

Inhibition of prostaglandin and leukotriene biosynthesis by gingerols and diarylheptanoids

The rhizomes of *Zingiber officinale* (ginger) and *Alpinia officinarum* contain potent inhibitors against prostaglandin biosynthesizing enzyme (PG synthetase). Gingerols and diarylheptanoids were identified as active compounds. Their possible mechanism of action which was deduced from the structures of active compounds indicated that the inhibitors would also be active against arachidonate 5-lipoxygenase, an enzyme of leukotriene (LT) biosynthesis. This was verified by testing their inhibitory effects on 5-lipoxygenase prepared from RBL-1 cells. A diarylheptanoid with catechol group was the most active compound against 5-lipoxygenase, while yakuchinone A was the most active against PG synthetase. Kiuchi F; Iwakami S; Shibuya M; Hanaoka F; Sankawa U. *Chem Pharm Bull* (Tokyo) 1992 Feb;40(2):387-91.

Zingiber officinale (ginger)--an antiemetic for day case surgery

The effect of powdered ginger root was compared with metoclopramide and placebo. In a prospective, randomised, double-blind trial the incidence of postoperative nausea and vomiting was measured in 120 women presenting for elective laparoscopic gynaecological surgery on a day stay basis. The incidence of nausea and vomiting was similar in patients given metoclopramide and ginger (27% and 21%) and less than in those who received placebo (41%). The requirement for postoperative antiemetics was lower in those patients receiving ginger. The requirements for postoperative analgesia, recovery time and time until discharge were the same in all groups. There was no difference in the incidence of possible side effects such as sedation, abnormal movement, itch and visual disturbance between the three groups. *Zingiber officinale* is an effective and promising prophylactic antiemetic, which may be especially useful for day case surgery. Phillips S, Ruggier R, Hutchinson SE. *Anaesthesia* 1993 Aug;48(8):715-717.

Ginger root against seasickness. A controlled trial on the open sea

In a double-blind randomized placebo trial, the effect of the powdered rhizome of ginger (*Zingiber officinale*) was tested on seasickness. Eighty naval cadets, unaccustomed to sailing in heavy seas reported during voyages on the high seas, symptoms of seasickness every hour for 4 consecutive hours after ingestion of 1 g of the drug or placebo. Ginger root reduced the tendency to vomiting and cold sweating significantly better than placebo did (p less than 0.05). With regard to vomiting, a modified Protection Index (PI) = 72% was calculated. Remarkably fewer symptoms of nausea and vertigo were reported after ginger root ingestion, but the difference was not statistically significant. For all symptom categories, PI = 38% was calculated. Grontved A, Brask T, Kambskard J, Hentzer E. *Acta Otolaryngol* (Stockh) 1988 Jan;105(1-2):45-49.

Cholagogic effect of ginger and its active constituents

The effect of bile secretion in rats was examined in order to clarify the stomachic action of ginger and also to investigate its active constituents. The results showed that mainly the acetone extracts of ginger, which contain essential oils and pungent principles, caused an increase in the bile secretion. Further analyses for the active constituents of the acetone extracts through column chromatography indicated that [6]-gingerol and [10]-gingerol, which are the pungent principles, are mainly responsible for the cholagogic effect of ginger. Yamahara J, Miki K, Chisaka T, Sawada T, Fujimura H, Tomimatsu T, Nakano K, Nohara T. *J Ethnopharmacol* 1985 May;13(2):217-225.

Effects of aqueous extracts of onion, garlic and ginger on platelet aggregation and metabolism of arachidonic acid in the blood vascular system: in vitro study

Aqueous extracts of onion, garlic and ginger were found to inhibit aggregation induced by ADP, epinephrine, collagen and arachidonate in a dose-dependent manner in vitro. In the case of onion and garlic extracts relatively much higher volumes were needed to bring about even a modest inhibition (by ca. 13-18%) of thromboxane synthesis in washed platelets from labelled AA. On the other hand a good correlation was found between the amounts of ginger extract needed to inhibit platelet aggregation and those to inhibit platelet thromboxane synthesis. Ginger extract reduced also platelet prostaglandin-endoperoxides. A dose-related inhibition of platelet thromboxane- and prostaglandin (PGF₂ alpha, PGE₂ and PGD₂) synthesis was affected by ginger extract. Extracts of onion, garlic and ginger inhibited biosynthesis of prostacyclin in rat aorta from labelled AA. Ginger extract mildly inhibited the synthesis of prostacyclin from endogenous pool of AA in rat aorta; the other two extracts were without effect. Srivas KC. *Prostaglandins Leukot Med* 1984 Feb;13(2):227-35.

Effects of ginger on gastroduodenal motility

The effect of a ginger rhizome extract (2 x 100 mg) was studied on fasting and postprandial gastroduodenal motility with stationary manometry in 12 healthy volunteers. The results showed that: the interdigestive antral motility was significantly increased by ginger during phase III of the migrating motor complex; the volunteers also had a significantly increased motor response to a test meal in the corpus; a trend to an increased motor response during ginger treatment was seen in all other regions of interest. Oral ginger improves gastroduodenal motility in the fasting state and after a standard test meal. Micklefield GH, Redeker Y, Meister V, Jung O, Greving I, May B. *Int J Clin Pharmacol Ther* 1999 Jul;37(7):341-6.

Ginger root--a new antiemetic. The effect of ginger root on postoperative nausea and vomiting after major gynaecological surgery

The effectiveness of ginger (*Zingiber officinale*) as an antiemetic agent was compared with placebo and metoclopramide in 60 women who had major gynaecological surgery in a double-blind, randomised study. There were statistically significantly fewer recorded incidences of nausea in the group that received ginger root compared with placebo (p less than 0.05). The number of incidences of nausea in the groups that received either ginger root or metoclopramide were similar. The administration of antiemetic after operation was significantly greater in the placebo group compared to the other two groups (p less than 0.05). Bone ME, Wilkinson DJ, Young JR, McNeil J, Charlton S. *Anaesthesia* 1990 Aug;45(8):669-71.