

Table 4 Selected apparent second order rate constants for reaction of HOCl with amino acid side chains, backbone amides and models of these structures

Data from [278,281,282].

Side chain (model compound examined)	Apparent second order rate constant ($M^{-1} \cdot s^{-1}$)
Cysteine side chain (cysteine)	3.6×10^8
Glutathione (GSH)	1.2×10^8
Methionine side chain (<i>N</i> -acetyl-Met-OMe)	3.4×10^7
Cystine disulfide (3,3'-dithiodipropionic acid)	1.6×10^5
Histidine side chain (4-imidazoleacetic acid)	1.2×10^5
α -Amino group (Gly)	1.0×10^5
Lysine side-chain amine (<i>N</i> - α -acetyl-Lys)	7.9×10^3
Tryptophan side chain (<i>N</i> -acetyl-Trp)	7.8×10^3
Tyrosine (<i>N</i> -acetyl-Tyr)	47
Arginine side chain (ethyl guanidine)	19
Amide bond [Cyclo-(Gly) ₂]	25
Amide bond [Cyclo-(Ala) ₂]	8.2
Glutamine/asparagine (propionamide)	0.041

- 278 Storkey, C., Davies, M.J. and Pattison, D.I. (2014) Reevaluation of the rate constants for the reaction of hypochlorous acid (HOCl) with cysteine, methionine, and peptide derivatives using a new competition kinetic approach. *Free Radic. Biol. Med.* **73**, 60–66 [CrossRef PubMed](#)
- 281 Pattison, D.I. and Davies, M.J. (2001) Absolute rate constants for the reaction of hypochlorous acid with protein side-chains and peptide bonds. *Chem. Res. Toxicol.* **14**, 1453–1464 [CrossRef PubMed](#)
- 282 Pattison, D.I. and Davies, M.J. (2006) Reactions of myeloperoxidase-derived oxidants with biological substrates: gaining insight into human inflammatory disease. *Curr. Med. Chem.* **13**, 3271–3290 [CrossRef PubMed](#)