

LESSON 5

14/02/2020

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Contents lists available at ScienceDirect

Journal of Hazardous Materials

journal homepage: www.elsevier.com/locate/jhazmat

Removal of benzoylecgonine from water matrices through UV₂₅₄/H₂O₂ process: Reaction kinetic modeling, ecotoxicity and genotoxicity assessment



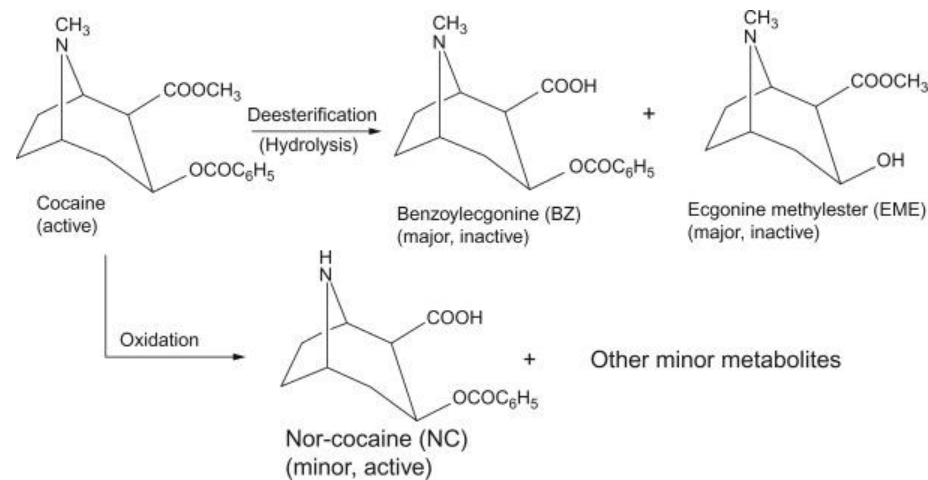
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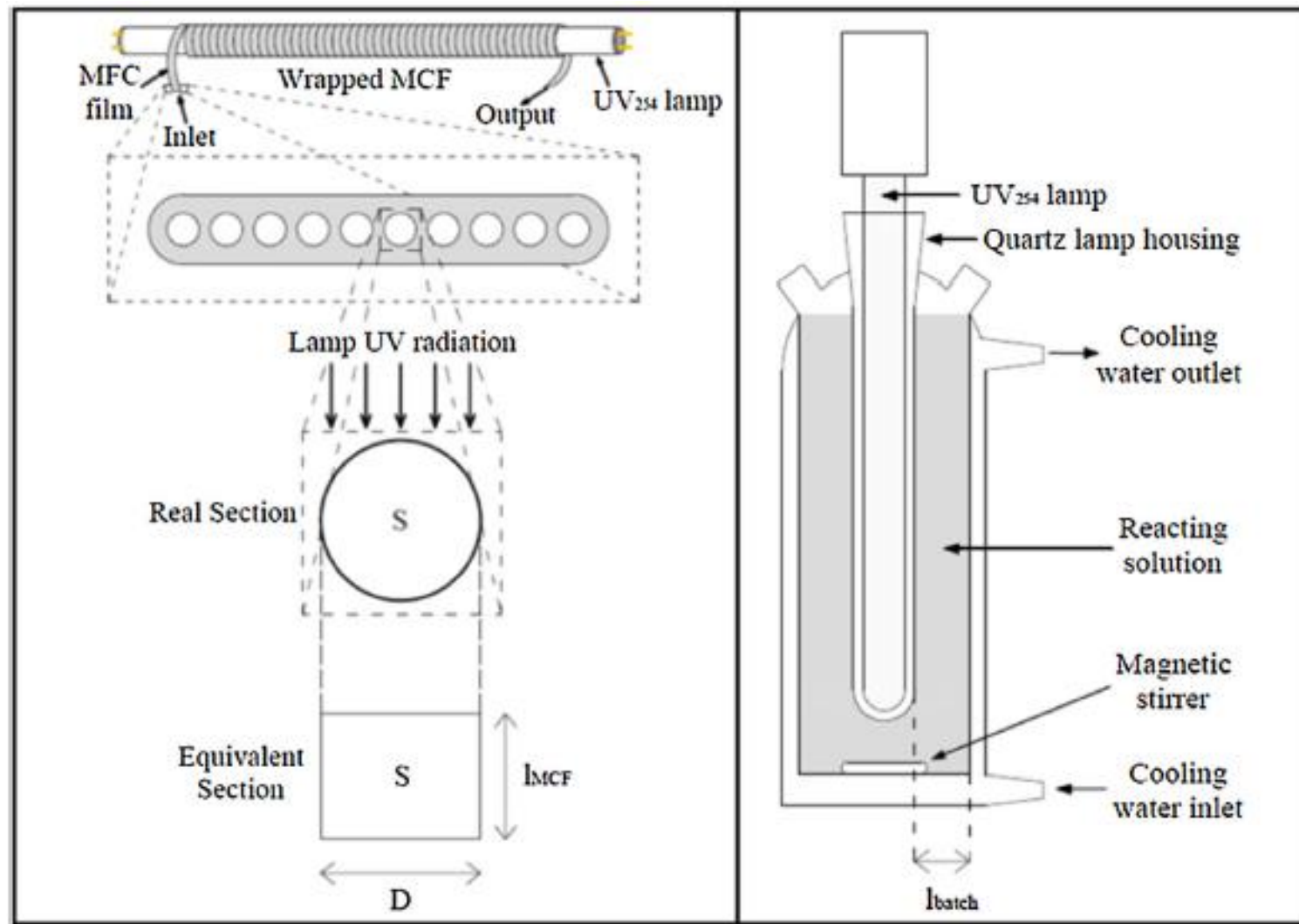
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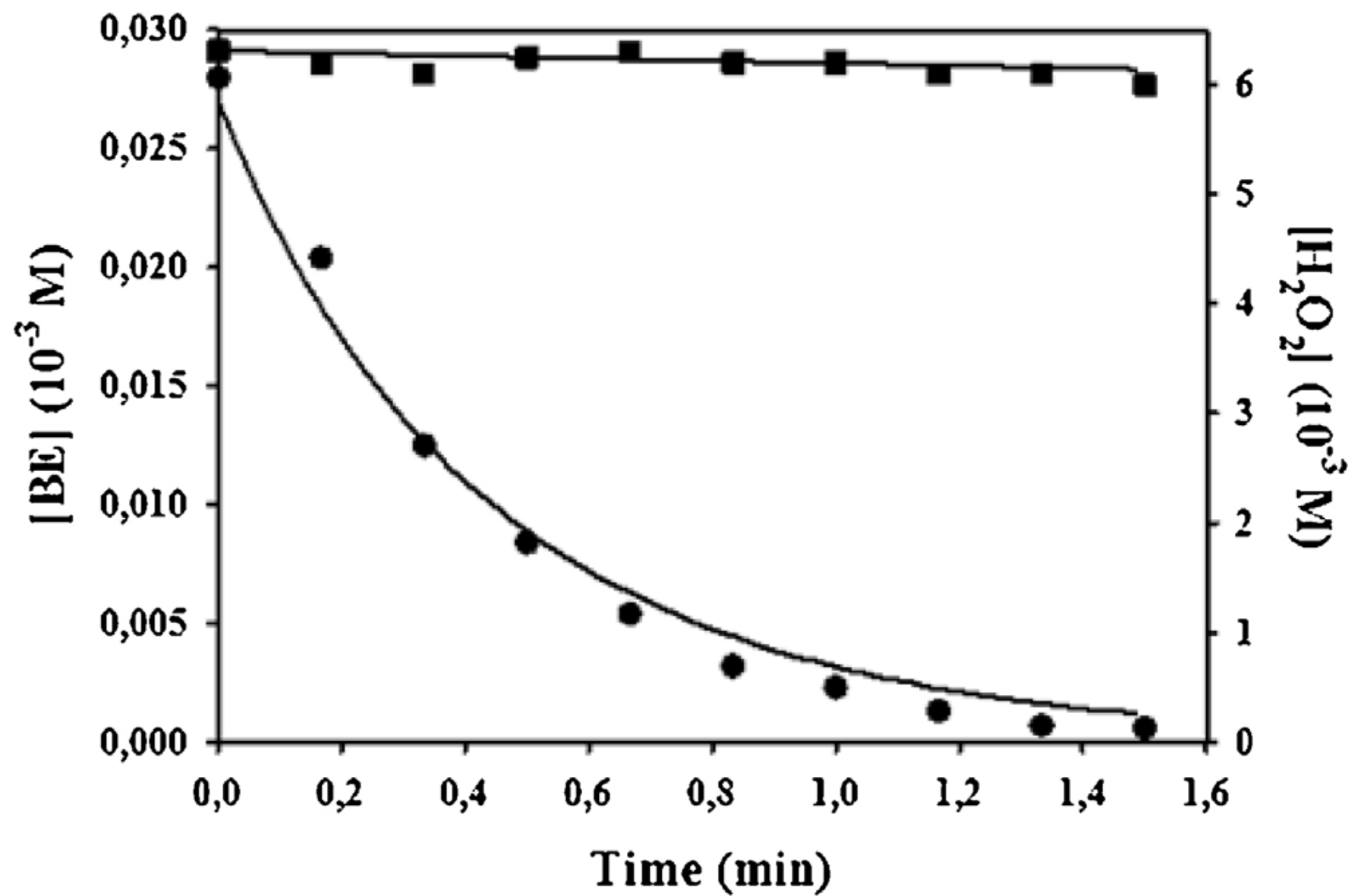




