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# Ginkgo Biloba and Alternative Therapies

By improving blood flow in arteries and capillaries and enhancing blood flow to the brain, Ginkgo biloba is said to be effective in treating ailments associated with decreased cerebral blood flow, particularly in older individuals. As with all other therapies, however, potential benefits of this herbal product must be balanced against possible risks.

*by Peter Lin, MD*



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The explosion of herbal products/remedies into the consumer market has taken grip of Western society over the past several years. There is a perception among the general public that “herbal” is analogous to “natural,” and that herbal products have no side effects. There also is a belief that herbal products will act exactly how their labels say they will, regardless of whether they have been tested and/or passed food and drug laws. In this age of “smart-shopping,” however, healthcare professionals and lay-people alike should be asking, “What is the evidence? What are the pitfalls of these products? If an herb is efficacious and has no side effects, shouldn’t everyone be taking it?” The information that follows may help clarify these questions.

## What is Ginkgo Biloba?

The Ginkgo biloba tree originated in China thousands of years ago and is one of the oldest trees on earth. It produces a fruit which has a seed in the centre. Ginkgo extract was originally taken from both this seed and the leaves of the tree. The very popular Ginkgo biloba currently available in stores is an extract of just the leaves. The standardized extract, EGb 761, contains ginkgo-flavonol glycosides (24%) and terpene lactones (6%), such as ginkgolides A, B, C and J and bilobalide.<sup>1</sup>

The hype over this herb, among the general public, is due to claims of its ability to improve concentration and memory.

Because Ginkgo biloba is a combination of several compounds, it has several effects:

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**Antioxidative.** Ginkgo biloba's antioxidant effects have been suggested as the mechanisms behind the protection of neurons from oxidative stress.

**Promotes vasodilation.** Ginkgo biloba helps increase blood flow and has been studied in patients with peripheral vascular disease.

**Antiplatelet activity** also has been associated with Ginkgo biloba.

With this host of effects, Ginkgo biloba has been used in a variety of conditions including cerebral insufficiency, tinnitus, vertigo, claudication and dementia.

### **What is the Evidence for the Use of Ginkgo Biloba in Dementia?**

A major study in Ginkgo biloba's favor was conducted by Le Bars et al in 1997.<sup>2</sup> This study contributed some evidence to the memory-enhancing components of Ginkgo biloba. The study assessed and compared EGb 761

Instrument (GERRI), and the Clinical Global Impression of Change (CGIC).

In the intent-to-treat analysis, the EGb group had an ADAS-Cog score 1.4 points higher than the placebo group ( $p = 0.04$ ) and a GERRI score 0.14 points higher than the placebo group ( $p = 0.004$ ). With the evaluable data set, 27% of patients treated with EGb achieved at least a four-point improvement on the ADAS-Cog, compared to 14% treated with placebo ( $p = 0.005$ ).

On the GERRI, 37% of the patients taking EGb were considered to be improved, compared to a 23% improvement in patients taking placebo ( $p = 0.003$ ). No difference was seen between EGb and placebo groups using the CGIC.

The results above led to the conclusion that EGb induced positive changes in cognitive performance and social functioning, although these changes were modest at best.

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(120 mg/day) to placebo in Alzheimer's disease (AD) and multi-infarct dementia. The trial took place over a 52-week period. A total of 309 patients were recruited but only 202 provided evaluable data at 52 weeks. The primary outcome measures used were the Alzheimer's Disease Assessment Scale-Cognitive subscale (ADAS-Cog), the Geriatric Evaluation by Relative's Rating

### **Side Effects**

Obviously, most (if not all) products with medicinal properties have side effects. The role of physicians is to balance the benefits versus the side effects of any product they prescribe. If a product has modest benefits but no side effects, then it is still worth using.

Although the clinical trial by Le Bars et al reported equal side-effect profiles for both groups of

patients, throughout the literature there have been sporadic case reports of bleeding complications with Ginkgo biloba because of its antiplatelet effects. A product with antiplatelet properties can cause spontaneous bleeding on its own, or can cause bleeding complications by enhancing the effects of other antiplatelet or anticoagulant agents, such as warfarin, acetylsalicylic acid (ASA) and/or non-steroidal anti-inflammatory drugs (NSAIDs). Hence, these combinations must be avoided.

### **What are the Concerns Regarding Use of Ginkgo Biloba?**

As mentioned above, there have been a number of cases of complications associated with Ginkgo biloba. Some of these complications are itemized below.

**Bleeding.** One case involved a 56-year-old man who suffered a spontaneous intracerebral hemorrhage after self-medicating on a regular basis with herbal preparations of Ginkgo biloba.<sup>3</sup>

Another case involved a post-laparoscopic cholecystectomy patient. The patient had post-operative bleeding complications, possibly related to Ginkgo biloba usage.<sup>4</sup> In view of a case report such as this, physicians are urged to inquire about Ginkgo biloba usage and to recommend stopping it at least one week prior to surgery.

**Seizures.** There also is concern about the ingestion of large quantities of ginkgo nuts (seeds of Ginkgo biloba). A 36-year-old woman reportedly consumed 70 to 80 ginkgo nuts and began experiencing generalized con-

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vulsions four hours after eating them.<sup>5</sup> Apparently, she was taking the nut to improve her memory. She had no prior seizure history.

**Drug-drug interactions.** Patients with AD are elderly and are typically taking multiple medications—including ASA. All drugs have the potential to interact with each other and cause adverse effects. Adding Ginkgo biloba to a therapeutic regimen (e.g., ASA) increases an already heightened risk for adverse interactions—particularly bleeding complications.

**Lack of regulation.** Unfortunately, herbal products, including Ginkgo biloba, are not regulated, which means they do not have to be proven safe or effective to be sold. The ingredients and the manufacturing process do not have to follow or meet any specific guidelines. The active ingredients may or may not be in the same proportions from one prepa-

ration to the next and, in some instances, contaminants may pass undetected into the product.

### Conclusion

Despite the fact that Ginkgo biloba has some beneficial properties (e.g., antioxidant effects), the risk of using this drug is too

high at the present time. The benefits are marginal but the risks are quite real and significant. Further research needs to be done to find the active ingredient in Ginkgo biloba. This ingredient could then be purified in order to eliminate some of its associated side effects. The opti-

mum dosing range also needs to be determined. The human body does not discriminate between a drug and a herb. Both are recognized and metabolized in much the same way. Before physicians can start recommending Ginkgo biloba to patients as a treatment for demen-

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tia, the herb needs to be studied and tested thoroughly—just as conventional medicines. The same rules and regulations should apply. In other words, the healing powers of one of the world's oldest trees are still a mystery that requires further study in order to ensure safe usage by patients.

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