

Ginkgo Biloba

History

- The ginkgo tree is the oldest living tree species in the world; individual trees can live for hundreds of years.
- Extracts are made from the tree's fan-shaped leaves. Each leaf has 2 lobes ("biloba").
- Has been used in ancient Chinese medicine for thousands of years.
- The most commonly used botanical supplement in the U.S. and Germany.

Most studied uses

Dementia, peripheral vascular disease (PVD)

Other common uses

Tinnitus, macular degeneration, asthma, age-related memory loss, prevention of high altitude sickness, memory enhancement in healthy persons.

Summary evaluation

- Dementia: ginkgo may be modestly effective, although data are limited and clinical studies are inconsistent. Improvement may not be much different from cholinesterase inhibitors, another common treatment for dementia, although ginkgo is much less expensive. Patients should be warned about possible bleeding, especially when ginkgo is used with aspirin.
- Peripheral vascular disease: ginkgo may be modestly effective, although the clinical significance of the scant data is limited. Regular exercise is far more effective than ginkgo or pentoxifylline, which is the other medication sometimes used for PVD.

Pharmacology

- Extracts contain a mixture of flavonoids, terpenoids, and phenolic acids.
- Bioavailability is 80-90%. Time to peak concentration of various constituents is 2-3 hrs.

Mechanism of action

- Terpenes appear to inhibit platelet activating factor.

- Flavonoids may have antioxidant properties.
- Ginkgo extracts may also inhibit nitric oxide, thereby leading to vascular relaxation.

Clinical studies

- For dementia, a few trials have shown modest benefit in cognitive scores compared to placebo, although the benefits are small, and of uncertain clinical significance. Some studies have been negative.
- The trial with the best methodology (LeBars 1997) randomized 309 patients to ginkgo 40 mg tid or placebo and found that after 52 weeks more patients in the ginkgo arm showed improvement (27% vs. 14%, P=.005). Methodological concerns included a very high drop out rate and uncertain effect on functional status or quality of life, although the overall study design was very good.
- A recent study from the Netherlands (van Dongen 2000) in a heterogeneous group of patients found no benefit from ginkgo 80 mg or 120 mg taken bid, and in fact found a slightly worsened self-perceived health status in those who took ginkgo compared to those who took placebo.
- One well-done RCT showed no benefit in using ginkgo for memory enhancement. (Solomon 2002)
- For peripheral vascular disease: Small studies of poor methodological quality suggest that symptoms may be slightly better with ginkgo compared to placebo. (Pittler 2000)

Adverse effects

- Well tolerated - rarely may cause GI upset, headache, dizziness, or bleeding.
- There are case reports of ginkgo-associated seizures and cerebral hemorrhage.

Contraindications/cautions

- Avoid concomitant use with warfarin, aspirin, or other antiplatelet agents.
- Discontinue use 7 days prior to surgery.
- Avoid in patients with bleeding or seizure disorders.

Important drug/herb interactions

- Ginkgo can potentiate bleeding risk in patients taking anticoagulants or antiplatelet drugs such as aspirin.

Formulation and dosage

- Dosages studied in trials vary, ranging from 40 mg tid to 120 mg bid.
- Standardized extracts used in trials contain 24% flavonoids and 6% terpenoids.

Key Ginkgo References

1. Le Bars PL, et al. A placebo-controlled, double-blind, randomized trial of an extract of Ginkgo biloba for dementia. JAMA 1997; 278:1327.
2. van Dongen MC, et al. The efficacy of ginkgo for elderly people with dementia and age-associated memory impairment: new results of a randomized clinical trial. J Am Geriatr Soc 2000; 48:1183.
3. Pittler MH, et al. Ginkgo biloba extract for the treatment of intermittent claudication: A meta-analysis of randomized trials. Am J Med 2000; 108:276.
4. Solomon PR, et al. Ginkgo for memory enhancement: a randomized controlled trial. JAMA. 2002;288(7):835-40.

For Additional Information

1. Natural Medicines Comprehensive Database. Available through UW Healthlinks.
2. UpToDate. Available through UW Healthlinks.
3. About Herbs. <http://www.fammed.washington.edu/predoctoral/CAM/sites.html>.
4. Herbmed.org for more general background.
5. For information about the quality of specific brands, check Consumerlabs.com.

