

RESEARCH
ROUNDUP

It's our goal here at *Good Health Lifestyles* to bring you the latest in cutting-edge research for a variety of common health issues. Because we believe that knowledge is power—especially when it comes to health—we are digging deeper into the exciting new research from leading medical journals and breaking it down to help you get the most from today's science.

Andrographis and Melatonin Promote Autophagy

THE STUDY ABSTRACT:

Zhao Y, Wang C, Goel A.

A combined treatment with melatonin and andrographis promotes autophagy and anti-cancer activity in colorectal cancer. *Carcinogenesis*. 2022 Jan 28;bgac008. doi: 10.1093/carcin/bgac008. Epub ahead of print. PMID: 35089340.

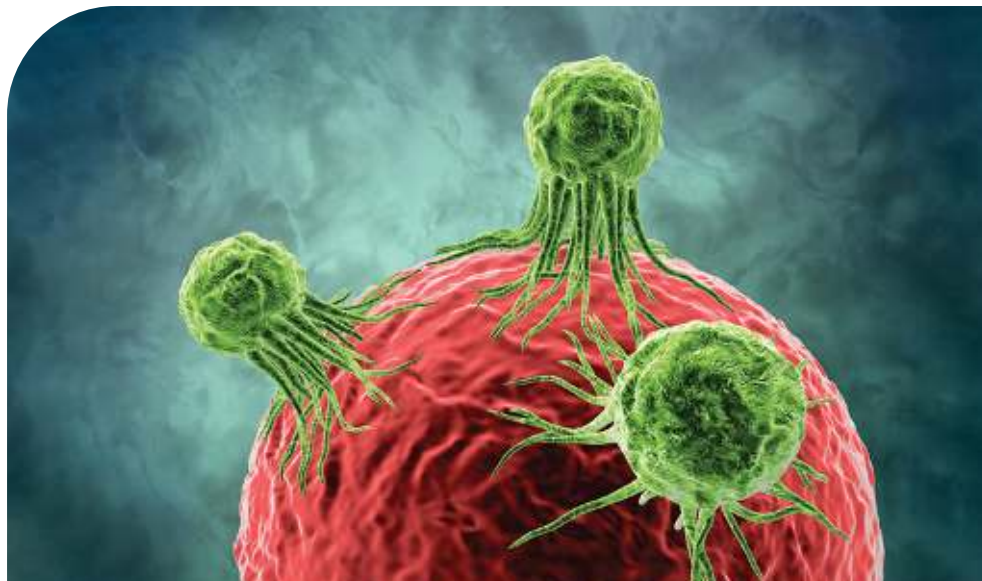
Colorectal cancer (CRC) is one of the most frequent malignancies worldwide and remains one of the leading causes of cancer-related deaths in the United States. The high degree of morbidity and mortality associated with this disease is largely due to the inadequate efficacy of current treatments as well as the development of chemoresistance.

In recent years, several pharmaceutical agents screened from natural products have shown the promise to offer a safe, inexpensive, and synergistically multi-targeted treatment option in various cancers. Given the growing evidence of anti-carcinogenic properties of two natural compounds, melatonin (MLT) and andrographis (Andro), we aimed to evaluate their synergistic anticancer effects in CRC. We demonstrate that indeed these two compounds possessed a synergistic anticancer effect in terms of their ability to inhibit cell viability, suppression of colony-formation and induction of apoptosis ($p < 0.05$). In line with our in-vitro findings, we were

able to validate this combinatorial anticancer activity in xenograft animal models ($p < 0.001$) as well as tumor-derived 3D organoids ($p < 0.01$). RNA-sequencing analysis revealed candidate pathways and genes that mediated antitumor efficacy of MLT and Andro in CRC, among which autophagy pathway and related genes, including NR4A1, CTSL and Atg12, were found to be primarily responsible for the increased anticancer effect by the two natural products. In conclusion, our data reveal a potent and synergistic therapeutic effect of MLT and Andro in the treatment of CRC and provides a rationale for suppressing autophagy in cancer cells as a potential therapeutic strategy for CRC.

WHAT THIS MEANS TO YOU:

Resistance to chemotherapy is an all-too-common condition of standard cancer treatment. Chemotherapy drugs are already toxic to the cancer *and* to the patient, so there's only so far that treatment can go before it becomes too dangerous to pursue further. There is absolutely a need to find other ways of preventing and treating the development of cancerous tumors.



This scientific cell study reported that *Andrographis paniculata*, an adaptogenic herb used in traditional Ayurvedic practice, along with melatonin, can be a powerful ally in the fight against cancer.

While melatonin is generally regarded for its relationship to sleep cycles, it affects virtually every cell in the body and is involved with inflammatory responses, immune system strength, and DNA integrity.

The researchers reported that andrographis and melatonin inhibited cancer cell replication and induced a process called *autophagy*, in which cancer cells degrade and ultimately die. While each nutrient was tested against cancer cells, andrographis and melatonin worked more effectively as a team than either one alone—although each ingredient showed remarkable efficacy when used by itself as well.

When searching for andrographis in supplement form, it is important to make sure it has been standardized for 20 percent andrographolide—a key component in the herb considered most responsible for its many beneficial effects. ■