Supporting Information

The Dermacozines and Light: A Novel Phenazine Semiquinone Radical based Photocatalytic System from the Deepest Oceanic Trench of the Earth

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<table>
<thead>
<tr>
<th>Dermacozine</th>
<th>Longest absorption maximum in the visible [nm]</th>
<th>Longest absorption maximum in the visible [m]</th>
<th>Calculated frequency [Hz]</th>
<th>E&lt;sub&gt;optical gap, calc, Joules [J]&lt;/sub&gt;</th>
<th>E&lt;sub&gt;optical gap, calc ev[eV]&lt;/sub&gt;</th>
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<tbody>
<tr>
<td>Dermacozine A</td>
<td>398</td>
<td>3.98E-07</td>
<td>7.53247E+14</td>
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<tr>
<td>Dermacozine B</td>
<td>419</td>
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<td>Dermacozine C</td>
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<td>Dermacozine D</td>
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<td>Dermacozine E</td>
<td>576</td>
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<td>4.32777E-19</td>
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<tr>
<td>Dermacozine I</td>
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<td>Dermacozine J</td>
<td>435</td>
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<td>Dermacozine M</td>
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<tr>
<td>Dermacozine N</td>
<td>729</td>
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<td>4.11238E+14</td>
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<tr>
<td>Dermacozine O</td>
<td>644</td>
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<td>3.08454E-19</td>
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<tr>
<td>Dermacozine P</td>
<td>465</td>
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<td>6.44715E+14</td>
<td>4.27193E-19</td>
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<tr>
<td>PCA</td>
<td>364</td>
<td>3.64E-07</td>
<td>8.23606E+14</td>
<td>5.45727E-19</td>
<td>3.41</td>
</tr>
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</table>

S4. Longest AMs of dermacozines in the visible EM (solvent: C<sub>2</sub>H<sub>5</sub>OH)<sup>[Ref.2,3,4,5]</sup> [eV].
S5. Dermacozine B Cyclic Voltammetry measurements (0.1 M NaClO₄ in CH₃CN).

S6. Dermacozine E Cyclic Voltammetry measurements (0.1 M NaClO₄ in CH₃CN).
S7. Dermacozine F Cyclic Voltammetry measurements (0.1 M NaClO₄ in CH₃CN).

S8. Dermacozine O Cyclic Voltammetry measurements (0.1 M NaClO₄ in CH₃CN).
S9. PCA Cyclic Voltammetry measurements (0.1 M NaClO₄ in CH₃CN).

S10. Dermacozine P Cyclic Voltammetry measurements (0.1 M NaClO₄ in CH₃CN).
S11. Measured anodic and cathodic potentials of dermacozines in 0.1 M NaClO₄ in CH₃CN±Standard Errors (SE) and calculated anodic and cathodic values±Mean Errors (ME) based on 13.a. linear regression (calculated anodic potentials) and arithmetic mean of measured cathodic potentials (µ)±ME. *Dermacozine P excluded from calculations as the cathodic and anodic current overlaps too much with the solvent decomposition.

NB: Since the errors of the AMs in Ethanol are not known, no standard propagation of error but mean error (ME) was given for calculated values. Whereas the measured potentials expressed as ± standard error (SE).
S12.a. Dermacozine B, E, F, O and PCA’s experimental optical (Solvent: C$_2$H$_5$OH) and experimental electric HOMO-LUMO energy gaps (solvent: CH$_3$CN) correlation.

S12.b. Dermacozine B, E, F, O and PCA’s experimental optical [eV] (Solvent: C$_2$H$_5$OH) and experimental electric HOMO-LUMO energy gaps [V] (solvent: CH$_3$CN) multiple regression (Microsoft Excel).
S13.a. Linear correlation between the experimental anodic potentials of dermacozine B, E, F, O and PCA [V] with Cyclic Voltammetry (solvent: CH$_3$CN) and the experimental optical HOMO-LUMO gaps measured with UV-Vis Spectroscopy (solvent C$_2$H$_5$OH) [eV].

