>
<td>Aplysina aerophoba</td>
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<tr>
<td>Compound</td>
<td>Type</td>
<td>Organism</td>
<td>Source</td>
<td>Year</td>
</tr>
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<td>----------------------------------</td>
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<tr>
<td>Halomicin D</td>
<td>Ansamycin</td>
<td><em>M. halophytica</em></td>
<td>Soil</td>
<td>1967</td>
</tr>
<tr>
<td>Rifamycins</td>
<td>Ansamysins</td>
<td><em>M. lacustris</em> ATCC 21975</td>
<td>Soil</td>
<td>1977</td>
</tr>
<tr>
<td>3-(Methylthio)rifamycin</td>
<td>Ansamycin</td>
<td><em>M. lacustris</em></td>
<td>Soil</td>
<td>1977</td>
</tr>
<tr>
<td>3-(Methylthio)rifamycin;</td>
<td>Ansamycin</td>
<td><em>M. lacustris</em></td>
<td>Soil</td>
<td>1977</td>
</tr>
<tr>
<td>16,17,18,19,28,29-Hexahydro</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-(Methylthio)rifamycin S</td>
<td>Ansamycin</td>
<td><em>M. lacustris</em></td>
<td>Soil</td>
<td>1977</td>
</tr>
<tr>
<td>3-(Methylthio)rifamycin;</td>
<td>Ansamycin</td>
<td><em>M. lacustris</em></td>
<td>Soil</td>
<td>1977</td>
</tr>
<tr>
<td>1,4-Quinone, 16,17,18,19,28,29-</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>hexahydro (365)</td>
<td></td>
<td></td>
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<tr>
<td>Antibiotic CP 43038</td>
<td>Ansamycin</td>
<td><em>M. saitamica.</em></td>
<td>Soil</td>
<td>1977</td>
</tr>
<tr>
<td>Antibiotic CP 42752</td>
<td>Ansamycin</td>
<td><em>M. saitamica.</em></td>
<td>Soil</td>
<td>1977</td>
</tr>
<tr>
<td>Antibiotic CP 43139</td>
<td>Ansamycin</td>
<td><em>M. saitamica.</em></td>
<td>Soil</td>
<td>1977</td>
</tr>
<tr>
<td>Halomicins A,B,C</td>
<td>Ansamysins</td>
<td><em>M. halophytica</em> subsp.</td>
<td>Salt pool</td>
<td>1977</td>
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<tr>
<td></td>
<td></td>
<td><em>halophytica</em> NRRL 2998</td>
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<td></td>
<td></td>
<td><em>M. halophytica</em> subsp. <em>nigra</em> NRRL 3097</td>
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<tr>
<td>Rifamycin S</td>
<td>Ansamycin</td>
<td><em>Micromonospora</em> spp.</td>
<td></td>
<td>2009</td>
</tr>
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<td></td>
<td></td>
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<tr>
<td>Compound</td>
<td>Type</td>
<td>Microorganism</td>
<td>Source</td>
<td>Year</td>
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<tr>
<td>Butremycin (377)</td>
<td>Macrolactam</td>
<td><em>Micromonospora</em> sp. K310</td>
<td>Marine</td>
<td>2014</td>
</tr>
<tr>
<td>Lobosamides A-C (378-380)</td>
<td>Macrolactam</td>
<td><em>Micromonospora</em> sp.</td>
<td>Marine</td>
<td>2015</td>
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<tr>
<td>FW05328-1 (381)</td>
<td>Macrolactam</td>
<td><em>Micromonospora</em> sp. FIM05328</td>
<td>Soil</td>
<td>2018</td>
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<tr>
<td>Aurodox (382)</td>
<td>Macrolactam</td>
<td><em>Micromonospora</em> sp. FIM05328</td>
<td>Soil</td>
<td>2018</td>
</tr>
<tr>
<td>Microansamycins A–I (383-391)</td>
<td>Macrolactam</td>
<td><em>Micromonospora</em> sp.</td>
<td>Soil</td>
<td>2018</td>
</tr>
<tr>
<td>Sporalactam A (392)</td>
<td>Ansa Macrolide</td>
<td><em>Micromonospora</em> sp.</td>
<td>marine sediment</td>
<td>2017</td>
</tr>
<tr>
<td>Sporalactam B (393)</td>
<td>Ansa Macrolide</td>
<td><em>Micromonospora</em> sp.</td>
<td>marine sediment</td>
<td>2017</td>
</tr>
<tr>
<td>Chemical Name</td>
<td>Compound Class</td>
<td>Isolated From</td>
<td>Source</td>
<td>Year</td>
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<tr>
<td>3-amino-27-demethoxy-27-hydroxyrifamycin S (394)</td>
<td>Ansa Macrolide</td>
<td>Micromonospora sp.</td>
<td>Marine sediment</td>
<td>2017</td>
</tr>
<tr>
<td>3-amino-rifamycin S (395)</td>
<td>Ansa Macrolide</td>
<td>Micromonospora sp.</td>
<td>Marine sediment</td>
<td>2017</td>
</tr>
<tr>
<td>Hazimicins (5 and 6) (396,397)</td>
<td>Nitriles</td>
<td>M. echinospora var. challisensis SCC 1411</td>
<td>Soil</td>
<td>1983</td>