$$\frac{d[\text{BE}]}{d\tau} = -F_{\text{BE}} - \frac{2 \cdot k_{\text{OH/BE}} \cdot F_{\text{H}_2\text{O}_2} \cdot [\text{BE}]}{k_h \cdot [\text{H}_2\text{O}_2] + k_{\text{OH/BE}} \cdot [\text{BE}] + k_{\text{OH/BP}} \cdot ([\text{BE}]_0 - [\text{BE}])}$$

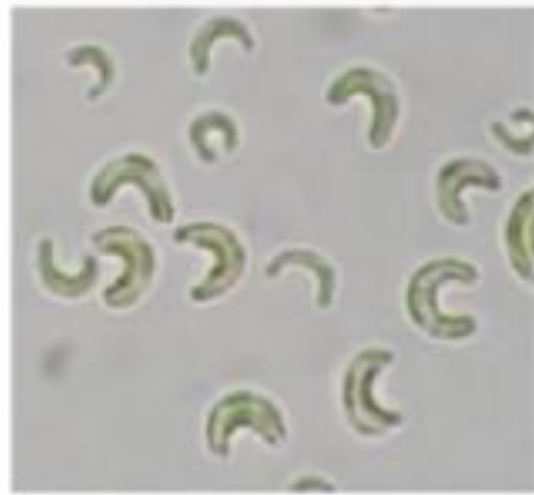
$$\frac{d[\text{H}_2\text{O}_2]}{d\tau} = -F_{\text{H}_2\text{O}_2} - \frac{k_h \cdot F_{\text{H}_2\text{O}_2} \cdot [\text{H}_2\text{O}_2]}{k_h \cdot [\text{H}_2\text{O}_2] + k_{\text{OH/BE}} \cdot [\text{BE}] + k_{\text{OH/BP}} \cdot ([\text{BE}]_0 - [\text{BE}])}$$

$k_{OH/BE} = 5.13 \cdot 10^9 \text{ M}^{-1} \cdot \text{s}^{-1}$
 $k_{OH/BP} = 8.93 \cdot 10^9 \text{ M}^{-1} \cdot \text{s}^{-1}$