<table>
<thead>
<tr>
<th>Dermacozine</th>
<th>(x) Electric HOMO [V]</th>
<th>(y) $\Delta E$ Optical [eV]</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCA</td>
<td>1.3</td>
<td>3.4</td>
</tr>
<tr>
<td>B</td>
<td>1.2</td>
<td>3</td>
</tr>
<tr>
<td>E</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>F</td>
<td>1.1</td>
<td>2.2</td>
</tr>
<tr>
<td>O</td>
<td>0.8</td>
<td>1.9</td>
</tr>
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</table>

S13.b. Multiple Regression (Microsoft Excel) between the experimental anodic potentials of dermacozine B, E, F, O and PCA [V] measured with Cyclic Voltammetry (solvent: CH$_3$CN) and the experimental optical HOMO-LUMO gaps measured with UV-Vis Spectroscopy (solvent C$_2$H$_5$OH) [eV].
S14.a. Linear correlation between the cathodic potentials of dermacozine B, E, F, O and PCA [V] measured with Cyclic Voltammetry (solvent: CH$_2$CN) and the experimental optical HOMO-LUMO gaps measured with UV-Vis Spectroscopy (solvent C$_2$H$_5$OH) [eV].

<table>
<thead>
<tr>
<th>Dermacozine</th>
<th>(x) Electric LUMO [V]</th>
<th>(y) Δ E Optical [eV]</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCA</td>
<td>-1</td>
<td>3,4</td>
</tr>
<tr>
<td>B</td>
<td>-0,9</td>
<td>3</td>
</tr>
<tr>
<td>E</td>
<td>-0,9</td>
<td>2,2</td>
</tr>
<tr>
<td>F</td>
<td>-0,9</td>
<td>2,2</td>
</tr>
<tr>
<td>O</td>
<td>-0,9</td>
<td>1,9</td>
</tr>
</tbody>
</table>

S14.b. Multiple regression (Microsoft Excel) between the experimental cathodic potentials of dermacozine B, E, F, O and PCA [V] measured with Cyclic Voltammetry (solvent: CH$_2$CN) and the experimental optical HOMO-LUMO gaps measured with UV-Vis Spectroscopy (solvent C$_2$H$_5$OH) [eV].
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S24. Dermacozine E dimer (LC)-HR-(ESI)-MS$^n$ after irradiation dissociated in CH$_3$OH and dermacozine E is detectable again.
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S26. LC MS Mass Spectrometry Chromatogram of Dermacozine B (Orbitrap)

S27. Dermacozine B 1D $^1$H NMR Spectrum in DMSO-$d_6$ 400 MHz (x: contaminant)
S28. LC MS Mass Spectrometry Chromatogram of Dermacozine E (Orbitrap)

S29. Dermacozine E 1D $^1$H NMR Spectrum in DMSO-$d_6$ 400 MHz
S30. LC MS Mass Spectrometry Chromatogram of Dermacozine F (qToF)

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S33. PCA 1D $^1$H NMR Spectrum in DMSO-$d_6$ 400 MHz
S34. Dermacozine O 1D $^1$H NMR Spectrum in DMSO-$d_6$ 400 MHz

† N.B. Identical spectral data of dermacozine O and P appearing in SI which have already been published in Reference [5]. However, for clarity and for completeness the authors present them in the SI with appropriate citation.

S35. LC MS Mass Spectrometry Chromatogram of Dermacozine O (qToF)

† N.B. Identical spectral data of dermacozine O and P appearing in SI which have already been published in Reference [5]. However, for clarity and for completeness the authors present them in the SI with appropriate citation.
S36. Dermacozine P 1D $^1$H NMR Spectrum in DMSO-$d_6$ 400 MHz

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S37. LC MS Mass Spectrometry Chromatogram of Dermacozine P (Orbitrap)

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