**The Longwood Herbal Task Force**

**(http://www.mcp.edu/herbal/default.htm) and**

**The Center for Holistic Pediatric Education and Research**

**(http://www.childrenshospital.org/holistic/)**

**Clinician Information Summary**

# GINGER

*(Zingiber officinale)*


## SUMMARY

Ginger is primarily used to treat nausea, but it is also used as an anti-inflammatory, a pain remedy, a warming remedy and to lower cholesterol levels. Randomized controlled trials support is use in preventing nausea. Case studies suggest usefulness in treating migraines and inflammatory arthritis, but no randomized trials have been reported. Data are insufficient to recommend ginger as a cholesterol-lowering supplement. Animal studies suggest thermogenic effects, but this has not been evaluated in humans. Given its long history of use as a food, ginger is presumed safe for supplemental use; it is on the Generally Recognized as Safe (GRAS) list. Because of its effects on platelet aggregation and thromboxane synthesis in vitro, some herbalists suggest caution for patients taking anticoagulants or those scheduled for surgery; on the other hand, no clinically significant anticoagulant effects have been documented. No studies have specifically evaluated ginger's safety during pregnancy, lactation or during childhood.


**POPULAR USES:** Nausea due to morning sickness, motion sickness, general anesthesia, and chemotherapy; to warm chills associated with viral infections; anti-inflammatory for migraine headaches and arthritis; high cholesterol

**ACTIVE CONSTITUENTS:** Phenolic compounds (shogaols and gingerols), sesquiterpenes (bisapolene, zingiberene, zingiberol, sesquiphellandrene, curcurmene), galanolactone, gingesulfonic acid, zingerone, geraniol, neral, monoacyldigalactosylglycerols, gingerglycolipids

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## SCIENTIFIC DATA

*In vitro:* In homogenated liver from mice and rats, ginger extracts interfere with cholesterol biosynthesis. Ginger extracts inhibit thromboxane generation and platelet aggregation in a dose-dependent fashion. Ginger blocks the formation of pro-inflammatory leukotrienes, thromboxane and prostaglandins. Ginger extracts induce thermogenesis in the isolated rat hind limb model.

*In animals:* In mice, ginger enhances intestinal motility; in shrews and frogs, it reduces experimentally-induced emesis. In rats with chronic, severe inflammatory arthritis, ginger oil reduces swelling and inflammation. Ginger also has antipyretic effects comparable to aspirin. In rats, orally administered ginger has significant thermogenic effects. Animal data on ginger's impact on cholesterol has been conflicting; studies in rabbits, rats and mice show decreased lipid levels, while other studies in rats do not demonstrate an impact.

*In humans:* Most (but not all) randomized, controlled trials support ginger's use as an antiemetic for nausea due to morning sickness, chemotherapy-associated nausea, post-operative nausea and motion sickness. Its effects appear to be primarily peripheral (on the gut) rather than central (on the CNS). Case series support the use of ginger in treating migraine headaches and inflammatory arthritis, but no controlled trials have evaluated its benefits compared with placebo or standard medications. Data on ginger's effect on platelet coagulation have been mixed; most studies have not shown any impact even with doses as high as 15 – 50 grams of fresh, cooked ginger, but one study did show reduced clotting in normal volunteers who consumed 5 grams of dried ginger. In one small case study, ginger had no acute effect on serum lipid levels, but large randomized trials have not been done. There are no studies evaluating ginger's thermogenic effects in humans.

## TOXICITY AND SIDE EFFECTS

*Side effects* include gastric irritation in persons unaccustomed to eating spicy foods. Ginger has no significant mutagenic or carcinogenic effects.

*Interactions with other medications:* Unknown

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*Contraindications:* None known. Caution has been suggested for patients taking anticoagulants or those scheduled for elective surgery, though no adverse effects or bleeding complications have been reported. Some herbalists suggest caution for patients with biliary disease, though experimental data to support this advice are lacking. Ginger had hypoglycemic effects in one study in mice, but this has not been reported in humans.

*Pregnancy and lactation:* No data evaluating safety. Non-teratogenic. Generally recognized as safe in 30 countries.

*Pediatric use:* No clinical studies or systematic surveillance evaluating safety.

## ADDITIONAL REFERENCES OR RESOURCES

- Longwood Herbal Task Force: http://www.mcp.edu/herbal/default.htm
- Ginger Complete Monograph: http://www.mcp.edu/herbal/ginger/ginger.pdf
- Ginger Patient Fact Sheet: http://www.mcp.edu/herbal/ginger/ginger.ph.pdf