*Daphnia
Magna*



*Raphidocelis
Subcapitata*



*Caenorhabditis
Elegans*

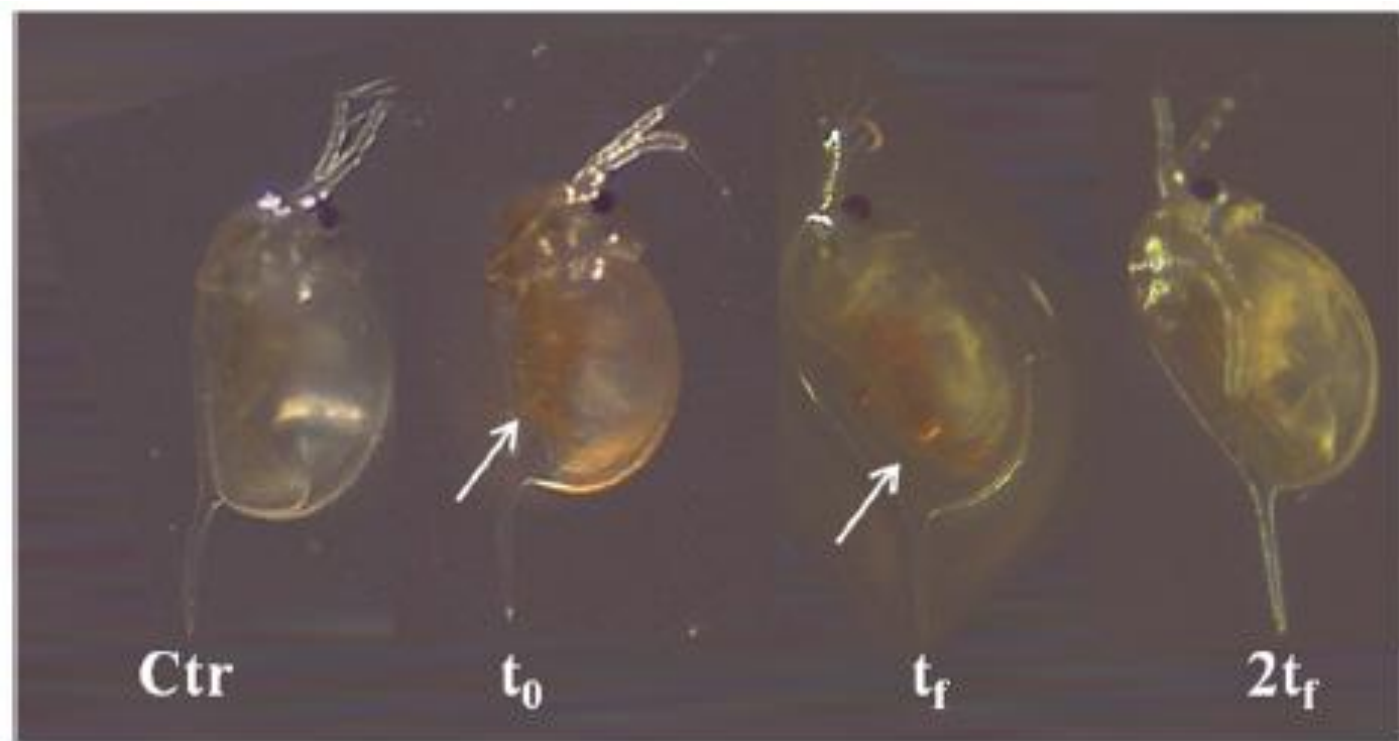


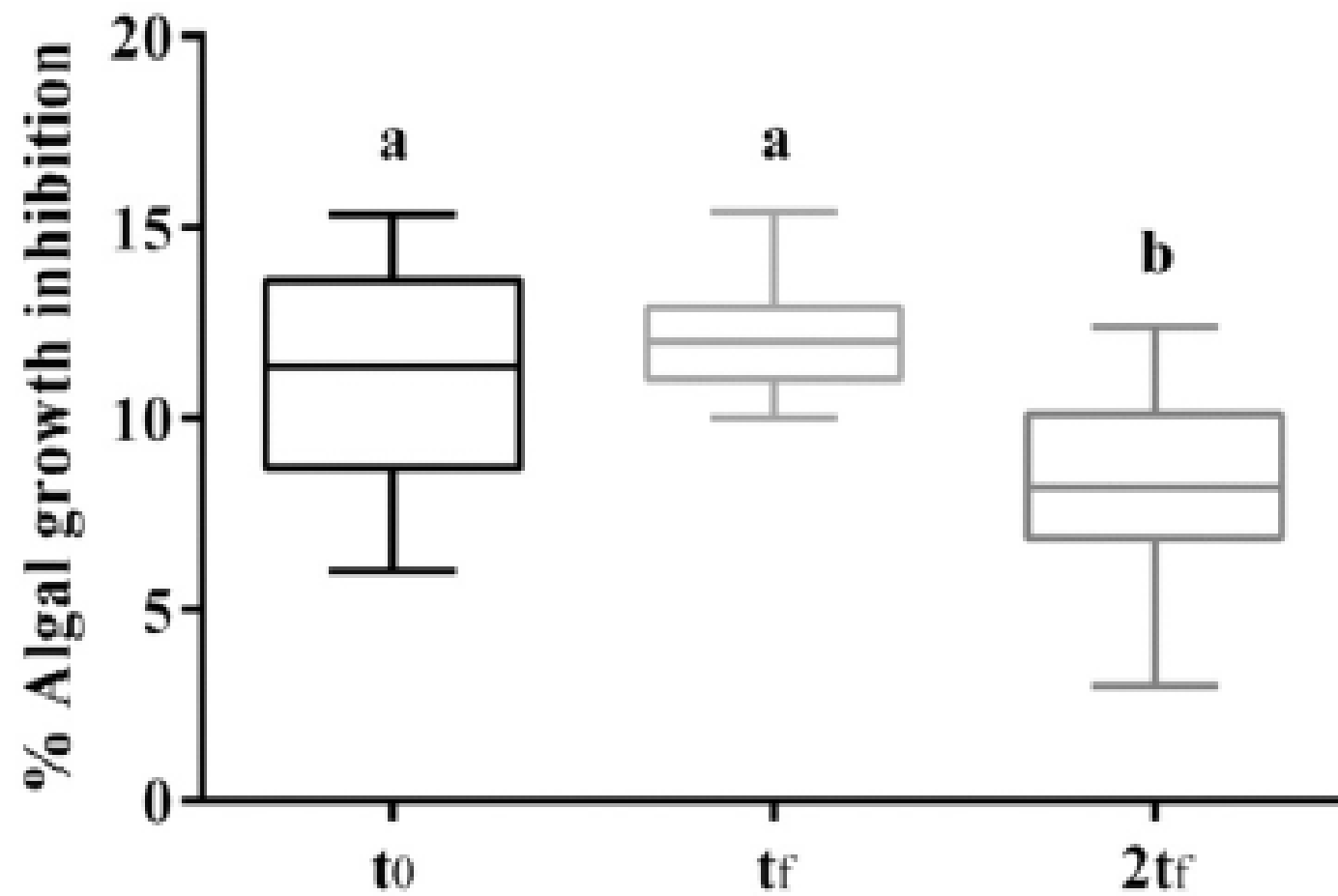
