***Supplementary Material***

**Network pharmacology-based analysis of marine**

**Cyanobacteria derived bioactive compounds for application to Alzheimer's disease**

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**1 Supplementary Figure and Table**

**1.1 Supplementary Figure**

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**Supplementary Figure S1.** GC-MS chromatogram of marine *Synechococcus* XM-24.

**1.2 Supplementary Table**

**1.2.1 Supplementary Table S1**

**Supplementary Table S1** Active compoundsidentified in *Synechococcus* sp.XM-24 biomass by GC–MS

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **NO.** | **Name** | **MV** | **Molecular Formula** | **CAS** | **SMILES** |
| 1 | Butanal, 3-hydroxy- | 88 | C4H8O2 | 107-89-1 | CC(CC=O)O |
| 2 | 2H-Pyran-2,4(3H)-dione, dihydro-6-methyl- | 128 | C6H8O3 | 85825-79-2 | CC1CC(=O)CC(=O)O1 |
| 3 | Styrene | 104 | C8H8 | 100-42-5 | C=CC1=CC=CC=C1 |
| 4 | Anisole | 108 | C7H8O | 100-66-3 | COC1=CC=CC=C1 |
| 5 | Allyl methallyl ether | 112 | C7H12O | 14289-96-4 | CC(=C)COCC=C |
| 6 | Benzenemethanol, 4-methyl- | 122 | C8H10O | 589-18-4 | CC1=CC=C(C=C1)CO |
| 7 | 1-Heptene, 2-methyl- | 112 | C8H16 | 15870-10-7 | CCCCCC(=C)C |
| 8 | Benzenepropionitrile | 131 | C9H9N | 645-59-0 | C1=CC=C(C=C1)CCC#N |
| 9 | 3-Undecene, (Z)- | 154 | C11H22 | 821-97-6 | CCCCCCCC=CCC |
| 10 | Isoquinoline, 3,4-dihydro- | 131 | C9H9N | 3230-65-7 | C1CN=CC2=CC=CC=C21 |
| 11 | Indolizin | 117 | C8H7N | 274-40-8 | C1=CC2=CC=CN2C=C1 |
| 12 | Phthalazine, 1-methyl- | 144 | C9H8N2 | 5004-46-6 | CC1=NN=CC2=CC=CC=C12 |
| 13 | 3-Undecene, (E)- | 154 | C11H22 | 1002-68-2 | CCCCCCCC=CCC |
| 14 | Undecane, 2-methyl- | 170 | C12H26 | 7045-71-8 | CCCCCCCCCC(C)C |
| 15 | 11-Octadecenoic acid, methyl ester | 296 | C19H36O2 | 52380-33-3 | CCCCCCC=CCCCCCCCCCC(=O)OC |
| 16 | Tridecanoic acid, 12-methyl-, methyl ester | 242 | C15H30O2 | 5129-58-8 | CC(C)CCCCCCCCCCC(=O)OC |
| 17 | n-Capric acid isopropyl ester | 214 | C13H26O2 | 2311-59-3 | CCCCCCCCCC(=O)OC(C)C |
| 18 | Tetradecanoic acid, 12-methyl-, methyl ester | 256 | C16H32O2 | 5129-66-8 | CCC(C)CCCCCCCCCCC(=O)OC |
| 19 | 1-NONYNE | 124 | C9H16 | 3452/9/3 | CCCCCCCC#C |
| 20 | 11-Tetradecen-1-ol, acetate, (Z)- | 254 | C16H30O2 | 20711-10-8 | CCC=CCCCCCCCCCCOC(=O)C |
| 21 | 11-Octadecenoic acid, methyl ester | 296 | C19H36O2 | 6198-58-9 | CCCCCCC=CCCCCCCCCCC(=O)OC |
| 22 | Hexadecanoic acid, methyl ester | 270 | C17H34O2 | 112-39-0 | CCCCCCCCCCCCCCCC(=O)OC |

**1.2.2 Supplementary Table S2**

**Supplementary Table S2 Databases information**

|  |  |  |  |
| --- | --- | --- | --- |
| **Datebases** | **Websites** | **Analysis Date** | **Reference** |
| PubChem databases | <https://pubchem.ncbi.nlm.nih.gov/search/search.cgi>  | 2022.11.23 | (Kim et al. 2016) |
| Swiss Target Prediction | https://www.swisstargetprediction.ch/ | 2022.11.28 | (Daina et al. 2019) |
| Search Server (SEA) | https://sea.bkslab.org/  | 2022.11.28 | (Keiser et al. 2007) |
| GeneCards | https://www.genecards.org/ | 2023.3.27 | (Rebhan et al. 1998) |
| DisGeNET | <https://www.disgenet.org/>  | 2023.3.27 | (Pinero et al. 2017) |
| InteractiVenn online platform | http://www.interactivenn.net/ | 2023.3.27 | (Heberle et al. 2015) |
| STRING database | https://string-db.org/  | 2023.3.30 | (Szklarczyk et al. 2017) |
| DAVID database | <https://david.ncifcrf.gov/> | 2023.4.18 | (Huang da et al. 2009) |
| AlzData database | <http://www.alzdata.org/index.html>  | 2023.5.2 | (Sweeney et al. 2015) |
| Protein Data Bank | <http://www.rcsb.org/pdb/home/home.do> | 2023.5.23 | (Burley et al. 2021) |

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