

5th International Conference on

Alzheimer's Disease & Dementia

September 29-October 01, 2016 London, UK

Vitamin D and resveratrol prevents cognitive decline via reduces APP amyloidogenic processing in the SAMP8 mice

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Alzheimer's disease is the most prevalent cause of progressive dementia in the elderly. Vitamin D (VD) and resveratrol (RSV) are two nutritional factors that have known neuroprotective effects. We aimed to explore whether the combination of VD with RSV might be more effective for reversing memory impairments shown by SAMP8 mice than intervention independently, as well as the underlying mechanisms. SAMP8 mice and SAMR1 were randomized into 5 groups: SAMR1, SAMP8, SAMP8 with VD (VD), SAMP8 with RSV (RSV) and SAMP8 with both VD and RSV (VDRSV). At the end of 24 weeks intervention, Morris water maze test was performed to assess the cognitive function; hippocampus and parietal cortex were dissected for further analysis. The combination of VD and RSV (VDRSV) is more effective for reversing cognitive impairment than intervention independently as demonstrated by the increased time spent in target quadrant and number of crossing. In the hippocampus, SAMP8 mice has elevated APP and BACE1 protein expression compared to SAMR1 mice; VDRSV has significant reduced expression of BACE1 compared to SAMP8 group. In the cortex, SAMP8 group has elevated APP, BACE1 and cathepsin B protein expression compared to SAMR1 group, VDRSV group has significant reduced expression of both APP and cathepsin B expression compared to SAMP8 group. Meanwhile, VD+RSV significantly reduced elevated A β_{42} levels in SAMP8 mice. In conclusion, the combination of VD with RSV is more effective for reversing cognitive impairment in SAMP8 mice, this might be associated that the combination might positively affect APP amyloidogenic processing, consequently A β_{42} burden.

Biography

Lili Xin has completed her PhD at the age of 25 years from Huazhong University of Science & Technology and postdoctoral studies from Soochow University. She is now working at Soochow University as an associated professor. She has published approximately 6 papers in reputed journals.

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