*Vicia
Faba*

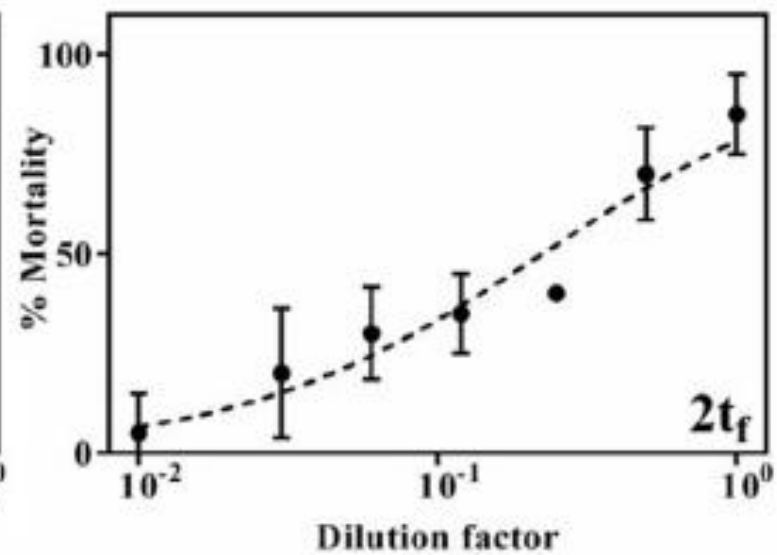
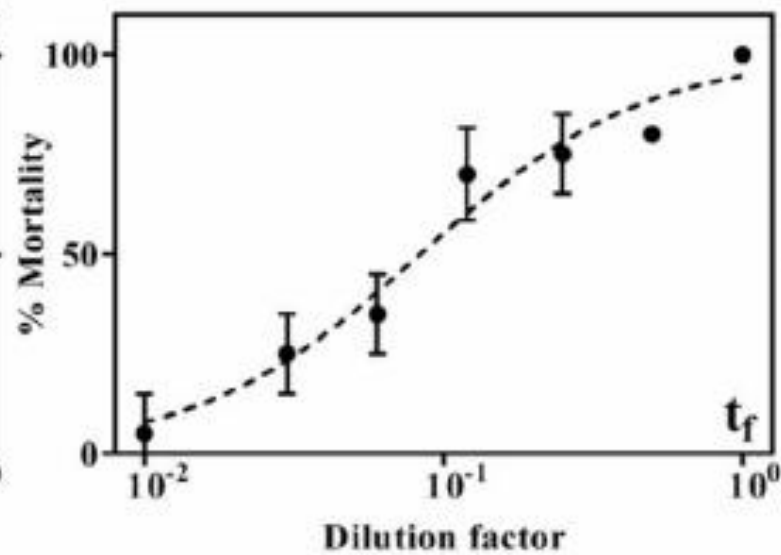
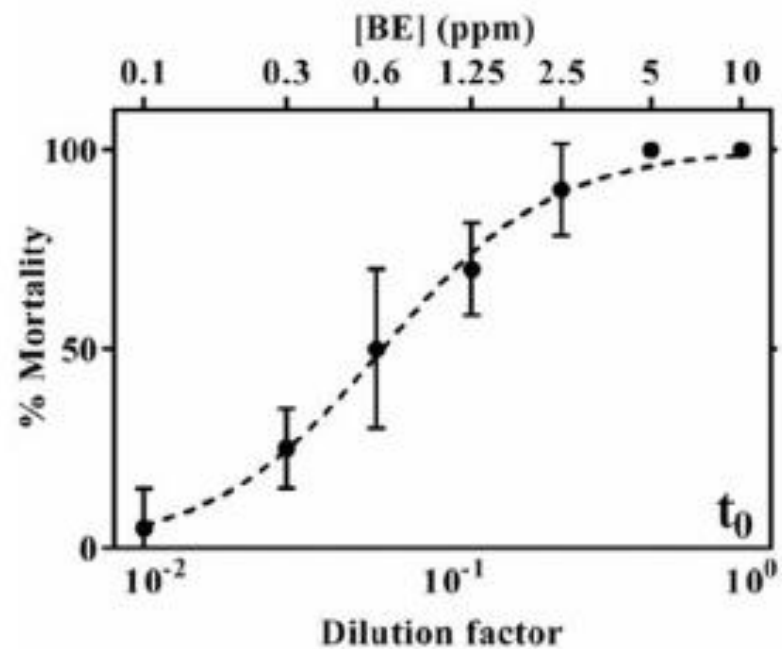
