Supplementary Information

Example $^1$H NMR spectra and peak assignment for each carbonyl compound. The carbonyl-H$_2$O$_2$ mixtures at equilibrium are shown.

Figure S1. Glycolaldehyde (10 mM) and H$_2$O$_2$ (17.7 mM)
Figure S2. Methylglyoxal (10 mM) and \( \text{H}_2\text{O}_2 \) (17.7 mM)
Figure S3. Propionaldehyde (10 mM) and H$_2$O$_2$ (17.7 mM)
Figure S4. Glyoxal (10 mM) and H$_2$O$_2$ (17.7 mM)
Figure S5. Glyoxylic acid (10 mM) and \( \text{H}_2\text{O}_2 \) (17.7 mM)
Figure S6. Methacrolein (10 mM) and H₂O₂ (100 mM)
Figure S7. Methylethyl ketone (10 mM) and H$_2$O$_2$ (100 mM)
Figure S8. Acetone (10 mM) and H$_2$O$_2$ (100 mM)