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In the present study we investigate the fate of citalopram (CIT) at neutral pH using advanced water treatment technologies that include O₃, ClO₂ oxidation, UV irradiation and Fenton oxidation. The ozonation resulted in 80% reduction after 30 min treatment. Oxidation with ClO₂ removed >90% CIT at a dosage of 0.1 mg L⁻¹. During UV irradiation 85% reduction was achieved after 5 min, while Fenton with addition of 14 mg L⁻¹ (Fe²⁺) resulted in 90% reduction of CIT. During these treatment experiments transformation products (TPs) were formed from CIT, where five compounds were identified by using high resolution and tandem mass spectrometry. Among these desmethyl-citalopram and citalopram N-oxide have been previously identified as human metabolites, while three are novel and published here for the first time. The three TPs are a hydroxylated dimethylamino-side chain derivative, a butyrolactone derivative and a defluorinated derivative of CIT.

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