



MEMORIAL SLOAN-KETTERING
CANCER CENTER

Sloan-Kettering Cancer Center in NYC Recognizes Mangosteen

Information From the Sloan-Kettering Cancer Center in New York City:

MANGOSTEEN (*Garcinia mangostana* L.)

CLINICAL SUMMARY

Mangosteen is a plant native to Southeast Asia. The fruits are used in traditional medicine to treat skin infections, wounds, and diarrhea. Recent studies have revealed that xanthones from the fruit hulls exhibit antibacterial ⁽³⁾, antifungal ⁽⁴⁾, and antiinflammatory ⁽⁵⁾ properties. Alpha-mangostin, a xanthone, inhibited growth of human leukemia HL60 cells ⁽¹⁾ ⁽⁶⁾, reduced the synthesis of prostaglandins ⁽⁵⁾, and prevented oxidative damage of LDL ⁽⁷⁾ in vitro. There is also preliminary evidence that alpha- and gamma-mangostins act as histamine and serotonin receptor blockers ⁽⁸⁾, and also inhibit HIV-1 protease ⁽⁹⁾. Garcinone E, another xanthone, exerts cytotoxic effects against human hepatocellular carcinoma cells ⁽¹⁰⁾. Extract from the pericarp of mangosteen has antiproliferative, antioxidative, and apoptotic effects against human breast cancer SKBR3 cells ⁽¹¹⁾. There is no data from clinical trials to verify these effects in humans. No adverse effects have been reported with the use of mangosteen.

SCIENTIFIC NAME

Garcinia mangostana L.

PURPORTED USES

- Bacterial Infections
- Diarrhea
- Fungal infections
- Inflammation
- Skin infections

- Wound healing

CONSTITUENTS

- Xanthones: alpha-mangostin, beta-mangostin, gamma-mangostin, garcinone B, garcinone E
- Mangostinone
- Tannins
- Flavonoid: epicatechin⁽¹⁾ ⁽²⁾

MECHANISM OF ACTION

The xanthones, alpha- and beta-mangostins, and garcinone B exhibit strong inhibitory effect against *Mycobacterium tuberculosis* in vitro ⁽³⁾. Alpha-mangostin has been shown to inhibit growth of human leukemia HL60 cells by inducing caspase-3-dependent apoptosis ⁽¹⁾ ⁽⁶⁾, reduce the synthesis of prostaglandins by inhibiting the activities of COX-1 and COX-2 enzymes ⁽⁵⁾, and prevent oxidative damage of LDL by functioning as a free-radical scavenger ⁽⁷⁾. Alpha- and gamma-mangostins also antagonize the activities of histamine and serotonin by acting as receptor blockers ⁽⁸⁾. Garcinone E has cytotoxic effects against human hepatocellular carcinoma cells ⁽¹⁰⁾. In vitro studies have also demonstrated that a crude methanolic extract from the pericarp of mangosteen has antiproliferative, antioxidative, and apoptotic effects against SKBR3 human breast cancer cells ⁽¹¹⁾.

LITERATURE SUMMARY AND CRITIQUE

There is no clinical data available to support the beneficial effects of mangosteen in humans.

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