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**Preventive effects of Resveratrol against chemotherapy induced cognitive impairment are associated with the modulation of neuro-inflammation and synaptic plasticity in mice****Shi Dongdong, C M Dong, L C Ho, E X Wu, Q Li, X M Wang and Z J Zhang**  
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Chemotherapy-induced cognitive impairment, often referred to as chemobrain, is a potential long-term side effect, clinically manifesting as difficulty in learning and memory, problems with processing speeds and executive function, resulting in reduced quality of life in cancer survivors. Resveratrol is a novel natural agent that may have the potential to improve cognitive performance. In the present study, we first showed that Resveratrol has no proliferation effects in the two breast cancer cell lines, MCF-7 and MAD-231 cells. In a separate experiment, female C57 mice were treated with 100 mg/kg Resveratrol for 3 weeks. Three injections of chemotherapeutic agents of Docetaxel (10 mg/kg), Adriamycin (10 mg/kg) and Cyclophosphamide (40 mg/kg) (DAC) in combination were given in the middle week at every three days. Following the completion of Resveratrol treatment, animals were tested in water maze at Day 1 and with manganese-enhanced magnetic resonance imaging (MEMRI) at Day 8. Resveratrol treatment resulted in significantly longer duration and more number of entries into the target quadrant than DAC-treated animals. Resveratrol also markedly lowered the level of TNF- $\alpha$  and IL-6 in the blood, the whole brain, the prefrontal cortex and the hippocampus. Resveratrol treatment further increased the intensity of MEMRI in the dentate gyrus, CA1 and CA3 subregions of the hippocampus. The duration and number of entry in water maze were negatively correlated with TNF- $\alpha$  and IL-6 concentration but positively correlated with MEMRI intensity in several tissues examined. Resveratrol also reversed DAC-induced suppression of the expression of brain derived neurotrophic factor (BDNF), the related receptor tropomyosin receptor kinase B (TrkB) and the N-methyl-D-aspartate receptor (NMDR1) in the prefrontal cortex and the hippocampus. These results indicate that Resveratrol can prevent cognitive impairment from chemotherapy probably via regulating neuroinflammation and synaptic plasticity in related brain regions.

**Biography**

Shi Dongdong is currently a PhD student from The University of Hong Kong, Hong Kong. She has experience in analysis and neurobiology. She has skills about operating analysis instruments like HPLC, UPLC, PCEC, HPLC-ELSD, HPLC-MS, UPLC-MS, etc. and in molecular and cellular biology techniques including cell culture, cell viability assay, FACS analysis, PCR, Western blot as well as about proteomics and metabonomics.

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