</tr>
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<tr>
<td>YM-47515 (399)</td>
<td>Isonitrile</td>
<td>M. echinospora subsp. echinospora Y-03559J</td>
<td>Soil</td>
<td>1997</td>
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<tr>
<td>Retymicin (400)</td>
<td>Xanthone</td>
<td>Micromonospora sp. Tü 6368</td>
<td>Soil</td>
<td>2005</td>
</tr>
<tr>
<td>MDN-0185 (401)</td>
<td>Polycyclic Xanthone</td>
<td>Micromonospora sp. CA-256353</td>
<td>Soil</td>
<td>2018</td>
</tr>
<tr>
<td>Mycinonic acid III (402)</td>
<td>Fatty acid</td>
<td>M. griseorubida</td>
<td>Soil</td>
<td>1991</td>
</tr>
<tr>
<td>Epimycinonic acid I (403)</td>
<td>Fatty acid</td>
<td>M. griseorubida</td>
<td>Soil</td>
<td>1991</td>
</tr>
<tr>
<td>Mycinonic acid I</td>
<td>Fatty acid</td>
<td>M. griseorubida</td>
<td>Soil</td>
<td>1991</td>
</tr>
<tr>
<td>Mycinonic acid II, Mycinonic acid IV</td>
<td>Fatty acid</td>
<td>M. griseorubida</td>
<td>Soil</td>
<td>1991</td>
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<tr>
<td>Decarboxymycinonic acid III</td>
<td>Fatty acid</td>
<td>M. griseorubida</td>
<td>Soil</td>
<td>1991</td>
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<tr>
<td>Compound</td>
<td>Type</td>
<td>Producing Organism</td>
<td>Source</td>
<td>Year</td>
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<td>3,15-Dihydroxy-4,6,8,14-tetramethyl-5,9-dioxo-10,12-heptadecadienoic acid</td>
<td>Fatty acid</td>
<td>M. griseorubida</td>
<td>Soil</td>
<td>1992</td>
</tr>
<tr>
<td>Saquayamycin Z</td>
<td>Saquayamycin</td>
<td>Micromonospora sp. Tü 6368</td>
<td>Soil</td>
<td>2005</td>
</tr>
<tr>
<td>Psicofuranine</td>
<td>Nucleoside-type antibiotic</td>
<td>M. echinospora</td>
<td>Soil</td>
<td>1959</td>
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<tr>
<td>7-Deazainosine</td>
<td>Nucleoside antibiotic.</td>
<td>M. chalcea</td>
<td>Soil</td>
<td>1970</td>
</tr>
<tr>
<td>5,6-Dihydro-5-azathymidine</td>
<td>Nucleoside antibiotic</td>
<td>M. melanogenses</td>
<td>Soil</td>
<td>1975</td>
</tr>
<tr>
<td>Dapiramicin A</td>
<td>Ribonucleoside</td>
<td>Micromonospora sp. SF-1917</td>
<td>Soil</td>
<td>1983</td>
</tr>
<tr>
<td>Epidapiramicin A</td>
<td>Ribonucleoside</td>
<td>Micromonospora sp.</td>
<td>Soil</td>
<td>1984</td>
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<tr>
<td>Sch 40832</td>
<td>Thiostrepton</td>
<td>M. carbonacea var. africana ATCC 39149</td>
<td>Soil</td>
<td>1998</td>
</tr>
<tr>
<td>Name</td>
<td>Structure</td>
<td>Source</td>
<td>Year</td>
<td>Activity</td>
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<tr>
<td>Streptimidone Ao58A</td>
<td>Glutarimide</td>
<td>M. coerulea Ao58</td>
<td>1999</td>
<td>Antifungal activity MIC (3-10 µg/ml).</td>
</tr>
<tr>
<td>Maklamicin</td>
<td>Spirotetronate polyketide</td>
<td>Micromonospora sp.GMKU326</td>
<td>2011</td>
<td>Antibacterial MIC (0.2-13 µg/ml)</td>
</tr>
<tr>
<td>Neomacquarimicin</td>
<td>Carbocyclic polyketide</td>
<td>Micromonospora sp.</td>
<td>2014</td>
<td>Anticancer IC&lt;sub&gt;50&lt;/sub&gt; (17-34 µM)</td>
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<td>MBJ-0003</td>
<td>Hydroxamate metabolite</td>
<td>Micromonospora sp. 29867</td>
<td>2014</td>
<td>Cytotoxic IC&lt;sub&gt;50&lt;/sub&gt; (11 µM)</td>
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<td>7-Acetyl-3, 6-dihydroxy-8-</td>
<td></td>
<td>Micromonospora sp. SA246</td>
<td>1998</td>
<td>Lipid peroxidation inhibitor IC&lt;sub&gt;50&lt;/sub&gt;</td>
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<td>methyl-1-tetralone.</td>
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<td>GTRI 02. L-form</td>
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<td>Naphthalenepropanoic acid</td>
<td></td>
<td>Micromonospora sp. HS-HM-036</td>
<td>2016</td>
<td>Anticancer IC&lt;sub&gt;50&lt;/sub&gt; (46.5 µg/ml).</td>
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<td>Serine alkaline proteases</td>
<td>Enzymes</td>
<td>M. chaiyaphumensis S103</td>
<td>2017</td>
<td>Deproteinization of shrimp waste.</td>
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<td>2- phenylacetic acid</td>
