

# Accepted Manuscript

Radiosynthesis and evaluation of novel  $^{99m}\text{Tc}(\text{CO})_3$ -labelled thymidine dithiocarbamate derivatives for tumor imaging with SPECT

Xiaojiang Duan, Qing Ruan, Qianqian Gan, Xiaoqing Song, Si'an Fang, Xuran Zhang, Junbo Zhang

PII: S0022-328X(18)30334-6

DOI: [10.1016/j.jorganchem.2018.05.009](https://doi.org/10.1016/j.jorganchem.2018.05.009)

Reference: JOM 20443

To appear in: *Journal of Organometallic Chemistry*

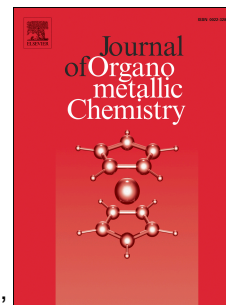
Received Date: 19 February 2018

Revised Date: 8 May 2018

Accepted Date: 9 May 2018

Please cite this article as: X. Duan, Q. Ruan, Q. Gan, X. Song, Si'. Fang, X. Zhang, J. Zhang, Radiosynthesis and evaluation of novel  $^{99m}\text{Tc}(\text{CO})_3$ -labelled thymidine dithiocarbamate derivatives for tumor imaging with SPECT, *Journal of Organometallic Chemistry* (2018), doi: 10.1016/j.jorganchem.2018.05.009.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



# Radiosynthesis and evaluation of novel $^{99m}\text{Tc}(\text{CO})_3$ -labelled thymidine dithiocarbamate derivatives for tumor imaging with SPECT

Xiaojiang Duan <sup>a</sup>, Qing Ruan <sup>a</sup>, Qianqian Gan <sup>a</sup>, Xiaoqing Song <sup>a</sup>, Si'an Fang <sup>a</sup>, Xuran Zhang <sup>a, b</sup>, and Junbo Zhang\*

<sup>a</sup> Key Laboratory of Radiopharmaceuticals (Beijing Normal University), Ministry of Education, College of Chemistry, Beijing Normal University, Beijing 100875, China.

<sup>b</sup> Department of Isotopes, China Institute of Atomic Energy, P. O. Box 2108, Beijing 102413, China

\*Corresponding Author:

For Junbo Zhang: phone +86-10-62208126, E-mail [zhjunbo@bnu.edu.cn](mailto:zhjunbo@bnu.edu.cn).

## Abstract:

A series of novel thymidine dithiocarbamate derivatives (DTC-TdR) were successfully synthesized and then radiolabelled using  $[\text{}^{99m}\text{Tc}(\text{CO})_3]^+$  core with high yields. The chemical characterizations of  $^{99m}\text{Tc}(\text{CO})_3$ -labelled dithiocarbamate derivatives have been carried out by preparing their corresponding rhenium complexes. The radiotracers were stable *in vitro*, and the partition coefficient results indicated that they were lipophilic. The cell uptake studies showed the uptakes of these  $^{99m}\text{Tc}(\text{CO})_3$ -labelled thymidine derivatives were mediated by nucleoside transporters. Biodistribution of the complexes in mice bearing tumor showed that they had high tumor uptake and good tumor/muscle ratio. A clear SPECT imaging of the tumor location was obtained in mice bearing S180 tumor with one of radiotracers, suggesting they would be potential tumor imaging agents.

## 1. Introduction

As the most established radiotracer for positron emission tomography (PET), the uptake of  $^{18}\text{F}$ -FDG (2- $[\text{}^{18}\text{F}]$ fluoro-2-deoxy-D-glucose) is strongly related with glucose metabolism [1]. Due to the presence of the Warburg effect, the uptake of  $^{18}\text{F}$ -FDG in tumor is usually significantly increased [2], making it the gold standard radiotracer for tumor detection and clinical staging. While  $^{18}\text{F}$ -FDG also accumulates in brain, inflammatory lesions and other metabolically active organs [3]. Sustained proliferation is one of the hallmarks of cancer[4], and DNA synthesis is the most

Download English Version:

<https://daneshyari.com/en/article/7755819>

Download Persian Version:

<https://daneshyari.com/article/7755819>

[Daneshyari.com](https://daneshyari.com)