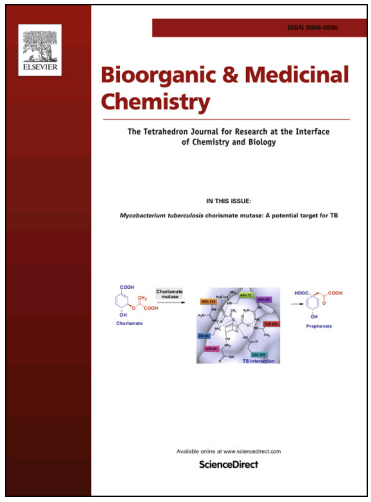
Accepted Manuscript



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PII: S0968-0896(17)30270-5
DOI: http://dx.doi.org/10.1016/j.bmc.2017.03.017
Reference: BMC 13614

To appear in: *Bioorganic & Medicinal Chemistry*

Received Date: 9 February 2017
Revised Date: 6 March 2017
Accepted Date: 8 March 2017

Please cite this article as: Mohamed, M.A., Abdel-Aziz, A.A., Sakr, H.M., El-Azab, A.S., Bua, S., Supuran, C.T., Synthesis and human/bacterial carbonic anhydrase inhibition with a series of sulfonamides incorporating phthalimido moieties, *Bioorganic & Medicinal Chemistry* (2017), doi: http://dx.doi.org/10.1016/j.bmc.2017.03.017

Synthesis and human/bacterial carbonic anhydrase inhibition with a series of sulfonamides incorporating phthalimido moieties

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Abstract. A series of sulfonamides was obtained by reacting substituted-2-(1,3-dioxo-1,3-dihydroisobenzofuran-5-carboxamido)benzoic acids with aromatic sulfonamides incorporating primary amino moieties. The new compounds were investigated as inhibitor of four carbonic anhydrase (CA, EC 4.2.1.1) isoforms, the human (h) hCA I and II, and the α- and β-class CAs from the pathogenic bacterium *Vibrio cholerae*, VchCAα and VhcCAβ. hCA I was effectively inhibited by the new sulfonamides, with inhibition constants in the range of 4.9 – 96.0 nM. hCA II also showed high affinity for these compounds (K_Is of 2.1 – 22.3 nM), whereas the two bacterial enzymes were less effectively inhibited, with K_Is of 281 – 3192 nM for VchCAα, and 5.40 – 9.26 μM for VhcCAβ. As the physiological function hCA I is poorly understood, and it was recently shown to be involved in the pathogenesis of cerebral malaria and amyotrophic lateral sclerosis, selective and effective inhibitors may be useful as tools or drugs for better understanding this abundant isoform.

Key words. Carbonic anhydrase; sulfonamide; phthalimide; *Vibrio cholerae*; β-class enzyme.

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