

Plant substance inhibits cancer stem cells

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Lab experiments show that the chemical compound damsine found in the plant *Ambrosia arborescens* inhibits the growth and spread of cancer stem cells. The similar but synthetically produced ambrosin has the same positive effect, according to researchers at Lund University and University Mayor of San Andrés in La Paz, Bolivia.

The plant *Ambrosia arborescens* grows at a high elevation in large parts of South America, and is traditionally used as a medicinal plant. The researchers have isolated the sesquiterpene lactone damsine from the plant and studied its effect on [cancer stem cells](#) in three different breast [cancer](#) cell lines. They have also performed similar studies using what is known as an analogue called ambrosin – a substance similar to damsine, but produced synthetically. The results show that they both have an effect on cancer stem [cells](#).

"Both the natural and the synthetic substances inhibit the growth and spread of cancer stem cells in breast cancer cell lines. This is the first time that it has been successfully proven by research," says Stina Oredsson, professor at Lund University.

Already at low concentrations, the two substances inhibit the division and mobility of the cancer cells. This means that the tumour becomes smaller as cell proliferation decreases. In the present study, the researchers show that the actual number of cancer stem cells decreases.

Stina Oredsson emphasises that this is basic research and that the results are based on [lab experiments](#) involving cell cultures. However, she

argues that the results are a breakthrough in cancer research as it may be the first step towards effective treatment of cancer stem cells, i.e. the cells believed to cause metastases.

"Different cancer cells have different abilities to survive chemotherapy. Cancer stem cells can be considered the most dangerous type of [cancer cells](#), as they appear to have an inherent resistance to the chemotherapeutic drugs used today. Our results can contribute to the development of new drugs against cancer stem cells but, unfortunately, it takes a long time to get from [basic research](#) to usable drugs," says Stina Oredsson.

She and her colleagues continue to study damsine and ambrosin. They have also developed other analogues that show very good inhibitory effects on cancer stem cells. These results have not yet been published.

More information: Wendy Soria Sotillo et al. Anti-cancer stem cell activity of a sesquiterpene lactone isolated from *Ambrosia arborescens* and of a synthetic derivative, *PLOS ONE* (2017). [DOI: 10.1371/journal.pone.0184304](#)

Provided by Lund University

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