Activity of Artemisia annua and artemisinin derivatives, in prostate carcinoma

Friedrich-Wilhelm Michaelsen, Mohamed E.M. Saeed, Jörg Schwarzkopf, Thomas Efferth

1 Practice for Naturopathy, 29499 Zernien, Germany
2 Department of Pharmaceutical Biology, Institute of Pharmacy and Biochemistry, Johannes Gutenberg University, Mainz, Germany
3 Clinic for General Medicine, 29456 Heeseker, Germany

**DISEASE:** Human prostate carcinoma

**LOCATION:** Germany

**STUDY SUBJECT:** One 80 year old man

**TREATMENT:** A. annua capsules (5x50 mg/day) long term (following short term treatment with bacalitumide)

**RESULT:** combined with the short-term treatment, “resulted in considerable regression of advanced metastasized prostate carcinoma”

**QUOTING THEIR CONCLUSION:** “Long-term treatment with A. annua capsules combined with short-term bicalitumide treatment resulted in considerable regression of advanced metastasized prostate carcinoma. Controlled clinical trials are required to evaluate the clinical benefit of A. annua in prostate cancer.”

**LINK:**
**DISEASE:** Triple-negative breast cancer

**LOCATION:** Germany

**STUDY SUBJECTS:** Cell and Mouse-Xenograph study

**TREATMENT:** Artemisia annua aqueous and acetonitrile-treated extract

**RESULT:** The *Artemisia annua* extract was found to be cytotoxic to a variety of treatment-resistant cancer cell lines derived from different tissues, although with different sensitivity, in both cells and mice. **Daily treatment of mice with xenografted breast cancer for 3 weeks slowed tumor growth** to a similar extent as the standard chemotherapeutic doxorubicin. Doxorubicin is highly toxic, resulting in body weight loss in mice – **this was not observed in mice**, where overall **much lower systemic toxicity was observed**.

**QUOTING THEIR CONCLUSION:** “This study provides evidence for an anticancer activity of an *Artemisia annua* extract marketed as a herbal preparation. Together, the results reveal new insights of *Artemisia annua*-derived compounds, their potential efficacy in anticancer therapy, and uncover compounds beside with activity against highly metastatic triple negative human breast cancer cells that are different from artemisinin. In addition, the study provides evidence for therapeutically active compounds in a herbal preparation. **These findings justify further exploration** of these compounds for therapeutic purposes.”

**DISEASE:** Non-Small Cell Lung Cancer  
**LOCATION:** USA  
**STUDY SUBJECTS:** Cell and Mouse-Xenograph study  
**TREATMENT:** Artemisia annua aqueous and acetonitrile-treated extract  

**RESULT:** Dried leaf *Artemisia annua* suppressed cancer cell viability with no inhibition of healthy human cells and inhibited cancer cell migration. In the mouse xenographs, A. annua treatment resulted in inhibited tumor growth by 50% compared to controls.

**QUOTING THEIR CONCLUSION:** “To our knowledge this is the first study showing dried leaf *Artemisia annua* (DLA) inhibited tumor growth. Using DLAe to study mechanism, we showed that DLAe is cytotoxic to human NSCLC cells and mechanistically similar to AS by slowing proliferation, stimulating cell cycle arrest and inducing apoptosis. DLAe also inhibited migration of A549 and PC9 NSCLC cells. Moreover, DLA inhibited A549 and PC9 induced tumor growth, whereas AS only inhibited A549 tumor growth. Together these results suggest DLA is a novel therapeutic for possible treatment of NSCLC and potentially other AN-sensitive cancers.”

**LINK:**  