

# Curcumin Analogs Have Anti-Cancer Effects

Scientists at Emory University in Atlanta have synthesized several chemical compounds based on curcumin that demonstrate extremely promising anti-cancer activity in the laboratory.

Curcumin, a bioactive compound present in turmeric, is known to exhibit powerful anti-cancer, anti-inflammatory, and antioxidant properties, and is believed to reduce the risk of cancer, heart disease, and Alzheimer's disease. In laboratory tests performed at the National Cancer Institute, at least nine of more than a dozen laboratory-created curcumin analogs showed "a moderate degree of anti-cancer



Turmeric (*Curcuma longa*)

activity," according to the Emory researchers.\* Three of the new curcumin derivatives "exhibited a high degree of cytotoxicity," inhibiting tumor cell growth better than the commonly used chemotherapy drug cisplatin.

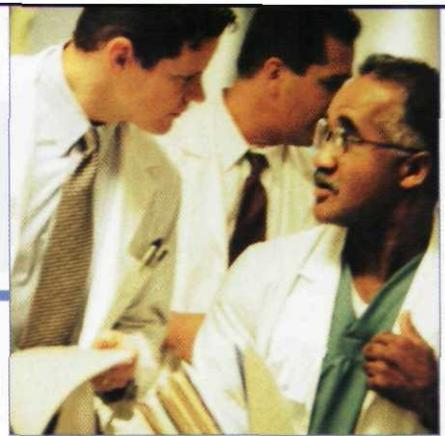
In laboratory tests at Emory, eight of the new compounds exhibited "a high degree" of anti-cancer activity, including effectiveness at preventing or interfering with angiogenesis, the process by which tumors supply themselves with nutrients that fuel further growth. Anti-angiogenic activity is of special interest to oncologists, as eliminating the vessels that supply blood to a tumor effectively strangles the tumor while preventing damage to surrounding tissues.

Of the numerous potentially effective synthetic compounds, one deemed especially promising was tested on live mice bred to serve as human breast cancer models. The chemical was well tolerated by the rodents and effectively reduced the size of their tumors. Researchers believe that this curcumin analog may be a candidate for development as a new anti-cancer drug.

—Dale Kiefer

**Reference**

\* Adams BK, Ferstl EM, Davis MC, et al. Synthesis and biological evaluation of novel curcumin analogs as anti-cancer and anti-angiogenesis agents. *Bioorg Med Chem.* 2004 Jul 15;12(14):3871-83.



## Vitamin E-CoQ10 Combo Reduces Inflammation

Inflammation is common to many of today's most prevalent health disorders, including heart disease, cancer, autoimmune disease, and diabetes. In a recent study, the combination of supplemental vitamin E and coenzyme Q10 (CoQ10) had the effect of reducing inflammatory status in baboons.\*

The baboons were maintained on a baseline diet low in fat and cholesterol for three months, then were placed on a high-fat, high-cholesterol diet for seven weeks. Blood levels of C-reactive protein, an important marker for inflammation in the body and a significant predictor of cardiovascular disease risk, were measured before and after the high-fat, high-cholesterol diet. The baboons' serum C-reactive protein levels were unchanged after the high-fat, high-cholesterol diet challenge.

Next, the baboons were supplemented with the antioxidant vitamin E for two weeks. Serum C-reactive protein levels dropped significantly following vitamin E supplementation. CoQ10 was then added to the baboons' supplementation, producing even greater reductions in inflammatory status as measured by C-reactive levels.

Vitamin E and CoQ10 may be powerful partners in reducing inflammatory status and thus in modulating the risk of numerous health conditions associated with inflammation and oxidative stress. Through their activity in reducing C-reactive protein, vitamin E and CoQ10 may help promote health and freedom from illnesses ranging from heart disease to diabetes.

—Elizabeth Wagner, ND

**Reference**

\* Wang XL, Rainwater DL, Mahaney MC, Stocker R. Cosupplementation with vitamin E and coenzyme Q10 reduces circulating markers of inflammation in baboons. *Am J Clin Nutr.* 2004 Sep;80(3):649-55.

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