Latin American Journal of Pharmacy
(formerly *Acta Farmacéutica Bonaerense)*
Lat. Am. J. Pharm. **32** (1): 107-12 (2013)

Regular Article
Received: October 30, 2012
Revised version: November 25, 2012
Accepted: December 1, 2012

Effect of Diallyl Trisulfide Derivatives on the Activation of Macrophage-Mediated Cytotoxicity

Xiaoyan HE, Junfeng YANG, Hua ZUO, Yonghuang LUO & Zhubo LI*

College of Pharmaceutical Sciences, Southwest University, Chongqing 400716, China

***SUMMARY*. Murine peritoneal macrophages were treated with four synthesized diallyl trisulfide (DATS) derivatives, 1,3-di(but-3-enyl) trisulfane (DATS-1), 1,3-bis(2-methylallyl) trisulfane (DATS-2), 1,3-bis(3-methylbut-2-enyl) trisulfane (DATS-3), and 1,3-di (pent-4-enyl) trisulfane (DATS-4), at the concentrations of 20, 40, 80, and 160 μg/mL for 24 h. The effects of DATS and its derivatives (DATSs) on macrophage's tumoricidal activity to human prostate cancer (PC-3), phagocytosis and the production of nitric oxide (NO) and tumor necrosis factor-α (TNF-α) were investigated. The results demonstrated that DATSs induce cytotoxicity of macrophages to PC-3, and increase phagocytosis and the releasing of NO and TNF-α in a dose-dependent manner. DATSs-induced antitumor activity of macrophages was associated with the phagocytosis, TNF-α and NO. It was suggested that the anti-tumor mechanism of DATSs was related with the DATSs-induced macrophage function. Additionally, DATS-1 or DATS-2 was more effective on macrophage function than DATS, DATS-3 or DATS-4 which might be caused by the different numbers of carbons in DATSs' structure. These evidences indicated that DATSs were effective modulator of macrophage cytotoxicity and secretory, and the different effects were dependent on the structure of DATSs.**

KEY WORDS: Cytotoxicity, Diallyl trisulfide derivatives, Macrophage, NO, phagocytosis, TNF-α.

* Author to whom correspondence should be addressed. *E-mail:* zb63@163.com