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Effect of Supplementation of a Whey Peptide Rich in β -Lactolin on Cognitive Performance in Healthy Adults: Randomized, Double-Blind, Placebo-Controlled Study

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Introduction: With rapid increase of aging worldwide, the number of people suffering from cognitive decline and dementia has been rapidly increasing. Numerous epidemiological and clinical studies have shown that consumption of dairy products have beneficial effects on cognitive decline and dementia in elderly. Our previous demonstration using pharmacologically-induced amnesia model mice identified tryptophan-tyrosine-related peptides, especially glycine-threonine-tryptophan-tyrosine (GTWY) of lactotetrapeptide, b-lactolin, as responsible agents improving cognitive decline in whey digestions, and we have originally developed GTWY-rich whey peptide by a specific enzymatic digestion. However, the effect of GTWY-rich whey peptide on cognitive functions in human has not been investigated. The present study is the first clinical trial evaluating the effects of GTWY-rich whey peptide on cognitive functions in a randomized, double-blind, placebo-controlled design.

Methods: Healthy middle to older adults, aged from 45 to 64 years, with a self-awareness of cognitive decline were recruited. 101 eligible subjects received either whey peptide tablets containing 1 g of the GTWY-rich whey peptide per day, which included 1.6 mg of GTWY, (N = 50) or placebo containing the same amount of maltodextrin (N = 51) for 12 weeks. Changes of cognitive functions from 0 week of the intervention were assessed using neuropsychological tests assessing memory functions (word recall, story recall and verbal fluency test) and attention and executive functions (stroop test, digit span, and paced auditory serial addition test) at 6 and 12 weeks.

Results: The change of verbal fluency test (VFT) score evaluating long-term memory retrieval at 12 weeks in whey peptide group tended to be higher than that in placebo group. Subgroup analysis showed that in the subjects with high-level of subjective fatigue measured by visual-analog scale, the changes of VFT, stroop test evaluating inhibition of executive functions and subjective memory function test at 6 weeks in whey peptide group were significantly higher than those in placebo group. The change of VFT score was also significantly higher in subjects with high fatigue measured by profile of mood status.

Discussion and Conclusions: The present study suggests that consumption of GTWY-rich whey peptide improve cognitive functions, especially memory retrieval and executive function, in healthy middle to older adults, with high subjective fatigue. It is also suggested that prefrontal cortex functions, especially dorsolateral prefrontal cortex is associated with the effects of the whey peptide. Consumptions of 1 g GTWY-rich whey peptide in daily life are safe and easy, which might be a practical approach to support cognitive function.

Conflict of Interest

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