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**File: ■ Ginkgo (*Ginkgo biloba*)
■ Asian Ginseng (*Panax ginseng*)
■ Cognition**

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RE: Ginkgo, Ginseng, and Royal Jelly Combination Improves Memory in Patients with Mild Cognitive Impairment

Yakoot M, Salem A, Helmy S. Effect of Memo[®], a natural formula combination, on Mini-Mental State Examination scores in patients with mild cognitive impairment. *Clin Interv Aging*. 2013;8:975-981.

Ginkgo (*Ginkgo biloba*) and Asian ginseng (*Panax ginseng*) are used for memory loss. Ginkgo has antioxidant, free radical scavenging, neuroprotective, and antiplatelet aggregation effects; beneficial effects in ischemia-reperfusion injury, hypoxia, cerebrovascular disease, cognitive deficits, and dementia have also been shown. Human and animal studies show that Asian ginseng improves abstract thinking, mental abilities, stamina, and endurance. Royal jelly is a honey bee secretion with high nutritional value that is rich in health-promoting substances such as sterols, phosphorus compounds, fatty acids, and acetylcholine. Royal jelly contains 2 unique substances – (1) the fatty acid 10-hydroxy-trans-2-decenoic acid which has been reported to promote neurogenesis, and (2) adenosine monophosphate (AMP) N1-oxide which induces neural cell proliferation and has been shown to improve cognitive impairment in mice.

It is hypothesized that a combination of ginkgo, ginseng, and royal jelly may have additive and complementary effects. The purpose of this randomized, double-blind, placebo-controlled multicenter study was to evaluate the effect of a proprietary supplement called Memo[®] (Pharco Pharmaceuticals; Alexandria, Egypt) on mild cognitive impairment. One capsule of Memo contains 750 mg lyophilized royal jelly standardized to at least 6% 10-hydroxy-2-decenoic acid, 120 mg ginkgo extract standardized to contain 24% flavonoid glycosides and 6% terpenoids, and 150 mg of *P. ginseng* alcohol root extract (containing 40%–80% ginsenosides).

Patients (n = 66, aged 50-80 years) were recruited from 2 outpatient clinics in Alexandria, Egypt. Included patients complained of memory impairment or forgetfulness and were diagnosed with mild cognitive impairment according to the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR)*. Patients were excluded if they had an established diagnosis of dementia or a baseline Mini-Mental State Examination (MMSE) score < 21; current treatment for dementia

(except those with only mild impairment who stopped treatment at least 1 month prior to enrollment); a recent history or current treatment for any specific acute acquired brain injury; a history or current treatment for major depressive or psychotic illnesses; were critically ill; had severe anemia; or had vital organ dysfunction. Patients were randomly assigned to receive either 1 capsule of Memo or placebo for 4 weeks. The outcome measure was a change in the MMSE score from baseline to 4 weeks.

At baseline, both groups had similar MMSE scores and demographic characteristics. After 4 weeks of treatment, the Memo-treated group had a mean 2.1-point improvement in the MMSE score compared with baseline, which was a statistically significant improvement ($P < 0.0001$). Also, the Memo-treated group had a statistically significant improvement in MMSE score compared to the placebo group at 4 weeks ($P < 0.0001$). The placebo group did not significantly improve compared with baseline. All of the data remained constant even after adjusting for age and educational level. There was no effect of gender on the change from baseline. It is unclear whether a 2.1-point increase in MMSE score translates to meaningful improvements in cognitive function; the authors do not discuss clinical relevance of these findings.

No serious adverse events were reported in either group; mild nausea, dyspepsia, and transient headache were reported in 3 patients in each group. Improved sexual performance and libido was reported by men treated with Memo; however, this result did not reach statistical significance.

According to the authors, this is the first study that evaluated the addition of royal jelly to a combination of ginkgo and Asian ginseng for the improvement of mild cognitive impairment. The authors conclude that the combination of these 3 ingredients may be beneficial in the treatment of cognitive decline during aging, as well as in the early phases of dementia and Alzheimer's disease. They acknowledge that financial constraints limited this study to the use of MMSE scores only for inclusion criteria and outcome measure. Larger studies of longer duration employing additional measures of cognitive function are needed to confirm these findings.

—Heather S. Oliff, PhD

Referenced article can be found at www.dovepress.com/effect-of-memoreg-a-natural-formula-combination-on-mini-mental-state-e-peer-reviewed-article-CIA.

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