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**Is *Ginkgo biloba* Effective and Safe for Dementia and Cognitive Impairment?**

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*Question*

Is *Ginkgo biloba* effective and safe for dementia and cognitive impairment?

*Data Source*

Cochrane systematic review of randomized controlled trials [1]. Trials were identified on 26 June 2002 through a search of the Cochrane Dementia and Cognitive Improvement Group's Specialized Register, which contains records from all the main medical databases (MEDLINE, EMBASE, CINAHL, PsycINFO, SIGLE, LILACS), from ongoing trials databases such as Clinicaltrials.gov and Current Controlled Trials and many other sources. The search terms used were ginkgo\*, tanakan, EGB-761, EGB761 and EGB 761.

*Patients*

Patients with acquired cognitive impairment, including dementia, of any degree of severity.

*Treatment*

*Ginkgo biloba* at any strength and over any period. *Ginkgo biloba* preparations are based on extracts of the leaves of the maidenhair tree, and include some compounds found in no other plants. The most commonly used preparation was a standard extract, EGb 761, containing 24 mg of total flavone glycosides and 6 mg of ginkgolides per 100 mg. It is produced from the ground-up leaves and contains 24% w/w (weight of active compound/total weight of extract) flavone glycosides and 6% w/w terpene lactones. The daily dose ranged from 80 to 600 mg/day, but was usually less than 200 mg/day.

*Outcome Measures*

Clinical global improvement (CGI) as assessed by a physician. Cognition, activities of daily living and emotional function as assessed by cognitive tests or rating scales. The number of patients experiencing adverse events. The number of patients dropping out before the scheduled end of treatment.

*Quality of Studies*

Many of the studies were considered of poor methodological quality. They had used unvalidated outcome measures that were inadequately described and reported. These were amongst the older, smaller studies. There are four recent studies that are much larger. Although generally of better methodological quality, one introduced possible bias by allowing patients who did not appear to be improving to leave the trial early and receive active treatment.

**Table 1.** Benefit and risk of *Ginkgo biloba* (any dose) in dementia

Events/ treatment	Events/ placebo	OR	95% CI	ARR, %	p
CGI					
57/79 (72)	42/77 (55)	2.16	1.11–4.20	17	0.02
Adverse events					
47/202 (23)	50/197 (25)	0.89	0.56–1.41	2	0.61

Figures in parentheses represent percentages. OR = Odds ratio; CI = confidence interval; ARR = absolute risk reduction.

*Main Results*

3,106 patients in 33 studies were included, but much smaller numbers contributed to the results (table 1). The number of patients with improvement on the CGI scale (dose greater than 200 mg/day) at 24 days was higher than with placebo.

There were no significant differences in the proportion of patients experiencing adverse events.

*Conclusion*

Overall, some small improvements attributable to *Ginkgo biloba* are seen in global assessment. However, the follow-up is very short and the quality of many studies very poor. The relationship between dose and effect has not been systematically investigated, but there is no evidence of a dose-related effect from the available trials. A large recent trial using a very low dose showed no statistically significant effect of *Ginkgo biloba* compared with placebo. There appear to be no adverse effects.

A number of older trials reported a highly significant benefit of *Ginkgo biloba* compared with placebo, but the methodology, the analyses and reporting of results are open to criticism. The more recent trials might be expected to provide more reliable results owing to improved methodology and larger size. Two of these trials show no statistically significant benefit, one has not published sufficient information for interpretation and another, which reported evidence of benefit, used unsound methods.

*Comment*

*Ginkgo biloba* has a long history of medicinal use in China, and is now frequently taken in Europe and the USA. A standard preparation is one of the top five prescription drugs in Germany. In most countries, preparations of *Ginkgo biloba* are available without prescription. The available evidence does not establish the efficacy of *Ginkgo biloba* for dementia or cognitive decline.

*Reference*

- 1 Birks J, Grimley Evans J: *Ginkgo biloba* for cognitive impairment and dementia (Cochrane Review); in: The Cochrane Library, issue 1, 2003, Update Software.