



Forkhead box protein O1 mediates apoptosis in a cancer cervical cell line treated with the antitumor agent tumor necrosis factor- α

B. Zhang^{1,2}, L. Gui¹, L. Zhu², X. Zhao², Y. Yang² and Q. Li¹

¹College of Animal Science and Technology, Northwest A & F University, Yangling, Shaanxi, China

²College of Basic Medical Sciences, Jiamusi University, Jiamusi, Heilongjiang, China

Corresponding author: Q. Li
E-mail: liqingwangysu@aliyun.com

Genet. Mol. Res. 14 (3): 7446-7454 (2015)

Received September 9, 2014

Accepted December 11, 2014

Published July 3, 2015

DOI <http://dx.doi.org/10.4238/2015.July.3.20>

ABSTRACT. Tumor necrosis factor- α (TNF- α) is an important pro-apoptotic cytokine, which performs a broad range of immune and inflammatory functions in several vital processes. TNF- α -induced apoptosis has been confirmed, however, relatively little is known regarding the role of forkhead box class-O 1 (FOXO1) in mediating TNF- α -induced apoptosis in cervical cancer. In our study, we used the well-characterized cervical cancer cell line C-33A to investigate the role of FOXO1. The results showed that the antitumor agent TNF- α increased the expression level of FOXO1 ($P < 0.05$) and enhanced its transcriptional activity ($P < 0.05$). Furthermore, knockdown of FOXO1 repressed TNF- α -induced apoptosis and caspase-3, 8, and 9 expressions ($P < 0.05$). Collectively, these findings suggest that TNF- α upregulated the transcriptional factor FOXO1, leading to an increased expression of apoptotic gene, which leads to an increase in apoptosis.

Key words: Cervical cancer; C-33A; TNF- α ; FOXO1; Apoptosis; Caspase