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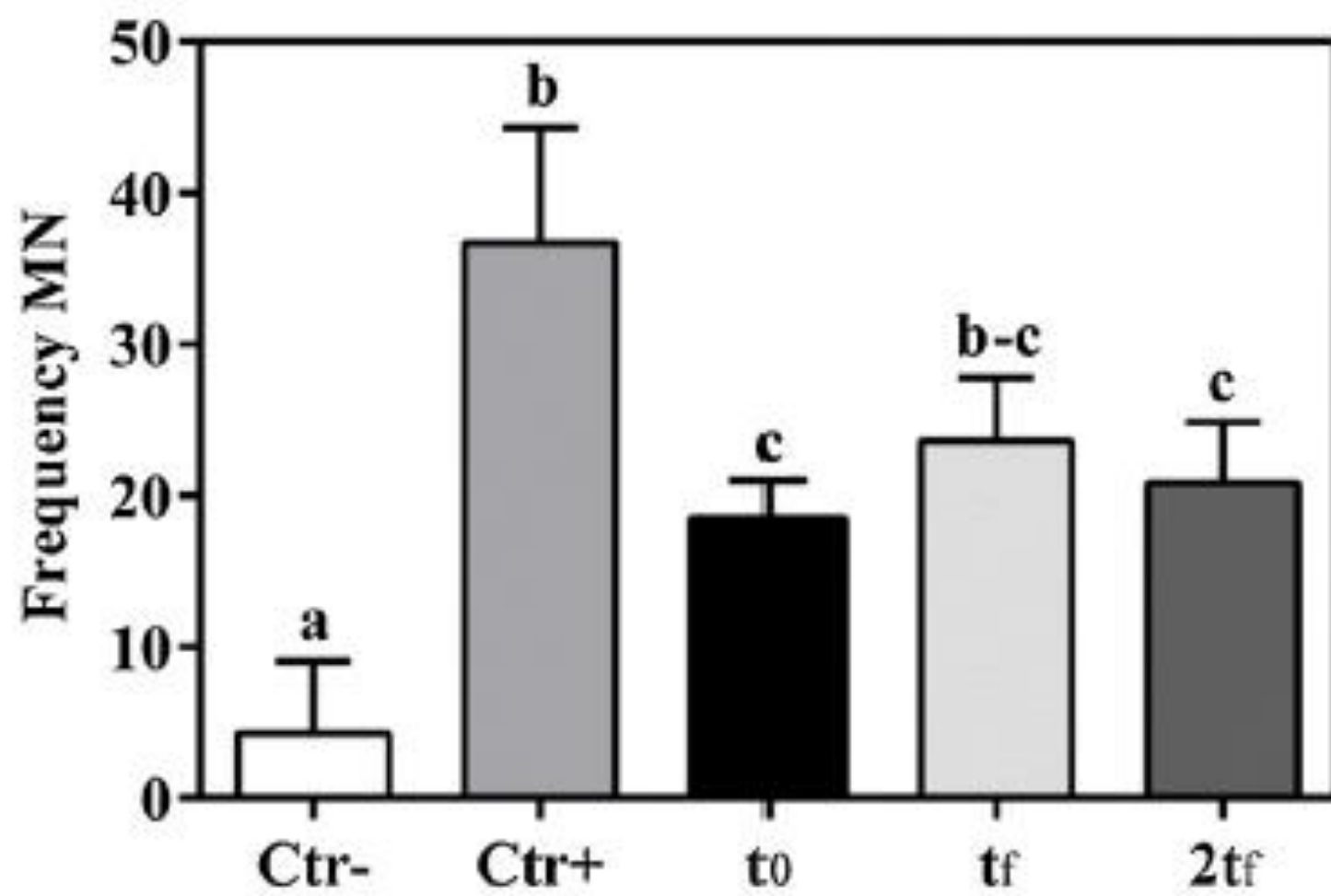


ANTONIETTA SICILIANO









**Studies on degradation of glyphosate by several oxidative chemical processes:
Ozonation, photolysis and heterogeneous photocatalysis**

<https://doi.org/10.1080/03601230903404598>