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Degradation of tetracycline in a schorl/H₂O₂ system: Proposed mechanism and intermediates

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11 **Abstract**

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13 Schorl could perform as an extremely promising catalyst for decomposing
14 tetracycline hydrochloride (TC) due to its high degradation efficiency, low cost,
15 chemical stability, easy recovery and repeatable utilization. Comparisons of TC
16 degradation indifferent systems showed that schorl/H₂O₂ system exhibited the
17 optimum pollutant elimination and TOC removal efficiencies. Kinetics and possible
18 mechanisms of TC degradation were clarified. The ·OH generated on the schorl
19 surface and O₂⁻/HO₂· were the main reactive species responsible for TC oxidation. Six
20 possible intermediates were identified, and possible transform mechanisms and
21 pathways were explored. Active radicals were inclined to attack the C=C double bond,
22 dimethylamino and phenolic moieties of TC molecular. The principal intermediate
23 products were generated through N-demethylation, oxidation and rearrangement.

24 **Keywords:** Heterogeneous Fenton; Intermediates; Kinetics; Schorl; Tetracycline

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27 **1. Introduction**

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