Supporting information.

Determination of HO• rate constants by a High-Throughput Fluorimetric Assay
Towards an unified reactivity scale for antioxidants

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\textbf{Figure S1} : determination of the reaction rate of coumarin with HO’
\textbf{Figure S2} : organisation of a microplate
\textbf{Figure S3} : set of molecules used to validate the method
\textbf{Figure S4} : determination of the reaction rate of methacrylate with HO’
The apparent rate constant of HO• with coumarin was determined following the absorption at 350 nm of the hydroxycyclohexadienyl radical, produced by the addition of HO• on the B ring of coumarin.

**Figure S-1**

Dependence of the rate constant of formation of the hydroxycyclohexadienyl radical on the coumarin concentration. The rate constant was determined from monoexponential fit of the transient absorbance measured at 350 nm.
Figure S2

On figure S-2 is displayed the plate organisation. Molecules are treated 8 at a time over the different lines of the microplates, and successive dilutions are then conducted along the lines. Columns 1 and 12 are left with water, 2 and 11 are standards containing coumarin only.

![Figure S-2: Microplate organisation](image-url)
**Figure S3**

*Set of molecules used to validate the screening method*

- **Dithiothreitol**
  - ![Chemical Structure](image1)

- **3-mercaptopropionate**:
  - ![Chemical Structure](image2)

- **Cysteine**:
  - ![Chemical Structure](image3)

- **2-mercaptoethanol**:
  - ![Chemical Structure](image4)

- **Glutathion**
  - ![Chemical Structure](image5)

- **4-hydroxy-3,5 dimethoxycinnamate**
  - ![Chemical Structure](image6)

- **Méthionine**
  - ![Chemical Structure](image7)

- **Cystéamine**:
  - ![Chemical Structure](image8)

- **Methacrylate**:
  - ![Chemical Structure](image9)

- **Cinnamate**
  - ![Chemical Structure](image10)

- **Thiourea**
  - ![Chemical Structure](image11)

- **Thiocyanate**
  - ![Chemical Structure](image12)

- **Phénol**
  - ![Chemical Structure](image13)

- **Benzoate**
  - ![Chemical Structure](image14)

- **4-hydroxy-3-methoxycinnamate**
  - ![Chemical Structure](image15)
<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Structural Formula</th>
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</thead>
<tbody>
<tr>
<td>Dimethylsulfoxide</td>
<td><img src="image" alt="Dimethylsulfoxide" /></td>
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<tr>
<td>4-hydroxy-3-methoxybenzoate (vanillate)</td>
<td><img src="image" alt="4-hydroxy-3-methoxybenzoate" /></td>
</tr>
<tr>
<td>Thymine</td>
<td><img src="image" alt="Thymine" /></td>
</tr>
<tr>
<td>Urate</td>
<td><img src="image" alt="Urate" /></td>
</tr>
<tr>
<td>3,4-dihydroxycinnamate (caffeate)</td>
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</tr>
<tr>
<td>4-Hydroxy-3,5-dimethoxybenzoate</td>
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<tr>
<td>Adenine</td>
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</tr>
<tr>
<td>3,3-dimethylacrylate</td>
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<tr>
<td>4-hydroxycinnamate</td>
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</tr>
<tr>
<td>5,5-dimethyl-1-pyrroline N-oxide (DMPO)</td>
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<tr>
<td>Ribose:</td>
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<td>Oxalate</td>
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<tr>
<td>Ascorbate</td>
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</table>
Figure S4

The apparent rate constant of HO’ with methacrylate was determined following the absorption at 320 nm of the radical, produced by the addition of HO’ on this compound. (figure S3)

Figure S-4 : Dependance of the rate $k_{app}$ of formation of the hydroxymethacryl radical on the methacrylate concentration. $k_{app}$ were determined from monoexponential fit of the transient absorbance measured at 320 nm