<td>Aromatic acid</td>
<td>Micromonospora sp. (strain G044)</td>
<td>2017</td>
<td>Detergent</td>
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<td>Name</td>
<td>Compound</td>
<td>Source</td>
<td>Isolation</td>
<td>Activity</td>
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<td>Diacidene</td>
<td>Polyene Dicarboxylic Acid</td>
<td>Micromonospora coxensis MTCC 8093</td>
<td>Marine</td>
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<td>Antibiotic XK 206</td>
<td>Micromonospora sp</td>
<td>Soil</td>
<td>1980</td>
<td>Weak antibacterial</td>
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<tr>
<td>Deoxydehydrochorismic acid</td>
<td>M. coxensis</td>
<td>Marine</td>
<td>2012</td>
<td>NA</td>
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<td>Glutamine scylo-inositol transaminase</td>
<td>M. purpure</td>
<td>Soil</td>
<td>1989</td>
<td>Catalyses the reaction of L-glutamine with 2,4,6/3,5-pentahydroxyhexanone to give 2-oxoglutaramate and 1-amino-1-deoxy-scyllo-inosito</td>
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<tr>
<td>Glyphomicin</td>
<td>Phosphoglycolipid</td>
<td>Micromonospora sp. ATCC 53481</td>
<td>Soil</td>
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<td>M GCI</td>
<td>Glycoprotein</td>
<td>Micromonospora sp. BR-1613</td>
<td>Soil</td>
<td>1984</td>
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<td>Isopimara-2-one-3-ol-8,15-diene</td>
<td>Diterpene</td>
<td>Micromonospora sp.</td>
<td>Marine</td>
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<td>Micromonohalimanes A and B</td>
<td>Diterpene</td>
<td>Micromonospora sp.</td>
<td>Marine</td>
<td>Antibacterial</td>
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<td>Daidzein-40-(2-deoxy-α-l-fucopyranoside)</td>
<td>Isoflavonoid</td>
<td>M. aurantiaca 110B</td>
<td>Soil</td>
<td>2019</td>
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<td>Daidzein-7-(2-deoxy-α-l-fucopyranoside)</td>
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<td>Moderate cytotoxic activity</td>
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<td>Name</td>
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<td>deoxy-α-l-fucopyranoside(435)</td>
<td>Alkaloids</td>
<td>Micromonospora sp</td>
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<td>Dimethyl phenazine-1,6-dicarboxylate (436)</td>
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<td>phenazine-1,6-dicarboxylic acid mono methyl ester(437)</td>
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<td>Phenazine-1-carboxylic acid; tubermycin(438)</td>
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<td>N-(2-hydroxyphenyl)-acetamide(439)</td>
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<td>p-anisamide(440)</td>
<td>Aromatic acid</td>
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<td>Marine</td>
<td>2020</td>
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<td>Paulomycin G (441)</td>
<td>Paulomycin</td>
<td>Micromonospora sp</td>
<td>Marine</td>
<td>2017</td>
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References:


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<tr>
<td>84</td>
<td>W. P. Fisher, J. Charney and W. A. Bolhofer</td>
<td><em>Antibiot. Chemother. (Northfield, Ill.)</em></td>
<td>1951</td>
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<td>571–572</td>
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<td>86</td>
<td>Google Patents</td>
<td>U.S. Patent 4,078,056</td>
<td>1978</td>
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<td>91</td>
<td>Google Patents</td>
<td>U.S. Patent 4,478,831</td>
<td>1984</td>
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<td>92</td>
<td>T. Okazaki, R. Enokita, H. Miyaoka, T. Takatsu and A. Torikata</td>
<td><em>J. Antibiot. (Tokyo)</em></td>
<td>1987</td>
<td>40</td>
<td>917–923</td>
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<td>97</td>
<td>M. S. Puar, T. M. Chan, V. Hegde, M. Patel, P. Bartner, K. J. Ng, B. N. Pramanik and R. D. MacFarlane</td>
<td><em>J. Antibiot. (Tokyo)</em></td>
<td>1998</td>
<td>51</td>
<td>221–224</td>
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