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Abbreviations Used

GPx = glutathione peroxidases
ROS = reactive oxygen species
Th = T helper cell

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Response to Meyer *et al.*

Eun Sook Hwang

To the Editor:

Meyer *et al.* attempted to interpret the seemingly opposite effects of glutathione peroxidase (GPx) 1 and 2 in airway inflammation as reported in our (5) and their (2) works. Lung epithelial cells are important for the expression of a variety of chemokines in airway inflammation. In particular, eotaxin expression by lung epithelial cells increases eosinophil infiltration, which is a prominent characteristic of chronic inflammation. Although the specific expression of GPx2 in lung epithelial cells and its protective roles in ovalbumin-induced airway inflammation have been clearly validated (2), the molecular mechanisms have not yet been distinctly characterized. For instance, the effects of GPx2 (or reactive oxygen species [ROS]) on the expression of chemokines such as IP-10, MIG, CXCL10, and eotaxin in lung epithelial cells would be good to explain the protective roles of GPx2 in allergic airway inflammation. In addition, GPx2 suppresses COX2 expression in tumor migration and invasion (1), indicating that GPx2-mediated inhibition of COX-2 may prevent the synthesis of inflammation mediators leukotrienes, thromboxanes, and prostaglandins in lung epithelial cells. It is important to note that a recent report suggests that GPx1 specifically controls Th-cell differentiation by modulating ROS and subsequently inflammatory immune response (5). GPx1 deficiency increased ROS in T cells, thus resulting in decreased Th2- and Th17-cell development and attenuated airway inflammation. GPx1 is thus suggested to play a key role in fine-tuning ROS level during Th-cell differentiation. However, the precise functions of GPx1 in lung epithelial cells remain to be clarified. In addition, GPx isoforms such as GPx2, GPx1, and GPx4 could be increased in the lung by antigenic challenge (3, 4). GPx2 expression is specifically increased by NRF2 activation, whereas GPx1 and GPx4 were prominently induced by selenium in a dose-dependent manner, implying the presence of distinct signaling pathway to induce GPx isoforms in a cell-specific and signal-dependent manner. It is therefore reasonable to conclude that both GPx1 and GPx2 eliminate ROS, but the expression and regulatory mechanisms of GPx1 and GPx2 may be distinct across cell types.

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