

Mechanism discovered for health benefit of green tea, new approach to autoimmune disease

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One of the beneficial compounds found in green tea has a powerful ability to increase the number of "regulatory T cells" that play a key role in immune function and suppression of autoimmune disease, according to new research in the Linus Pauling Institute at Oregon State University.

This may be one of the underlying mechanisms for the health benefits of [green tea](#), which has attracted wide interest for its ability to help control inflammation, improve immune function and prevent cancer.

[Pharmaceutical drugs](#) are available that perform similar roles and have been the subject of much research, scientists say, but they have problems with toxicity. A natural food product might provide a long-term, sustainable way to accomplish this same goal without toxicity, researchers said.

"This appears to be a natural, plant-derived compound that can affect the number of regulatory T cells, and in the process improve immune function," said Emily Ho, an LPI principal investigator and associate professor in the OSU Department of Nutrition and Exercise Sciences.

"When fully understood, this could provide an easy and safe way to help control [autoimmune problems](#) and address various diseases," Ho said.

The findings have been published in *Immunology Letters*, a professional

journal.

There are many types of cells that have different roles in the immune system, which is a delicate balancing act of attacking unwanted invaders without damaging normal cells. In autoimmune diseases, which can range from simple allergies to juvenile diabetes or even terminal conditions such as Lou Gehrig's disease, this process goes awry and the body mistakenly attacks itself.

Some cells exist primarily to help control that problem and dampen or "turn off" the immune system, including regulatory T cells. The number and proper function of those regulatory T cells, in turn, is regulated by other biological processes such as [transcription factors](#) and [DNA methylation](#).

In this study, OSU scientists did experiments with a compound in green tea, a polyphenol called EGCG, which is believed to be responsible for much of its health benefits and has both anti-inflammatory and anti-cancer characteristics. They found it could cause a higher production of regulatory T cells. Its effects were not as potent as some of those produced by prescription drugs, but it also had few concerns about long-term use or toxicity.

"EGCG may have health benefits through an epigenetic mechanism, meaning we aren't changing the underlying DNA codes, but just influencing what gets expressed, what cells get turned on," Ho said. "And we may be able to do this with a simple, whole-food approach."

Laboratory studies done with mice, Ho said, showed that treatment with EGCG significantly increased the numbers and frequencies of regulatory T [cells](#) found in spleen and lymph nodes, and in the process helped to control the immune response.

"Epigenetic regulation can be potentially exploited in generating suppressive [regulatory T cells](#) for therapeutic purposes, and is of significant clinical importance for the suppression of [autoimmune diseases](#)," the researchers said in their study.

Provided by Oregon State University

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