

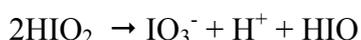
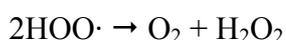
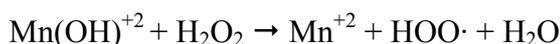
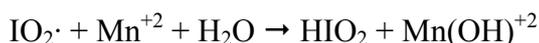
Briggs-Rauscher reaction

The skeleton of the global process of the Briggs-Rauscher reaction is as follows:

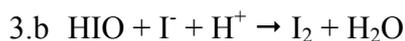
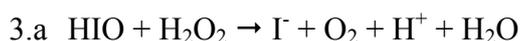
1. As soon as the solutions are mixed, iodate ion is reduced by hydrogen peroxide to produce iodous acid (HIO_2):



2. The **radical process (amber)** starts, producing hydroperoxide radicals ($\text{HOO}\cdot$) and, ultimately, hypoiodous acid (HIO):



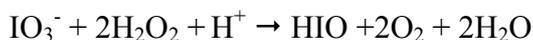
3. The hypoiodous acid follows two different pathways, one of which results in iodine:



4. Iodine reacts slowly with malonic acid, according to the following equation:



5. $[\text{HIO}]$, $[\text{I}_2]$, $[\text{I}^-]$ increase significantly since:



is faster than:



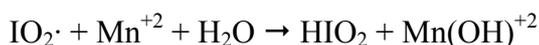
and than:



6. As $[\text{I}^-]$ increases, the reaction:



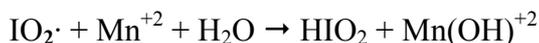
becomes faster than:



7. The radical process, therefore, stops and the excess of HIO from the reaction in Step 5 is consumed in the following **non-radical reactions (blue)**:



8. When $[\text{I}^-]$ is sufficiently low, the reactions:



become faster than:



and the **radical process (amber)** starts once again.

9. The sequence continues until the whole iodate anion and all the malonic acid have completely reacted.

This document is supporting material for the following article:

Farusi G (2009) Looking for antioxidant food. *Science in School* **13**: 39-43.
www.scienceinschool.org/2009/issue13/antioxidants