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The combination of 1 α ,25dihydroxyvitaminD3 with resveratrol prevents endoplasmic reticulum stress-mediated neuronal degeneration by improving insulin signaling and inhibiting tau hyperphosphorylation in SH-SY5Y cells

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Endoplasmic reticulum stress (ER stress) is a critical factor involved in the pathogenesis of AD. Vitamin D and resveratrol are two nutritional factors that have reported neuroprotective effects, and findings from cellular model suggest that resveratrol could potentiate vitamin D's effects. We aimed to determine the effects of vitamin D & resveratrol on ER stress mediated neurodegeneration and whether synergistic effects existed. Tunicamycin (2 μ M) was utilized to induce ER stress in SH-SY5Y cells, cells were then incubated with vitamin D (10^{-7} , 10^{-8} and 10^{-9} M) and resveratrol (25 μ M). The combination of vitamin D & resveratrol completely reversed tunicamycin induced cytotoxicity in SH-SY5Y cells, as well as elevation in ER stress markers (i.e. GRP78, p-eIF2 α and CHOP), insulin signaling disruption (i.e. elevation in p-IRS-1serine307 and reduction in p-Akt serine473) and tau phosphorylation (i.e. reduction in p-GSK3 β serine9, and elevation in p-Tau serine396 & 404). Further studies are required to clarify whether the observed synergistic effects in the present study would also existed *in vivo*, this will lay scientific foundation whether the combination of vitamin D with resveratrol might be an effective maneuver in the prevention and treatment of AD in human subjects.

Biography

Zhongxiao Wan has completed her PhD at the age of 29 years from University of Alberta and postdoctoral studies from University of British Columbia. She is now working at Soochow University as a research fellow. She has published approximately 16 papers in reputed journals in obesity and Alzheimer's disease related fields.

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