Companion retards the development of memory deficit in APP/PS1 mice

Ya-Hsin Hsiao and Po-Wu Gean

Institute of Clinical Pharmacy and Pharmaceutical Sciences, National Cheng-Kung University, Tainan, Taiwan 701

Alzheimer’s disease (AD), a progressive neurodegenerative disease, is the most common cause of dementia in aged person. Studies have demonstrated beneficial effects of social support on aging. This study is to examine whether companion retards AD development in APP/PS1 mice. APP/PS1 mice weaning at 6 months old were randomly assigned to group that cohouse with 1, 3, or 6 month-old WT mice for 3 months. Until at the age of 9 months, APP/PS1 mice were tested for fear-conditioning paradigms to test contextual and cue memory. In addition, APP/PS1 mice of group housing (no new companion treatment) were used as a control. We found that improvement of memory was higher in companion with 1-month WT mice than in other groups. Therefore, we choose 1-month WT mice as our companion model. We divided bad or good memory of aged APP/PS1 mice as unsusceptible or susceptible to companion group. The results show that $A_42/A_40$ ratio and calpain activity were significantly lower in the susceptible APP/PS1 mice than in the unsusceptible groups. These results suggest companion attenuates the increased $A_42/A_40$ ratio, calpain activity and rescues the memory deficit in APP/PS1 mice.