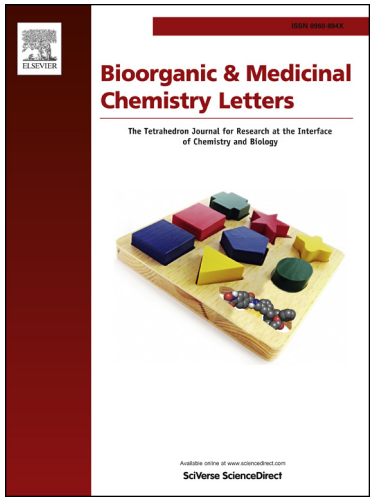


2-(Nitroaryl)benzothiazole and benzoxazole derivatives as fluorogenic substrates for the detection of nitroreductase activity in clinically important microorganisms

Marie Cellier, Amandine Gignoux, Arthur L. James, Sylvain Orenga, John D. Perry, Shaun N. Robinson, Stephen P. Stanforth, Graeme Turnbull

PII: S0960-894X(15)30209-2
DOI: http://dx.doi.org/10.1016/j.bmcl.2015.10.099
Reference: BMCL 23255

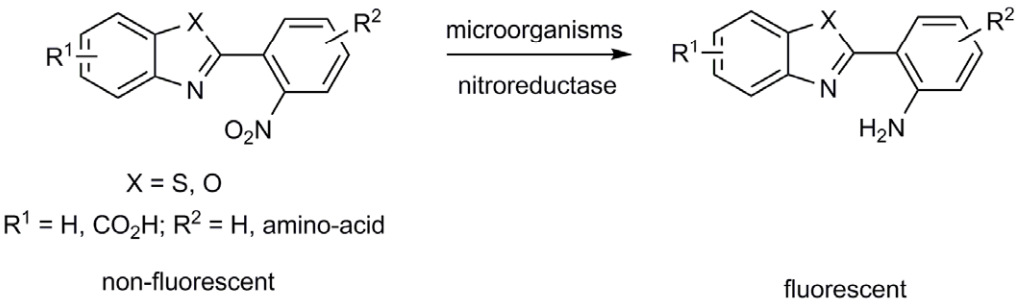
To appear in: *Bioorganic & Medicinal Chemistry Letters*

Received Date: 7 September 2015
Revised Date: 30 October 2015
Accepted Date: 31 October 2015

Please cite this article as: Cellier, M., Gignoux, A., James, A.L., Orenga, S., Perry, J.D., Robinson, S.N., Stanforth, S.P., Turnbull, G., 2-(Nitroaryl)benzothiazole and benzoxazole derivatives as fluorogenic substrates for the detection of nitroreductase activity in clinically important microorganisms, *Bioorganic & Medicinal Chemistry Letters* (2015), doi: http://dx.doi.org/10.1016/j.bmcl.2015.10.099

2-(Nitroaryl)benzothiazole and benzoxazole derivatives as fluorogenic substrates for the detection of nitroreductase activity in microorganisms

Marie Cellier, Amandine Gignoux, the late Arthur L. James, Sylvain Orenga, John D. Perry, Shaun N. Robinson Stephen P. Stanforth* and Graeme Turnbull



2-(Nitroaryl)benzothiazole and benzoxazole derivatives as fluorogenic substrates for the detection of nitroreductase activity in clinically important microorganisms

Marie Cellier,[a] Amandine Gignoux,[b,c] the late Arthur L. James,[b,e] Sylvain Orenga,[a] John D. Perry,[d] Shaun N. Robinson[b], Stephen P. Stanforth[b*] and Graeme Turnbull.[b]

[a] Research & Development Microbiology, bioMérieux SA, 3 route de Port Michaud, 38 390 La-Balme-les-Grottes, France
[b] Department of Applied Sciences, Northumbria University, Newcastle upon Tyne, NE1 8ST, UK
[c] École Nationale Supérieure de Chimie de Paris, 11 rue Pierre et Marie Curie, F75231 Paris cedex 05, France
[d] Department of Microbiology, Freeman Hospital, Newcastle upon Tyne, NE7 7DN, UK
[e] Deceased, May 2014

*Corresponding authors. Tel.: +44-191 227 4784; fax: + 44-191 227 3519; e-mail: steven.stanforth@northumbria.ac.uk

Abstract

A series of carboxy-substituted 2-(nitroaryl)benzothiazole derivatives and carboxy-substituted 2-(nitroaryl)benzoxazole derivatives were prepared and evaluated as potential nitroreductase substrates for the purpose of detecting clinically important microorganisms. Several of the substrates produced highly fluorescent colonies with the majority of a panel of 10 Gram-negative bacteria and also with two of a panel of 8 Gram-positive bacteria.

Keywords Nitroreductase, fluorescence, enzyme substrates, microorganism detection, bacterial detection