



## ***In vitro* effect of dexmedetomidine on the respiratory burst of neutrophils**

S.L. Chen<sup>1</sup>, W. Zhou<sup>2</sup>, F.Z. Hua<sup>1</sup>, Y. Chen<sup>1</sup>, X.L. Zheng<sup>1</sup>, X.F. Long<sup>1</sup> and J. Lu<sup>1</sup>

<sup>1</sup>Department of Anesthesiology,  
The Second Affiliated Hospital of Nanchang University,  
Nanchang, Jiangxi Province, China

<sup>2</sup>Department of Vascular Surgery,  
The Second Affiliated Hospital of Nanchang University, Nanchang,  
Jiangxi Province, China

Correspondence author: J. Lu  
E-mail: junlu2015@sina.com

Genet. Mol. Res. 15 (2): gmr.15028069

Received November 17, 2015

Accepted January 8, 2015

Published June 3, 2016

DOI <http://dx.doi.org/10.4238/gmr.15028069>

**ABSTRACT.** The immunosuppressive effects of dexmedetomidine, a highly selective and widely used  $\alpha_2$ -adrenoceptor agonist for sedation, analgesia, and stress management, are investigated *in vitro*. In the present study, the respiratory burst of human neutrophils separated from venous blood was evaluated with dexmedetomidine treatment after *Escherichia coli* stimulation. The effects of five concentrations of dexmedetomidine (1, 5, 10, 50, 100  $\mu\text{g/mL}$ ) were evaluated by rhodamine in a flow cytometer. The nitric oxide (NO) production and nitric oxide synthase (iNOS) activity were also determined by using commercial kits. The results were compared to the positive control responses (respiratory burst without drug). We found that dexmedetomidine significantly suppressed respiratory burst, NO production, and iNOS activity after stimulation with *E. coli*, in a dose-dependent manner. The suppressive effects of dexmedetomidine

on phagocytic activity of human neutrophils were associated with respiratory burst coupled with NO production.

**Key words:** Dexmedetomidine; Respiratory burst of neutrophils; NO production; iNOS activity